INTRODUCTION

How to Use This Manual

This manual is divided into multiple sections. The first page of each section is marked with a black tab that lines up with its corresponding thumb index tab on this page and the back cover. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.
Each section includes:

1. A table of contents, or an exploded view index showing:
   - Parts disassembly sequence.
   - Bolt torques and thread sizes.
   - Page references to descriptions in text.
2. Disassembly/assembly procedures and tools.
3. Inspection.
4. Testing/troubleshooting.
5. Repair.
6. Adjustments.

Safety Messages

Your safety, and the safety of others, is very important. To help you make informed decisions, we have provided safety messages, and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle. You must use your own good judgment.

You will find important safety information in a variety of forms including:

- **Safety Labels** — on the vehicle.
- **Safety Messages** — preceded by a safety alert symbol ⚠ and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

⚠ DANGER	You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
⚠ WARNING	You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
⚠ CAUTION	You CAN be HURT if you don't follow instructions.

- **Instructions** — how to service this vehicle correctly and safely.

As you read this manual, you will find information that is preceded by a NOTICE symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

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Specifications apply to Canada

HONDA MOTOR CO., LTD.
Service Publication Office

As sections with * include SRS components; special precautions are required when servicing.

General Information

Chassis and Paint Codes

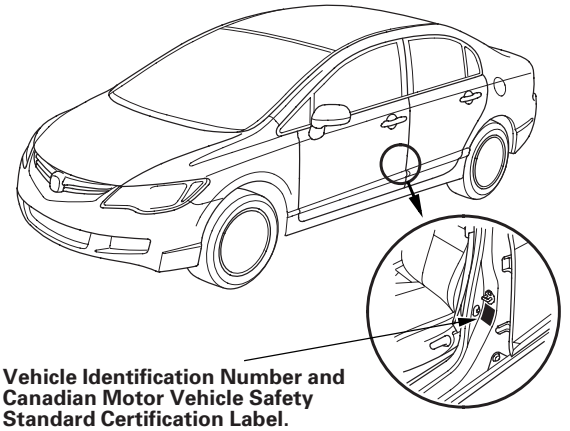
'06 Model

Vehicle Identification Number

2HH FD5 6 5 * 6 H 200001

a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
2HH: Honda of Canada Mfg.,
Honda Canada Inc.
Acura passenger vehicle
b. Line, Body and Engine Type
FD5: Acura CSX/K20Z2
c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual
6: 4-door Sedan/5-speed Automatic
d. Vehicle Grade (Series)
5: TOURING
7: PREMIUM
e. Check Digit
f. Model Year
6: '06
g. Factory Code
H: Alliston, Ontario Factory in Canada
h. Serial Number



Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification Label.

Engine Number

K20Z2 - 1300001

a b

a. Engine Type
K20Z2: 2.0 L DOHC i-VTEC Sequential Multiport Fuel-injected engine
b. Serial Number

Transmission Number

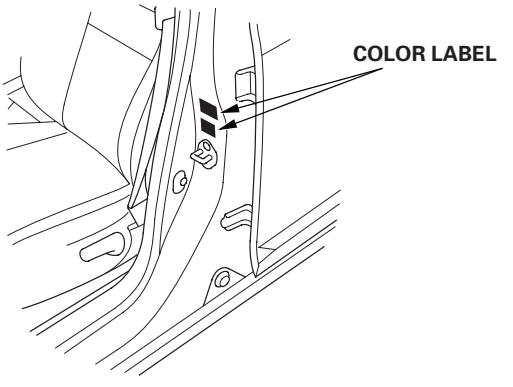
RPD6 - 1000001

a b

a. Transmission Type
RPD6: 5-speed Manual
MPMA: 5-speed Automatic
b. Serial Number

Paint Code

Code	Color
NH-578	Taffeta White
NH-700M	Alabaster Silver Metallic
NH-701M	Galaxy Gray Metallic
B-92P	Nighthawk Black Pearl
B-536P	Royal Blue Pearl
B-537M	Neutron Blue Metallic
YR-557P	Habanero Red Pearl



’07 Model

Vehicle Identification Number

2HH FD5 6 5 * 7 H 200001

a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
2HH: Honda of Canada Mfg.,
Honda Canada Inc.
Acura passenger vehicle

b. Line, Body and Engine Type
FD5: Acura CSX/K20Z2, K20Z3

c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual, 6-speed Manual
6: 4-door Sedan/5-speed Automatic

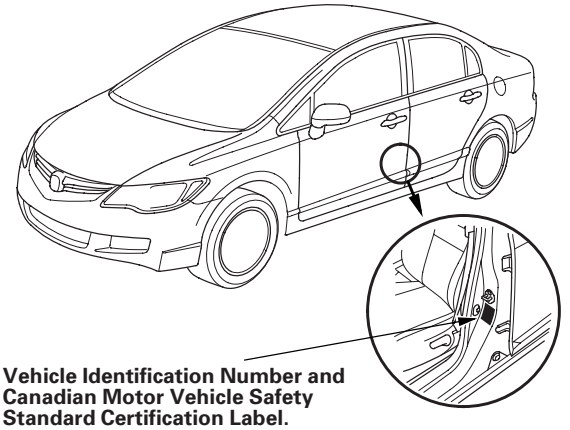
d. Vehicle Grade (Series)
5: TOURING
7: PREMIUM
9: TYPE S

e. Check Digit

f. Model Year
7: ’07

g. Factory Code
H: Alliston, Ontario Factory in Canada

h. Serial Number
200001—: K20Z2 engine model
250001—: K20Z3 engine model



Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification Label.

Engine Number

K20Z2 - 2300001

a b

a. Engine Type
K20Z2: 2.0 L DOHC i-VTEC Sequential Multiport Fuel-injected engine
K20Z3: 2.0 L DOHC i-VTEC Sequential Multiport Fuel-injected engine

b. Serial Number
2300001—: K20Z2
2000001—: K20Z3

Transmission Number

RPD5 - 1500001

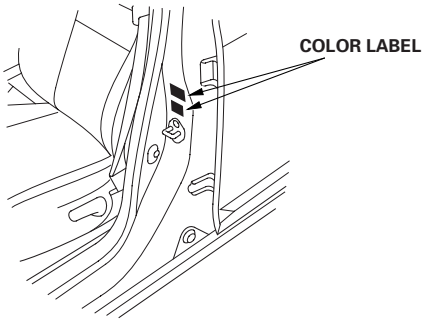
a b

a. Transmission Type
RPD5: 5-speed Manual
PNN3: 6-speed Manual
MPMA: 5-speed Automatic

b. Serial Number
1000001—: PNN3
1500001—: RPD5
2000001—: MPMA

Paint Code

Code	Color
NH-578	Taffeta White
NH-700M	Alabaster Silver Metallic
NH-701M	Galaxy Gray Metallic
B-92P	Nighthawk Black Pearl
B-529P	Fiji Blue Pearl
B-536P	Royal Blue Pearl
B-537M	Neutron Blue Metallic
YR-557P	Habanero Red Pearl



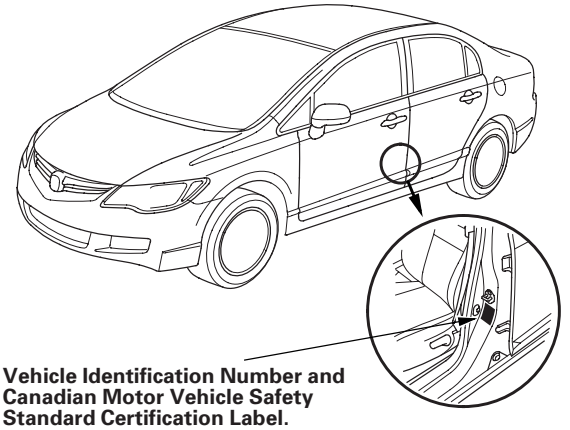
Chassis and Paint Codes (cont'd)

'08 Model

Vehicle Identification Number

2HH FD5 6 5 * 8 H 200001
a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
2HH: Honda of Canada Mfg.,
Honda Canada Inc.
Acura passenger vehicle
b. Line, Body and Engine Type
FD5: Acura CSX/K20Z2, K20Z3
c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual, 6-speed Manual
6: 4-door Sedan/5-speed Automatic
d. Vehicle Grade (Series)
5: CSX
7: PREMIUM
9: TYPE S
e. Check Digit
f. Model Year
8: '08
g. Factory Code
H: Alliston, Ontario Factory in Canada
h. Serial Number
200001—: K20Z2 engine model
250001—: K20Z3 engine model



Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification Label.

Engine Number

K20Z2 - 3300001
a b

a. Engine Type
K20Z2: 2.0 L DOHC i-VTEC Sequential Multiport Fuel-injected engine
K20Z3: 2.0 L DOHC i-VTEC Sequential Multiport Fuel-injected engine
b. Serial Number
3300001—: K20Z2
3000001—: K20Z3

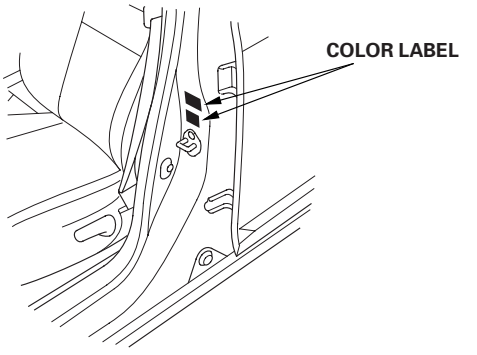
Transmission Number

RPD5 - 2500001
a b

a. Transmission Type
RPD5: 5-speed Manual
PNN3: 6-speed Manual
MPMA: 5-speed Automatic
b. Serial Number
2000001—: PNN3
2500001—: RPD5
3000001—: MPMA

Paint Code

Code	Color
NH-578	Taffeta White
NH-700M	Alabaster Silver Metallic
NH-701M	Galaxy Gray Metallic
B-92P	Nighthawk Black Pearl
B-529P	Fiji Blue Pearl
B-536P	Royal Blue Pearl
R-525P	New Red Pearl



’09 Model

Vehicle Identification Number

2HH FD5 6 5 * 9 H 200001

a b c d e f g h

a. Manufacturer, Make and Type of Vehicle
2HH: Honda of Canada Mfg.,
Honda Canada Inc.
Acura passenger vehicle

b. Line, Body and Engine Type
FD5: Acura CSX/K20Z2, K20Z3

c. Body Type and Transmission Type
5: 4-door Sedan/5-speed Manual, 6-speed Manual
6: 4-door Sedan/5-speed Automatic

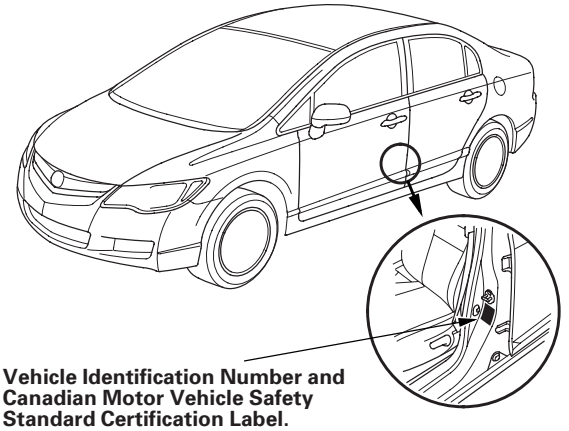
d. Vehicle Grade (Series)
5: CSX
7: TECH PKG
9: TYPE S

e. Check Digit

f. Model Year
9: ’09

g. Factory Code
H: Alliston, Ontario Factory in Canada

h. Serial Number
200001—: K20Z2 engine model
250001—: K20Z3 engine model



Vehicle Identification Number and Canadian Motor Vehicle Safety Standard Certification Label.

Engine Number

K20Z2 - 5300001

a b

a. Engine Type
K20Z2: 2.0 L DOHC i-VTEC Sequential Multiport Fuel-injected engine
K20Z3: 2.0 L DOHC i-VTEC Sequential Multiport Fuel-injected engine

b. Serial Number
5300001—: K20Z2
4000001—: K20Z3

Transmission Number

SPTM - 4000001

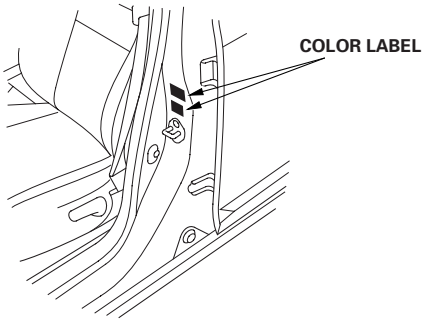
a b

a. Transmission Type
SPTM: 5-speed Manual
SPNM: 6-speed Manual
MPMA: 5-speed Automatic

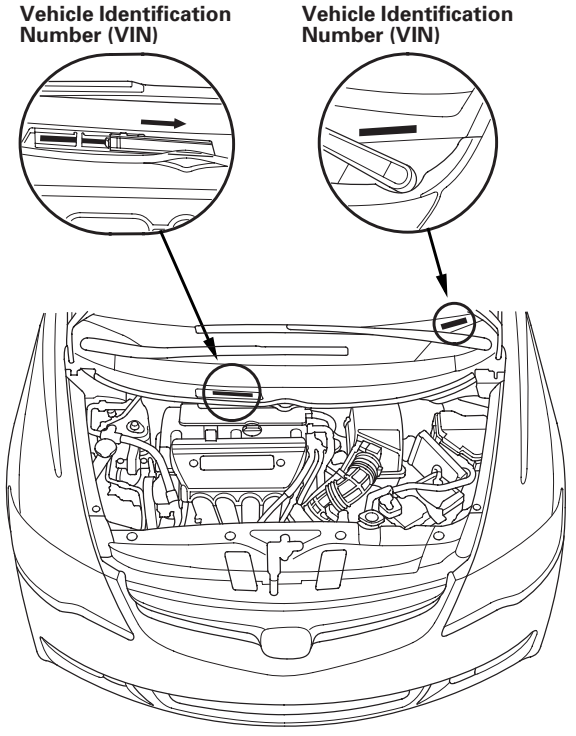
b. Serial Number
4000001—: SPTM
4000001—: SPNM
4000001—: MPMA

Paint Code

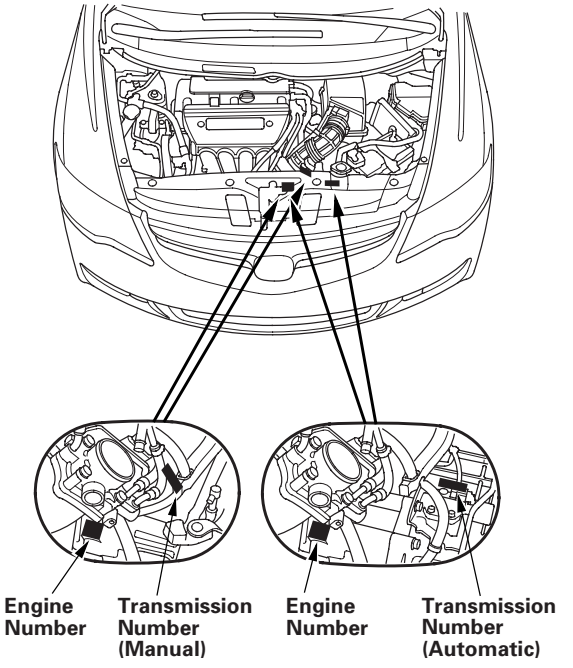
Code	Color
NH-578	Taffeta White
NH-700M	Alabaster Silver Metallic
NH-731P	Crystal Black Pearl
NH-737M	Polished Metal Metallic
B-561P	Dyno Blue Pearl
YR-578M	Urban Titanium Metallic
B-536P	Royal Blue Pearl
R-525P	New Red Pearl



Identification Number Locations



K20Z2 engine Model:



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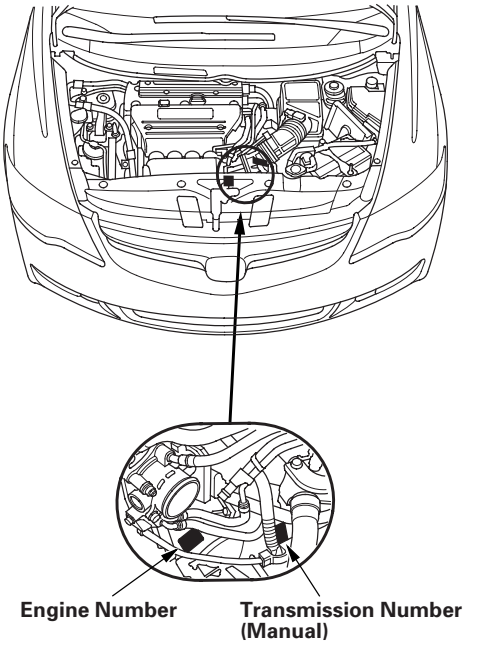
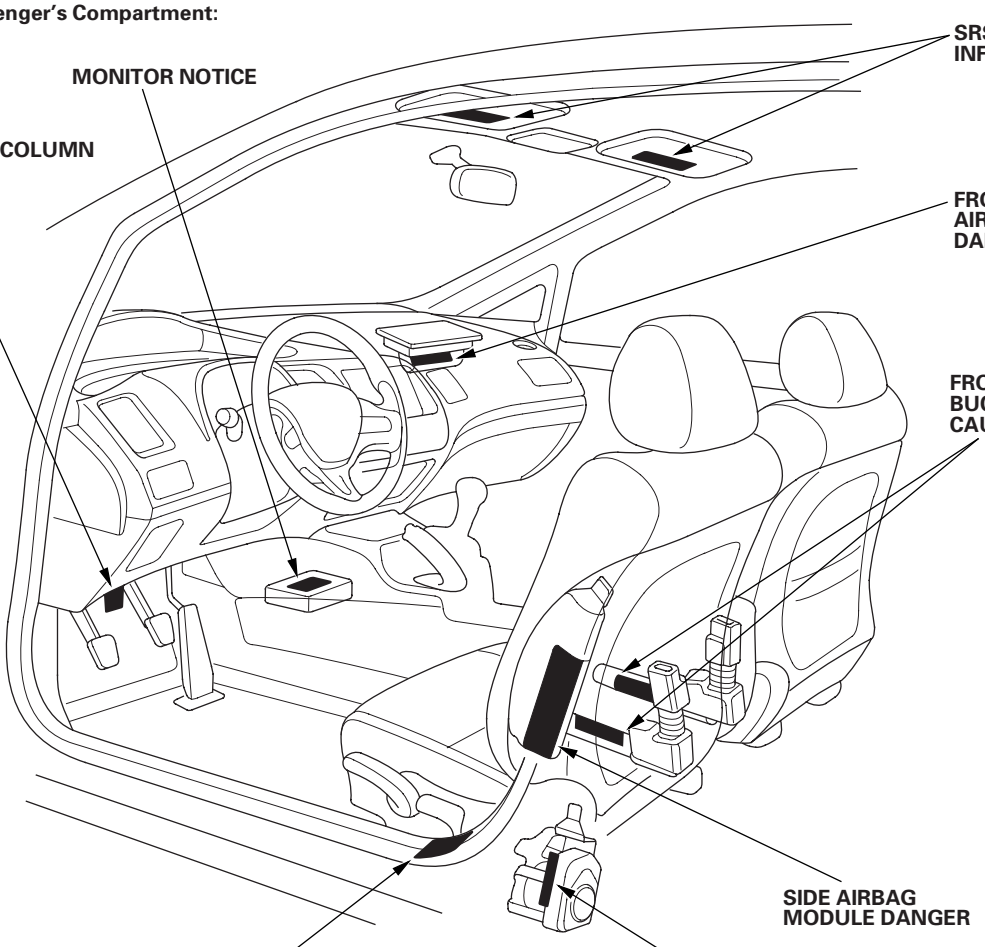
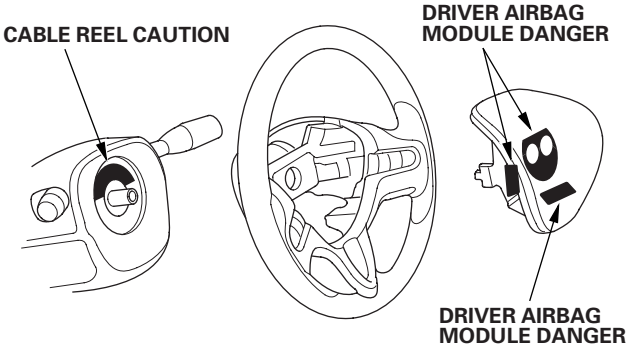


Danger/Warning/Caution Label Locations

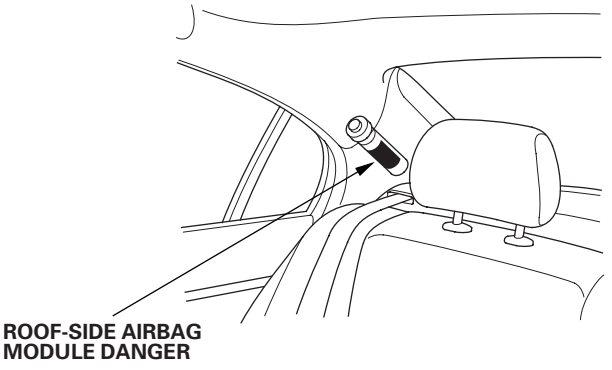
Front Passenger's Compartment:



Steering Wheel:



Rear Passenger's Compartment:



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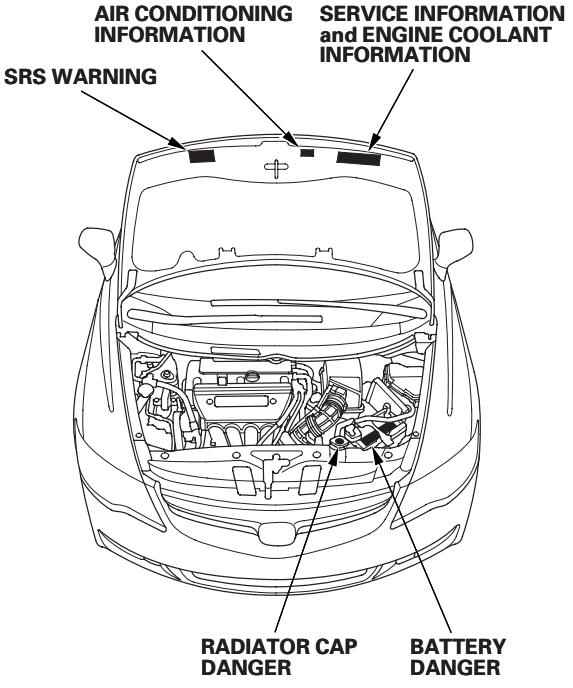
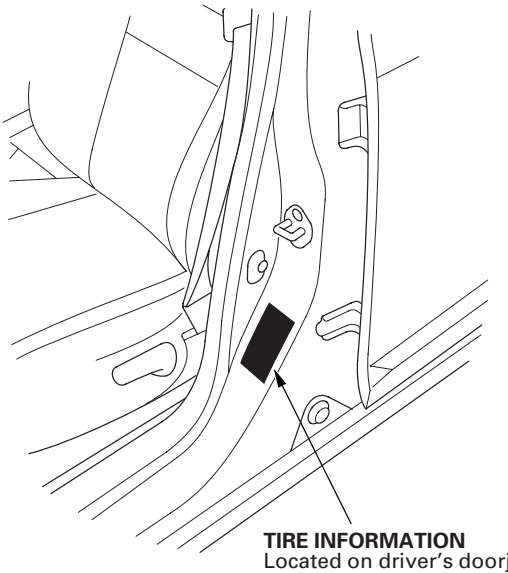
Danger/Warning/Caution Label Locations (cont'd)



Doorjamb Area



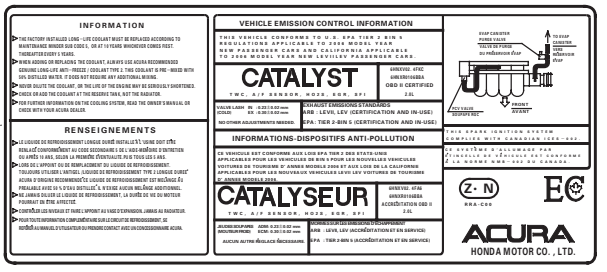
Under-hood Emission Control Label

Emission Group Identification

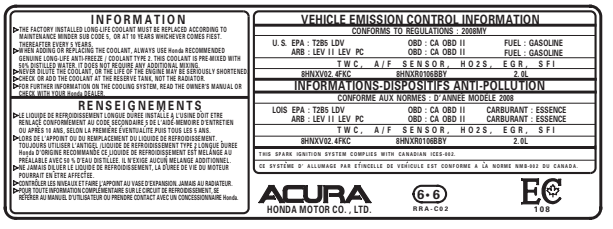
K20Z2 engine Model:

Example:

'06-07 Models



'08-09 Models



'06 Model
THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW PASSENGER CARS AND CALIFORNIA REGULATIONS APPLICABLE TO 2006 MODEL YEAR NEW LEV II LEV PASSENGER CARS.

'07 Model
THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW PASSENGER CARS AND CALIFORNIA REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW LEV II LEV PASSENGER CARS.

'08 Model
CONFORMS TO REGULATIONS: 2008 MY

'09 Model
CONFORMS TO REGULATIONS: 2009 MY

Test Group and Evaporative Family

Test Group:

9 HNX V 02.0 VA9
a b c d e

- **a. Model Year**
  6: '06
  7: '07
  8: '08
  9: '09
- **b. Manufacturer Subcode**
  HNX: HONDA
- **c. Family Type**
  V: LDV
- **d. Displacement Group**
- **e. Sequence Characters**
  FKC: '06 model, '08 model
  HKC: '07 model
  VA9: '09 model

Evaporative Family:

9 HNX R 0106 VEA
a b c d e

- **a. Model Year**
  6: '06
  7: '07
  8: '08
  9: '09
- **b. Manufacturer Subcode**
  HNX: HONDA
- **c. Family Type**
  R: EVAP/ORVR
- **d. Canister Working Capacity Group**
- **e. Sequence Characters**
  BBA: '06 model
  BBY: '07 model, '08 model
  VEA: '09 model

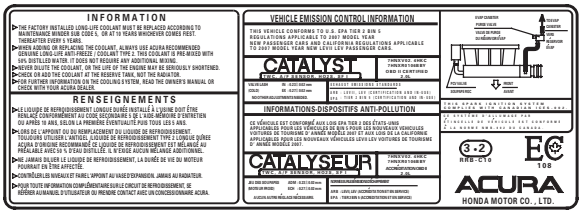
Under-hood Emission Control Label (cont'd)

Emission Group Identification

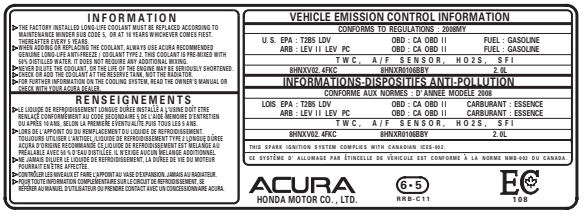
K20Z3 engine Model:

Example:

'07 Model



'08-09 Models



'07 Model
THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5 REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW PASSENGER CARS AND CALIFORNIA REGULATIONS APPLICABLE TO 2007 MODEL YEAR NEW LEV II LEV PASSENGER CARS.

'08 Model
CONFORMS TO REGULATIONS: 2008 MY

'09 Model
CONFORMS TO REGULATIONS: 2009 MY

Test Group and Evaporative Family

Test Group:

9 HNX V 02.0 VA9
a b c d e

- **a. Model Year**
  7: '07
  8: '08
  9: '09
- **b. Manufacturer Subcode**
  HNX: HONDA
- **c. Family Type**
  V: LDV
- **d. Displacement Group**
- **e. Sequence Characters**
  HKC: '07 model
  FKC: '08 model
  VA9: '09 model

Evaporative Family:

9 HNX R 0106 VEA
a b c d e

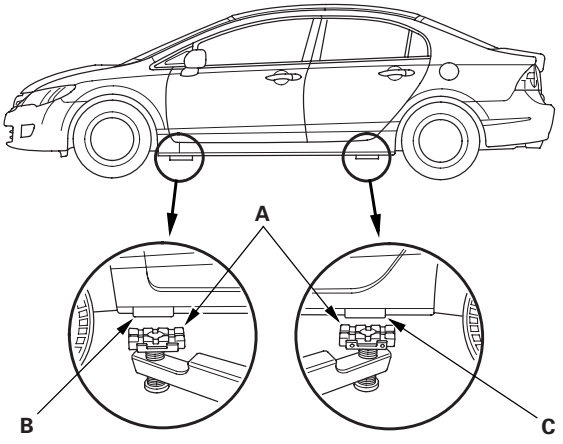
- **a. Model Year**
  7: '07
  8: '08
  9: '09
- **b. Manufacturer Subcode**
  HNX: HONDA
- **c. Family Type**
  R: EVAP/ORVR
- **d. Canister Working Capacity Group**
- **e. Sequence Characters**
  BBY: '07 model, '08 model
  VEA: '09 model

Lift and Support Points

NOTE: If you are going to remove heavy components such as suspension or the fuel tank from the rear of the vehicle, first support the front of the vehicle with tall safety stands. When substantial weight is removed from the rear of the vehicle, the center of gravity can change, causing the vehicle to tip forward on the lift.

Vehicle Lift

1. Position the lift blocks (A) under the vehicle's front support points (B) and rear support points (C).



2. Raise the lift a few inches, and rock the vehicle gently to be sure it is firmly supported.

3. Raise the lift to its full height, and inspect the vehicle support points for solid contact with the lift blocks.

Safety Stands

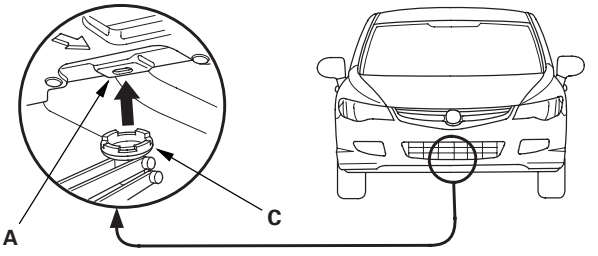
To support the vehicle on safety stands, use the same support points as for a vehicle lift. Always use safety stands when working on or under any vehicle that is supported only by a jack.

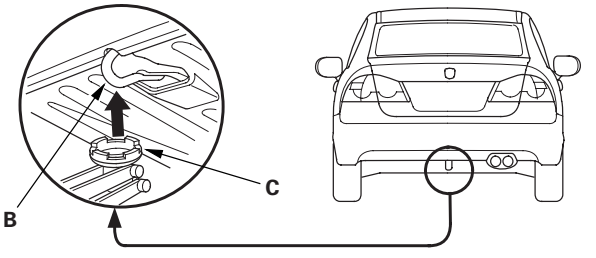
Floor Jack

1. When lifting the front of the vehicle, set the parking brake. When lifting the rear of the vehicle, put the shift lever in reverse for manual transmission, or in P for automatic transmission.

2. Block the wheels that are not being lifted.

3. Position the floor jack under the front jacking bracket (A) or the rear jacking bracket (B). Center the jacking bracket on the jack lift platform (C), and jack up the vehicle high enough to fit the safety stands under it.





4. Position the safety stands under the support points, and adjust them so the vehicle is level.

5. Lower the vehicle onto the stands.

Towing

If the vehicle needs to be towed, call a professional towing service. Never tow the vehicle behind another vehicle with a rope or chain. It is very dangerous.

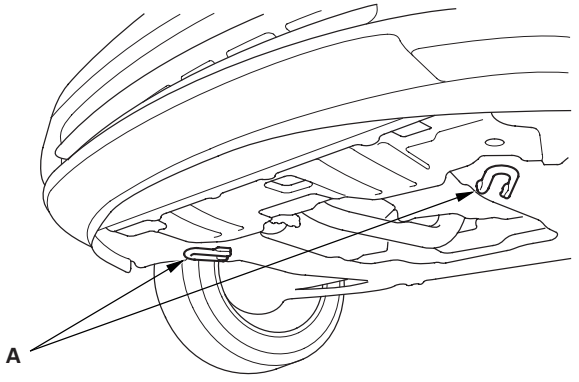
Emergency Towing
There are three popular methods of towing a vehicle.

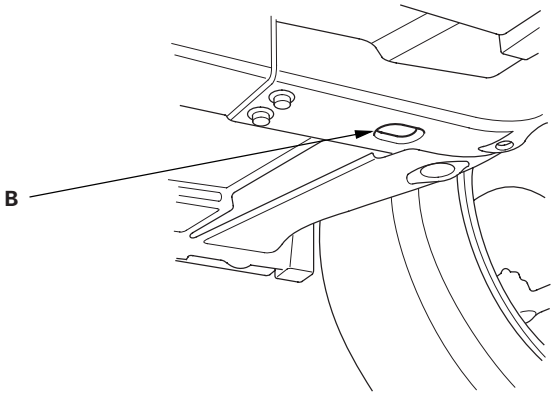
Flat-bed Equipment — The operator loads the vehicle on the back of a truck. **This is the best way of transporting the vehicle.**

To accommodate flat-bed equipment, the vehicle is equipped with front towing hooks (A), front tie down hook slots (B), rear towing hook (C), and rear tie down hook slots (D).

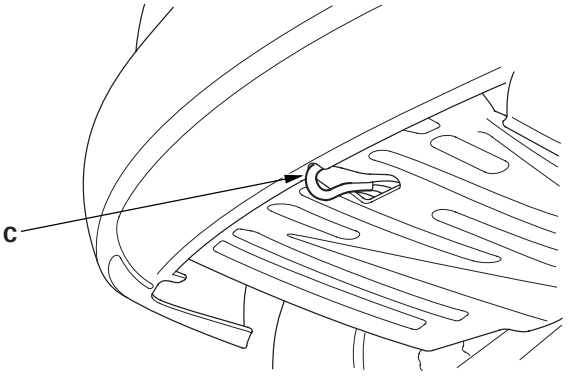
The rear towing hook can be used with a winch to pull the vehicle onto the truck, and the tie down hook slots can be used to secure the vehicle to the truck.

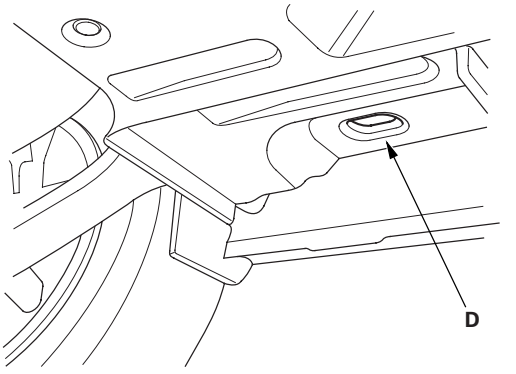
Front:





Rear:





Wheel Lift Equipment — The tow truck uses two pivoting arms that go under the tires (front or rear) and lift them off the ground. The other two wheels remain on the ground. **This is an acceptable way of towing the vehicle.**

Sling-type Equipment — The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or the suspension, and the cables lift that end of the vehicle off the ground. The vehicle's suspension and body can be seriously damaged if this method of towing is attempted. **This method of towing the vehicle is unacceptable.**

If the vehicle cannot be transported by a flat-bed, it should be towed with the front wheels off the ground. If the vehicle is damaged, and must be towed with the front wheels on the ground, or with all four wheels on the ground, do this:

Manual Transmission
- Release the parking brake.
- Shift the transmission to neutral.
- Leave the ignition switch in ACCESSORY (I) so the steering wheel does not lock.
- Make sure all accessories are turned off to minimize current battery draw.

Automatic Transmission
- Release the parking brake.
- Start the engine.
- Shift to D, then to N.
- Turn off the engine.
- Leave the ignition switch in ACCESSORY (I) so the steering wheel does not lock.
- Make sure all accessories are turned off to minimize current battery draw.

It is best to tow the vehicle no farther than 80 km (50 miles), and keep the speed below 55 km/h (35 mph).

NOTICE
- Improper towing preparation will damage the transmission. Follow the above procedure exactly. If you cannot shift the transmission or start the engine (automatic transmission), the vehicle must be transported on a flat-bed.
- Trying to lift or tow the vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight.

Parts Marking

To deter vehicle theft, certain major components are marked with the vehicle identification number (VIN). Original parts have self-adhesive labels. Replacement body parts have generic self-adhesive labels. These labels should not be removed. The original engine or transmission VIN plates are not transferable to the replacement engine or transmission.

NOTE: Be careful not to damage the parts marking labels during body repair. Mask the labels before repairing the part.

Specifications

Standards and Service Limits

Design Specifications

Standards and Service Limits

Engine Electrical

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12 V	
	Firing order		1—3—4—2	
Spark plug	Type (K20Z2)		DENSO: SKJ20DR-M11	
	Type (K20Z3)		DENSO: SK22PR-M11S	
	Gap		1.0—1.1 mm (0.039—0.043 in.)	———
Ignition timing	At idle Check the *red* mark	M/T (in neutral), A/T (in N or P)	8±2 °BTDC	
Drive belt	Tension		Auto-tensioner	
Alternator	Output	At 13.5 V and normal engine temperature	105 A	
	Coil (rotor) resistance	20 ℃ (68 ℉)	3.2 —4.0 Ω	
	Slip ring O.D.		14.4 mm (0.57 in.)	14.0 mm (0.55 in.)
	Brush length		10.5 mm (0.41 in.)	1.5 mm (0.06 in.)
	Brush spring tension		3.2 N (0.33 kgf, 0.7 lbf)	
Starter	Output		1.6 kW	
	Commutator mica depth		0.40—0.50 mm (0.016—0.020 in.)	0.15 mm (0.006 in.)
	Commutator runout		0.02 mm (0.0008 in.) max.	0.05 mm (0.002 in.)
	Commutator O.D.		28.0—28.1 mm (1.102—1.106 in.)	27.5 mm (1.083 in.)
	Brush length		11.1—11.5 mm (0.44—0.45 in.)	4.3 mm (0.17 in.)

Engine Assembly

Item	Measurement	Qualification	Standard or New
Compression	Pressure Check the engine with the starter cranking	Minimum	930 kPa (9.5 kgf/cm^2, 135 psi)
		Maximum variation	200 kPa (2.0 kgf/cm^2, 28 psi)

Cylinder Head

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		———	0.05 mm (0.002 in.)
	Height		103.95—104.05 mm (4.093—4.096 in.)	———
Camshaft	End play		0.05—0.20 mm (0.002—0.008 in.)	0.4 mm (0.02 in.)
	Camshaft-to-holder oil clearance	No. 1 journal	0.030—0.069 mm (0.001—0.003 in.)	0.15 mm (0.006 in.)
		No. 2, 3, 4, 5 journals	0.060—0.099 mm (0.002—0.004 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height (K20Z2)	Intake (primary)	34.263 mm (1.3489 in.)	———
		Intake (secondary)	29.638 mm (1.1668 in.)	———
		Exhaust	34.092 mm (1.3422 in.)	———
	Cam lobe height (K20Z3)	Intake (primary)	32.791 mm (1.2910 in.)	———
		Intake (mid)	35.534 mm (1.3990 in.)	———
		Intake (secondary)	32.678 mm (1.2865 in.)	———
		Exhaust (primary)	32.772 mm (1.2902 in.)	———
		Exhaust (mid)	34.768 mm (1.3688 in.)	———
		Exhaust (secondary)	32.661 mm (1.2859 in.)	———
Valve	Clearance (cold) (K20Z2)	Intake	0.21—0.25 mm (0.008—0.010 in.)	———
		Exhaust	0.28—0.32 mm (0.011—0.013 in.)	———
	Clearance (cold) (K20Z3)	Intake	0.21—0.25 mm (0.008—0.010 in.)	———
		Exhaust	0.25—0.29 mm (0.010—0.011 in.)	———
	Stem O.D.	Intake	5.475—5.485 mm (0.2156—0.2159 in.)	5.445 mm (0.214 in.)
		Exhaust	5.450—5.460 mm (0.2146—0.2150 in.)	5.420 mm (0.213 in.)
	Stem-to-guide clearance	Intake	0.030—0.055 mm (0.0012—0.0022 in.)	0.08 mm (0.003 in.)
		Exhaust	0.055—0.080 mm (0.0022—0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width	Intake	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
		Exhaust	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height	Intake	44.0—44.5 mm (1.73—1.75 in.)	44.7 mm (1.76 in.)
		Exhaust	44.1—44.6 mm (1.74—1.76 in.)	44.8 mm (1.76 in.)
Valve spring	Free length	Intake	NIPPON HATSUJO: 47.57 mm (1.8728 in.)	———
			CHUO HATSUJO: 47.58 mm (1.8732 in.)	
		Exhaust	NIPPON HATSUJO: 49.64 mm (1.954 in.)	———
			CHUO HATSUJO: 49.63 mm (1.954 in.)	
Valve guide	I.D.	Intake	5.515—5.530 mm (0.2171—0.2177 in.)	5.55 mm (0.219 in.)
		Exhaust	5.515—5.530 mm (0.2171—0.2177 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	15.2—16.2 mm (0.598—0.638 in.)	———
		Exhaust	15.5—16.5 mm (0.610—0.650 in.)	———
Rocker arm	Arm-to-shaft clearance (K20Z2)	Intake	0.025—0.052 mm (0.0010—0.0020 in.)	0.08 mm (0.003 in.)
		Exhaust	0.018—0.056 mm (0.0007—0.0022 in.)	0.08 mm (0.003 in.)
	Arm-to-shaft clearance (K20Z3)	Intake	0.025—0.052 mm (0.0010—0.0020 in.)	0.08 mm (0.003 in.)
		Exhaust	0.025—0.052 mm (0.0010—0.0020 in.)	0.08 mm (0.003 in.)

Standards and Service Limits

Engine Block

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter	A or I	86.010—86.020 mm (3.3862—3.3866 in.)	86.070 mm (3.3886 in.)
		B or II	86.000—86.010 mm (3.3858—3.3862 in.)	86.070 mm (3.3886 in.)
	Bore taper		———	0.05 mm (0.002 in.)
	Reboring limit		———	0.25 mm (0.01 in.)
Piston	Skirt O.D. at 11 mm (0.4 in.) from bottom of skirt	No letter or A	85.980—85.990 mm (3.3850—3.3854 in.)	85.930 mm (3.3831 in.)
		Letter B	85.970—85.980 mm (3.3846—3.3850 in.)	85.920 mm (3.3827 in.)
	Clearance in cylinder		0.020—0.040 mm (0.0008—0.0016 in.)	0.05 mm (0.002 in.)
Piston ring	Ring-to-groove clearance (K20Z2)	Top	0.035—0.060 mm (0.0014—0.0024 in.)	0.13 mm (0.005 in.)
		Second	0.030—0.055 mm (0.0012—0.0022 in.)	0.13 mm (0.005 in.)
	Ring-to-groove clearance (K20Z3)	Top	0.045—0.070 mm (0.0018—0.0028 in.)	0.13 mm (0.005 in.)
		Second	0.040—0.065 mm (0.0016—0.0026 in.)	0.13 mm (0.005 in.)
	Ring end gap (K20Z2)	Top	0.20—0.35 mm (0.008—0.014 in.)	0.60 mm (0.024 in.)
		Second	0.40—0.55 mm (0.016—0.022 in.)	0.70 mm (0.028 in.)
		Oil	0.20—0.70 mm (0.008—0.028 in.)	0.80 mm (0.031 in.)
	Ring end gap (K20Z3)	Top	0.20—0.35 mm (0.008—0.014 in.)	0.60 mm (0.024 in.)
		Second	0.50—0.65 mm (0.020—0.026 in.)	0.75 mm (0.030 in.)
		Oil	0.20—0.70 mm (0.008—0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		21.961—21.965 mm (0.8646—0.8648 in.)	21.953 mm (0.8643 in.)
	Pin-to-piston clearance		−0.005 to +0.002 mm (−0.00020 to +0.00008 in.)	0.005 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005—0.015 mm (0.0002—0.0006 in.)	0.02 mm (0.0008 in.)
	Small-end bore diameter		21.970—21.976 mm (0.8650—0.8652 in.)	———
	Large-end bore diameter (K20Z2)		48.0 mm (1.89 in.)	———
	Large-end bore diameter (K20Z3)		51.0 mm (2.01 in.)	———
	End play		0.15—0.30 mm (0.006—0.012 in.)	0.40 mm (0.016 in.)
Crankshaft	Main journal diameter	No. 1, 2, 4, 5 journals	54.984—55.008 mm (2.1648—2.1657 in.)	———
		No. 3 journal	54.976—55.000 mm (2.1644—2.1654 in.)	———
	Rod journal diameter (K20Z2)		44.976—45.000 mm (1.7707—1.7717 in.)	———
	Rod journal diameter (K20Z3)		44.976—45.000 mm (1.7707—1.7717 in.)	———
	Rod/main journal taper		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10—0.35 mm (0.004—0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.03 mm (0.0012 in.) max.	0.04 mm (0.0016 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance	No. 1, 2, 4, 5 journals	0.017—0.041 mm (0.0007—0.0016 in.)	0.050 mm (0.0020 in.)
		No. 3 journal	0.025—0.049 mm (0.0010—0.0019 in.)	0.055 mm (0.0022 in.)
	Connecting rod bearing-to-journal oil clearance (K20Z2)		0.020—0.050 mm (0.0008—0.0020 in.)	0.060 mm (0.0024 in.)
	Connecting rod bearing-to-journal oil clearance (K20Z3)		0.032—0.066 mm (0.0013—0.0026 in.)	0.077 mm (0.0030 in.)

Engine Lubrication

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity (K20Z2)	Engine overhaul	5.3 L (5.6 US qt)	
		Oil change including filter	4.2 L (4.4 US qt)	
		Oil change without filter	4.0 L (4.2 US qt)	
	Capacity (K20Z3)	Engine overhaul	5.5 L (5.8 US qt)	
		Oil change including filter	4.4 L (4.6 US qt)	
		Oil change without filter	4.2 L (4.4 US qt)	
Oil pump	Inner-to-outer rotor clearance		0.06—0.16 mm (0.002—0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance		0.15—0.21 mm (0.006—0.008 in.)	0.23 mm (0.009 in.)
	Pump housing-to-rotor axial clearance		0.035—0.070 mm (0.0014—0.0028 in.)	0.12 mm (0.005 in.)
	Balancer shafts, journal diameter	No. 1 journal, front shaft	19.938—19.950 mm (0.7850—0.7854 in.)	19.92 mm (0.784 in.)
		No. 1 journal, rear shaft	23.938—23.950 mm (0.9424—0.9429 in.)	23.92 mm (0.942 in.)
		No. 2 journal, front and rear shaft	32.949—32.961 mm (1.2972—1.2977 in.)	32.93 mm (1.296 in.)
	Balancer shafts, journal taper		0.005 mm (0.0002 in.) max.	———
	Balancer shafts, end play	Front	0.063—0.108 mm (0.0025—0.0043 in.)	0.14 mm (0.0055 in.)
		Rear	0.063—0.108 mm (0.0025—0.0043 in.)	0.14 mm (0.0055 in.)
	Balancer shafts, shaft-to-bearing clearance	No. 1 journal, front shaft	0.050—0.082 mm (0.0020—0.0032 in.)	0.10 mm (0.004 in.)
		No. 1 journal, rear shaft	0.050—0.082 mm (0.0020—0.0032 in.)	0.10 mm (0.004 in.)
		No. 2 journal, front and rear shaft	0.060—0.120 mm (0.0024—0.0047 in.)	0.15 mm (0.006 in.)
	Balancer shaft bearings, I.D.	No. 1 journal, front shaft	20.000—20.020 mm (0.7874—0.7882 in.)	20.03 mm (0.789 in.)
		No. 1 journal, rear shaft	24.000—24.020 mm (0.9449—0.9457 in.)	24.03 mm (0.946 in.)
		No. 2 journal, front and rear shaft	33.021—33.069 mm (1.3000—1.3019 in.)	33.09 mm (1.303 in.)
	Relief valve, oil pressure with oil temperature at 80 ℃ (176 ℉)	At idle	70 kPa (0.7 kgf/cm^2, 10 psi) min.	
		At 3,000 rpm	300 kPa (3.1 kgf/cm^2, 44 psi) min.	

Standards and Service Limits

Cooling System

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacities (including engine, heater, hoses, and reservoir) Use Honda Long Life Antifreeze/ Coolant Type 2 (K20Z2)	M/T: engine overhaul	6.6 L (1.74 US gal)
		M/T: coolant change	4.3 L (1.14 US gal)
		A/T: engine overhaul	6.5 L (1.72 US gal)
		A/T: coolant change	4.2 L (1.11 US gal)
	Coolant capacities (includes engine, heater, hoses, and reservoir) Use Honda Long Life Antifreeze/ Coolant Type 2 (K20Z3)	Engine overhaul	6.8 L (1.80 US gal)
		Coolant change	4.5 L (1.19 US gal)
Coolant reservoir	Coolant capacity		0.4 L (0.11 US gal)
Radiator cap	Opening pressure		93—123 kPa (0.95—1.25 kgf/cm^2, 14—18 psi)
Thermostat	Opening temperature	Begins to open	76—80 ℃ (169—176 ℉)
		Fully open	90 ℃ (194 ℉)
	Valve lift at fully open		8.0 mm (0.31 in.)

Fuel and Emissions

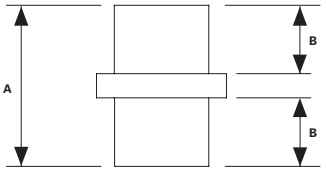
Item	Measurement	Qualification	Standard or New
Fuel pressure regulator	Pressure with fuel pressure gauge connected		330—380 kPa (3.4—3.9 kgf/cm^2, 48—55 psi)
Fuel tank	Capacity		50 L (13.2 US gal)
Engine idle (K20Z2)	Idle speed without load	M/T (in neutral)	700±50 rpm
		A/T (in N or P)	800±50 rpm
	Idle speed with high electrical load (A/C switch ON, temperature set to max cool, blower fan on High, rear window defogger ON, and headlights on high beam)	M/T (in neutral)	780±50 rpm
		A/T (in N or P)	800±50 rpm
Engine idle (K20Z3)	Idle speed without load	M/T (in neutral)	750±50 rpm
	Idle speed with high electrical load (A/C switch ON, temperature set to max cool, blower fan on High, rear window defogger ON, and headlights on high beam)	M/T (in neutral)	750±50 rpm

Clutch

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch pedal	Height from floor	Except Type S	159.3 mm (6.27 in.)	———
		Type S	161.3 mm (6.35 in.)	———
	Stroke		130—140 mm (5.12—5.51 in.)	———
Flywheel	Runout on clutch mating surface		0.05 mm (0.002 in.) max.	0.15 mm (0.006 in.)
Clutch disc	Rivet head depth		1.65—2.25 mm (0.065—0.089 in.)	0.7 mm (0.03 in.)
	Thickness		8.3—8.9 mm (0.33—0.35 in.)	6.0 mm (0.24 in.)
Pressure plate	Warpage		0.03 mm (0.001 in.) max.	0.15 mm (0.006 in.)
	Evenness of the height of the diaphragm spring fingers		0.6 mm (0.02 in.) max.	0.8 mm (0.03 in.)

Standards and Service Limits

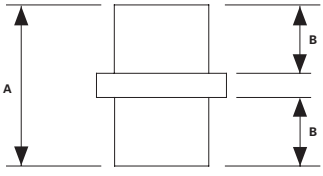
Manual Transmission and M/T Differential (5-speed)

Item	Measurement	Qualification	Standard or New	Service Limit
Manual transmission fluid	Capacity Use Acura MTF	Fluid change	1.5 L (1.6 US qt)	
		Overhaul	1.7 L (1.8 US qt)	
Mainshaft	End play		0.11—0.17 mm (0.004—0.007 in.)	Adjust
	Diameter of ball bearing contact area (transmission housing side)		27.987—28.000 mm (1.1018—1.1024 in.)	27.93 mm (1.100 in.)
	Diameter of 4th/5th gear distance collar contact area		31.984—32.000 mm (1.2592—1.2598 in.)	31.93 mm (1.257 in.)
	Diameter of needle bearing contact area		38.984—39.000 mm (1.5348—1.5354 in.)	38.93 mm (1.533 in.)
	Diameter of ball bearing contact area (clutch housing side)		27.977—27.990 mm (1.1015—1.1020 in.)	27.92 mm (1.099 in.)
	Diameter of bushing contact area		20.80—20.85 mm (0.819—0.821 in.)	20.75 mm (0.817 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Mainshaft 3rd, 4th, and 5th gear	I.D.		44.009—44.025 mm (1.7326—1.7333 in.)	44.08 mm (1.735 in.)
	End play		0.06—0.16 mm (0.002—0.006 in.)	0.25 mm (0.010 in.)
	Thickness		23.92—23.97 mm (0.942—0.944 in.)	23.80 mm (0.937 in.)
Mainshaft 4th/5th gear distance collar	I.D.		32.00—32.01 mm (1.2598—1.2602 in.)	32.02 mm (1.261 in.)
	O.D.		38.989—39.000 mm (1.5350—1.5354 in.)	38.94 mm (1.533 in.)
	Length 	A	51.95—52.05 mm (2.045—2.049 in.)	———
		B	24.03—24.08 mm (0.946—0.948 in.)	———
MBS distance collar	I.D.		28.00—28.10 mm (1.102—1.106 in.)	———
	Length		23.95—24.05 mm (0.943—0.947 in.)	———
Countershaft	Diameter of ball bearing contact area (transmission housing side)		30.020—30.033 mm (1.1819—1.1824 in.)	29.97 mm (1.180 in.)
	Diameter of 1st gear distance collar contact area		39.937—39.950 mm (1.5723—1.5728 in.)	39.88 mm (1.570 in.)
	Diameter of needle bearing contact area (clutch housing side)		40.000—40.015 mm (1.5748—1.5754 in.)	39.95 mm (1.573 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	35 mm shim-to-bearing inner race clearance		0.04—0.10 mm (0.0016—0.0039 in.)	Adjust
Countershaft 1st and 2nd gear	I.D.		52.010—52.029 mm (2.0476—2.0484 in.)	52.08 mm (2.050 in.)
	End play		0.06—0.16 mm (0.002—0.006 in.)	0.25 mm (0.010 in.)
	Thickness	1st	22.92—22.97 mm (0.902—0.904 in.)	22.87 mm (0.900 in.)
		2nd	27.92—27.97 mm (1.099—1.101 in.)	27.87 mm (1.097 in.)
Countershaft 1st and 2nd gear distance collar	I.D.		39.95—39.96 mm (1.5728—1.5732 in.)	39.97 mm (1.574 in.)
	O.D.		46.989—47.000 mm (1.8500—1.8504 in.)	46.94 mm (1.848 in.)
	Length	1st	23.03—23.08 mm (0.907—0.909 in.)	———
		2nd	28.03—28.08 mm (1.104—1.106 in.)	———

Item	Measurement	Qualification	Standard or New	Service Limit
Reverse idler gear	I.D.		20.016—20.043 mm (0.7880—0.7891 in.)	20.90 mm (0.832 in.)
	Gear-to-reverse gear shaft clearance		0.036—0.084 mm (0.0014—0.0033 in.)	0.16 mm (0.006 in.)
Synchro ring	Ring-to-gear clearance	Ring pushed against gear	0.70—1.49 mm (0.028—0.059 in.)	0.4 mm (0.016 in.)
Triple cone synchro	Outer synchro ring-to-synchro cone clearance	Ring pushed against gear	0.70—1.19 mm (0.028—0.047 in.)	0.3 mm (0.012 in.)
	Synchro cone-to-gear clearance	Ring pushed against gear	0.50—1.04 mm (0.020—0.041 in.)	0.3 mm (0.012 in.)
	Outer synchro ring-to-gear clearance	Ring pushed against gear	0.95—1.68 mm (0.037—0.066 in.)	0.6 mm (0.024 in.)
Shift fork	Finger thickness		7.4—7.6 mm (0.29—0.30 in.)	———
	Fork-to-synchro sleeve clearance		0.35—0.65 mm (0.014—0.026 in.)	1.0 mm (0.039 in.)
Reverse shift fork	Finger width		13.4—13.7 mm (0.528—0.539 in.)	———
	Fork-to-reverse idler gear clearance		0.20—0.59 mm (0.008—0.023 in.)	1.3 mm (0.051 in.)
Shift arm	I.D.		13.973—14.000 mm (0.5501—0.5512 in.)	———
	Finger width		16.9—17.0 mm (0.665—0.669 in.)	———
	Shift arm-to-shift fork clearance		0.2—0.5 mm (0.008—0.020 in.)	0.62 mm (0.024 in.)
Select lever	Finger width		14.85—14.95 mm (0.585—0.589 in.)	———
Change lever	Shaft-to-select lever clearance		0.05—0.25 mm (0.002—0.010 in.)	0.50 mm (0.020 in.)
	Groove width		15.00—15.10 mm (0.591—0.594 in.)	———
	Shaft-to-shift arm clearance		0.013—0.070 mm (0.0005—0.0028 in.)	0.1 mm (0.004 in.)
M/T differential carrier	Pinion shaft contact area I.D.		18.010—18.028 mm (0.7091—0.7098 in.)	———
	Carrier-to-pinion shaft clearance		0.027—0.057 mm (0.0011—0.0022 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		28.025—28.045 mm (1.1033—1.1041 in.)	———
M/T differential pinion gear	Backlash		0.05—0.15 mm (0.002—0.006 in.)	———
	I.D.		18.042—18.066 mm (0.7103—0.7113 in.)	———
	Pinion gear-to-pinion shaft clearance		0.059—0.095 mm (0.0023—0.0037 in.)	0.15 mm (0.006 in.)
M/T differential 80 mm shim	80 mm shim-to-bearing outer race clearance in transmission housing		0—0.10 mm (0—0.039 in.)	Adjust

Standards and Service Limits

Manual Transmission and M/T Differential (6-speed)

Item	Measurement	Qualification	Standard or New	Service Limit
Manual transmission fluid	Capacity Use Honda MTF	Fluid change	1.5 L (1.6 US qt)	
		Overhaul	1.7 L (1.8 US qt)	
Mainshaft	End play		0.11—0.17 mm (0.004—0.007 in.)	Adjust
	Diameter of ball bearing contact area (transmission housing side)		27.987—28.000 mm (1.1018—1.1024 in.)	27.93 mm (1.100 in.)
	Diameter of 4th/5th gear distance collar contact area		31.984—32.000 mm (1.2592—1.2598 in.)	31.93 mm (1.257 in.)
	Diameter of needle bearing contact area		38.984—39.000 mm (1.5348—1.5354 in.)	38.93 mm (1.533 in.)
	Diameter of ball bearing contact area (clutch housing side)		27.977—27.990 mm (1.1015—1.1020 in.)	27.92 mm (1.099 in.)
	Diameter of bushing contact area		20.80—20.85 mm (0.819—0.821 in.)	20.75 mm (0.817 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
Mainshaft 3rd, 4th, and 5th gear	I.D.		44.009—44.025 mm (1.7326—1.7333 in.)	44.08 mm (1.735 in.)
	End play		0.06—0.16 mm (0.002—0.006 in.)	0.25 mm (0.010 in.)
	Thickness		23.92—23.97 mm (0.942—0.944 in.)	23.80 mm (0.937 in.)
Mainshaft 6th gear	I.D.		40.009—40.025 mm (1.5752—1.5758 in.)	40.08 mm (1.578 in.)
	End play		0.06—0.16 mm (0.002—0.006 in.)	0.25 mm (0.010 in.)
	Thickness		23.92—23.97 mm (0.942—0.944 in.)	23.80 mm (0.937 in.)
Mainshaft 4th/5th gear distance collar	I.D.		32.00—32.01 mm (1.2598—1.2602 in.)	32.02 mm (1.261 in.)
	O.D.		38.989—39.000 mm (1.5350—1.5354 in.)	38.94 mm (1.533 in.)
	Length  	A	51.95—52.05 mm (2.045—2.049 in.)	———
		B	24.03—24.08 mm (0.946—0.948 in.)	———
Mainshaft 6th gear distance collar	I.D.		28.00—28.01 mm (1.102—1.103 in.)	28.02 mm (1.103 in.)
	O.D.		34.989—35.000 mm (1.3775—1.3780 in.)	34.940 mm (1.3756 in.)
	Length		24.03—24.08 mm (0.946—0.948 in.)	———
Countershaft	Diameter of ball bearing contact area (transmission housing side)		30.020—30.033 mm (1.1819—1.1824 in.)	29.97 mm (1.180 in.)
	Diameter of 1st gear distance collar contact area		39.937—39.950 mm (1.5723—1.5728 in.)	39.883 mm (1.5702 in.)
	Diameter of needle bearing contact area (clutch housing side)		35.000—35.015 mm (1.3780—1.3785 in.)	34.95 mm (1.376 in.)
	Runout		0.02 mm (0.001 in.) max.	0.05 mm (0.002 in.)
	35 mm shim-to-bearing inner race clearance		0.04—0.10 mm (0.0016—0.0039 in.)	Adjust
Countershaft 1st and 2nd gear	I.D.		52.010—52.029 mm (2.0476—2.0484 in.)	52.08 mm (2.050 in.)
	End play		0.06—0.16 mm (0.002—0.006 in.)	0.25 mm (0.010 in.)
	Thickness	1st	22.92—22.97 mm (0.902—0.904 in.)	22.87 mm (0.900 in.)
		2nd	27.92—27.97 mm (1.099—1.101 in.)	27.87 mm (1.097 in.)
Countershaft 1st and 2nd gear distance collar	I.D.		39.95—39.96 mm (1.5728—1.5732 in.)	39.97 mm (1.574 in.)
	O.D.		46.989—47.000 mm (1.8500—1.8504 in.)	46.94 mm (1.848 in.)
	Length	1st	23.03—23.08 mm (0.907—0.909 in.)	———
		2nd	28.03—28.08 mm (1.104—1.106 in.)	———

Item	Measurement	Qualification	Standard or New	Service Limit
Reverse idler gear	I.D.		20.016—20.043 mm (0.7880—0.7891 in.)	20.90 mm (0.823 in.)
	Gear-to-reverse idler gear shaft clearance		0.036—0.084 mm (0.0014—0.0033 in.)	0.16 mm (0.006 in.)
Synchro ring	Ring-to-gear clearance	Ring pushed against gear	0.70—1.49 mm (0.028—0.059 in.)	0.4 mm (0.016 in.)
Double cone synchro and triple cone synchro	Outer synchro ring-to-synchro cone clearance	Ring pushed against gear	0.70—1.19 mm (0.028—0.047 in.)	0.3 mm (0.012 in.)
	Synchro cone-to-gear clearance	Ring pushed against gear	0.50—1.04 mm (0.020—0.041 in.)	0.3 mm (0.012 in.)
	Outer synchro ring-to-gear clearance	Ring pushed against gear	0.95—1.68 mm (0.037—0.066 in.)	0.6 mm (0.024 in.)
Shift fork	Finger thickness		7.4—7.6 mm (0.29—0.30 in.)	———
	Fork-to-synchro sleeve clearance		0.35—0.65 mm (0.014—0.026 in.)	1.0 mm (0.039 in.)
Reverse shift fork	Finger width		13.4—13.7 mm (0.528—0.539 in.)	———
	Fork-to-reverse idler gear clearance		0.20—0.59 mm (0.008—0.023 in.)	1.3 mm (0.051 in.)
Shift arm	I.D.		13.973—14.000 mm (0.5501—0.5512 in.)	———
	Finger width		16.9—17.0 mm (0.665—0.669 in.)	———
	Shift arm-to-shift fork clearance		0.2—0.5 mm (0.008—0.020 in.)	0.62 mm (0.024 in.)
Select lever	Finger width		14.85—14.95 mm (0.585—0.589 in.)	———
Change lever	Shaft-to-select lever clearance		0.05—0.25 mm (0.002—0.010 in.)	0.50 mm (0.020 in.)
	Groove width		15.00—15.10 mm (0.591—0.594 in.)	———
	Shaft-to-shift arm clearance		0.013—0.070 mm (0.0005—0.0028 in.)	0.1 mm (0.004 in.)
M/T differential 80 mm shim	80 mm shim-to-bearing outer race clearance in transmission housing		0—0.10 mm (0—0.039 in.)	Adjust

Standards and Service Limits

Automatic Transmission and A/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
Automatic transmission fluid	Capacity Use Acura ATF-Z1	Fluid change	2.9 L (3.1 US qt)	
		Overhaul	6.5 L (6.9 US qt)	
ATF pressure	Line pressure	At 2,000 rpm in P or N	900—960 kPa (9.2—9.8 kgf/cm^2, 130—140 psi)	850 kPa (8.7 kgf/cm^2, 120 psi)
	1st clutch pressure	At 2,000 rpm in 1st gear in S	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	2nd clutch pressure	At 2,000 rpm in 2nd gear in S	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	3rd clutch pressure	At 2,000 rpm in 3rd gear in S	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	4th clutch pressure	At 2,000 rpm in 4th gear in S	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
	5th clutch pressure	At 2,000 rpm in 5th gear in S	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)
Torque converter	Stall speed Check with vehicle on level ground		2,150 rpm	2,000—2,300 rpm
Clutch	Clearance between clutch end-plate and top disc	1st	1.23—1.43 mm (0.048—0.056 in.)	———
		2nd	0.75—0.95 mm (0.030—0.037 in.)	———
		3rd	0.83—1.03 mm (0.033—0.041 in.)	———
		4th, 5th	0.73—0.93 mm (0.029—0.037 in.)	———
	Clutch return spring free length	1st, 2nd, 3rd	50.8 mm (2.00 in.)	48.8 mm (1.92 in.)
		4th, 5th	33.5 mm (1.32 in.)	31.5 mm (1.24 in.)
	Clutch disc thickness		1.94 mm (0.076 in.)	———
	Clutch plate thickness	1st, 2nd, 3rd	2.0 mm (0.079 in.)	When discolored
		4th, 5th	2.3 mm (0.091 in.)	When discolored
	Clutch wave-plate phase difference		0.07—0.20 mm (0.003—0.008 in.)	0.05 mm (0.002 in.)
	1st, 3rd clutch end-plate thickness	Mark 1	2.3 mm (0.091 in.)	When discolored
		Mark 2	2.4 mm (0.094 in.)	When discolored
		Mark 3	2.5 mm (0.098 in.)	When discolored
		Mark 4	2.6 mm (0.102 in.)	When discolored
		Mark 5	2.7 mm (0.106 in.)	When discolored
		Mark 6	2.8 mm (0.110 in.)	When discolored
		Mark 7	2.9 mm (0.114 in.)	When discolored
		Mark 8	3.0 mm (0.118 in.)	When discolored
		Mark 9	3.1 mm (0.122 in.)	When discolored
		Mark 10	3.2 mm (0.126 in.)	When discolored
		Mark 11	3.3 mm (0.130 in.)	When discolored
		Mark 12	3.4 mm (0.134 in.)	When discolored
	2nd clutch end-plate thickness	Mark 1	2.6 mm (0.102 in.)	When discolored
		Mark 2	2.7 mm (0.106 in.)	When discolored
		Mark 3	2.8 mm (0.110 in.)	When discolored
		Mark 4	2.9 mm (0.114 in.)	When discolored
		Mark 5	3.0 mm (0.118 in.)	When discolored
		Mark 6	3.1 mm (0.122 in.)	When discolored
		Mark 7	3.2 mm (0.126 in.)	When discolored
		Mark 8	3.3 mm (0.130 in.)	When discolored
		Mark 9	3.4 mm (0.134 in.)	When discolored

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch (cont'd)	4th, 5th clutch end-plate thickness	Mark 1	2.1 mm (0.083 in.)	When discolored
		Mark 2	2.2 mm (0.087 in.)	When discolored
		Mark 3	2.3 mm (0.091 in.)	When discolored
		Mark 4	2.4 mm (0.094 in.)	When discolored
		Mark 5	2.5 mm (0.098 in.)	When discolored
		Mark 6	2.6 mm (0.102 in.)	When discolored
		Mark 7	2.7 mm (0.106 in.)	When discolored
		Mark 8	2.8 mm (0.110 in.)	When discolored
		Mark 9	2.9 mm (0.114 in.)	When discolored
Mainshaft	Diameter of needle bearing contact area	At stator shaft	22.984—23.000 mm (0.905—0.906 in.)	When worn or damaged
		At 5th gear	51.975—51.991 mm (2.046—2.047 in.)	When worn or damaged
		At 4th gear collar	33.975—33.991 mm (1.3376—1.3382 in.)	When worn or damaged
	I.D. of gears	5th gear	57.000—57.019 mm (2.2441—2.2448 in.)	When worn or damaged
		4th gear	40.000—40.016 mm (1.5748—1.5754 in.)	When worn or damaged
	End play of gears	5th gear ('06-07 models)	0.03—0.11 mm (0.001—0.004 in.)	———
		5th gear ('08-09 models)	0.04—0.10 mm (0.002—0.004 in.)	———
		4th gear	0.10—0.22 mm (0.004—0.009 in.)	———
	41 x 68 mm thrust washer thickness ('06-07 models)	No. 1	6.35 mm (0.250 in.)	When worn or damaged
		No. 2	6.40 mm (0.252 in.)	When worn or damaged
		No. 3	6.45 mm (0.254 in.)	When worn or damaged
		No. 4	6.50 mm (0.256 in.)	When worn or damaged
		No. 5	6.55 mm (0.258 in.)	When worn or damaged
		No. 6	6.60 mm (0.260 in.)	When worn or damaged
	41 x 68 mm thrust washer thickness ('08-09 models)	No. 1	4.450 mm (0.1752 in.)	When worn or damaged
		No. 2	4.475 mm (0.1762 in.)	When worn or damaged
		No. 3	4.500 mm (0.1772 in.)	When worn or damaged
		No. 4	4.525 mm (0.1781 in.)	When worn or damaged
		No. 5	4.550 mm (0.1791 in.)	When worn or damaged
		No. 6	4.575 mm (0.1801 in.)	When worn or damaged
		No. 7	4.600 mm (0.1811 in.)	When worn or damaged
		No. 8	4.625 mm (0.1821 in.)	When worn or damaged
		No. 9	4.650 mm (0.1831 in.)	When worn or damaged
		No. 10	4.675 mm (0.1841 in.)	When worn or damaged
		No. 11	4.700 mm (0.1850 in.)	When worn or damaged
		No. 12	4.725 mm (0.1860 in.)	When worn or damaged
		No. 13	4.750 mm (0.1870 in.)	When worn or damaged
		No. 14	4.775 mm (0.1880 in.)	When worn or damaged
		No. 15	4.800 mm (0.1890 in.)	When worn or damaged
	4th gear collar length		66.3—66.4 mm (2.610—2.614 in.)	———
	Length of 4th gear collar flange from end		19.15—19.30 mm (0.754—0.760 in.)	When worn or damaged
	Sealing ring thickness		1.91—1.97 mm (0.0752—0.0776 in.)	1.86 mm (0.0732 in.)
	Width of sealing ring groove		2.025—2.060 mm (0.0797—0.0811 in.)	2.080 mm (0.0819 in.)
	Clutch feed pipe O.D.		7.97—7.98 mm (0.3138—0.3142 in.)	7.95 mm (0.313 in.)
	Clutch feed pipe bushing I.D.		8.000—8.015 mm (0.3150—0.3156 in.)	8.030 mm (0.3161 in.)

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Countershaft	Diameter of needle bearing contact area	At torque converter housing	36.005—36.015 mm (1.4175—1.4179 in.)	When worn or damaged
		At 4th gear collar	34.982—34.998 mm (1.3772—1.3779 in.)	When worn or damaged
		At reverse gear collar	39.979—40.000 mm (1.5740—1.5748 in.)	When worn or damaged
	I.D. of gears	4th gear	41.000—41.016 mm (1.6142—1.6148 in.)	When worn or damaged
		Reverse gear	46.000—46.016 mm (1.8110—1.8117 in.)	When worn or damaged
	End play of gears	5th gear	0—0.48 mm (0—0.019 in.)	———
		4th gear	0.04—0.12 mm (0.002—0.005 in.)	———
		Reverse gear	0.10—0.25 mm (0.004—0.010 in.)	———
	Distance collar length		54.22—54.30 mm (2.135—2.138 in.)	———
	Reverse selector hub width		25.45—25.65 mm (1.002—1.010 in.)	———
	Reverse selector hub O.D.		55.87—55.90 mm (2.200—2.201 in.)	When worn or damaged
Secondary shaft	Diameter of needle bearing contact area	At 1st gear	39.986—39.999 mm (1.5742—1.5748 in.)	When worn or damaged
		At 2nd gear	39.986—39.999 mm (1.5742—1.5748 in.)	When worn or damaged
		At 3rd gear collar	36.975—36.991 mm (1.4557—1.4563 in.)	When worn or damaged
	I.D. of gears	1st gear	47.000—47.016 mm (1.8504—1.8510 in.)	When worn or damaged
		2nd gear	46.000—46.016 mm (1.8110—1.8117 in.)	When worn or damaged
		3rd gear	43.000—43.016 mm (1.6929—1.6935 in.)	When worn or damaged
	End play of gears	1st gear	0.04—0.12 mm (0.002—0.005 in.)	———
		2nd gear	0.04—0.12 mm (0.002—0.005 in.)	———
		3rd gear	0.10—0.22 mm (0.004—0.009 in.)	———
	37 x 58 mm thrust washer thickness	No. 1	3.900 mm (0.154 in.)	When worn or damaged
		No. 2	3.925 mm (0.155 in.)	When worn or damaged
		No. 3	3.950 mm (0.156 in.)	When worn or damaged
		No. 4	3.975 mm (0.156 in.)	When worn or damaged
		No. 5	4.000 mm (0.157 in.)	When worn or damaged
		No. 6	4.025 mm (0.158 in.)	When worn or damaged
		No. 7	4.050 mm (0.159 in.)	When worn or damaged
		No. 8	4.075 mm (0.160 in.)	When worn or damaged
		No. 9	4.100 mm (0.161 in.)	When worn or damaged
		No. 10	4.125 mm (0.162 in.)	When worn or damaged
		No. 11	4.150 mm (0.163 in.)	When worn or damaged
		No. 12	4.175 mm (0.164 in.)	When worn or damaged
		No. 13	4.200 mm (0.165 in.)	When worn or damaged
		No. 14	4.225 mm (0.166 in.)	When worn or damaged
		No. 15	4.250 mm (0.167 in.)	When worn or damaged
		No. 16	4.275 mm (0.168 in.)	When worn or damaged
		No. 17	4.300 mm (0.169 in.)	When worn or damaged
		No. 18	4.325 mm (0.170 in.)	When worn or damaged
		No. 19	4.350 mm (0.171 in.)	When worn or damaged
		No. 20	4.375 mm (0.172 in.)	When worn or damaged
	40 x 51.5 mm thrust washer thickness	No. 1	4.80 mm (0.189 in.)	When worn or damaged
		No. 2	4.85 mm (0.191 in.)	When worn or damaged
		No. 3	4.90 mm (0.193 in.)	When worn or damaged
		No. 4	4.95 mm (0.195 in.)	When worn or damaged
		No. 5	5.00 mm (0.197 in.)	When worn or damaged
		No. 6	5.05 mm (0.199 in.)	When worn or damaged

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft (cont'd)	3rd gear collar length		43.9—44.0 mm (1.728—1.732 in.)	———
	Length of 3rd gear collar flange from end		5.25—5.40 mm (0.207—0.213 in.)	When worn or damaged
	Sealing ring thickness		1.91—1.97 mm (0.0752—0.0776 in.)	1.86 mm (0.0732 in.)
	Width of sealing ring groove		2.025—2.060 mm (0.0797—0.0811 in.)	2.080 mm (0.0819 in.)
	Clutch feed pipe O.D.	3rd clutch feed pipe	11.47—11.48 mm (0.4516—0.4520 in.)	11.45 mm (0.4508 in.)
		1st clutch feed pipe	6.97—6.98 mm (0.2744—0.2748 in.)	6.95 mm (0.2736 in.)
	Clutch feed pipe bushing I.D.	3rd clutch feed pipe	11.500—11.518 mm (0.4528—0.4535 in.)	11.530 mm (0.4539 in.)
		1st clutch feed pipe	7.018—7.030 mm (0.2763—0.2768 in.)	7.045 mm (0.2774 in.)
	ATF guide of sealing ring contact I.D.		29.000—29.021 mm (1.1417—1.1426 in.)	29.05 mm (1.144 in.)
Idler gear shaft	Diameter of needle bearing contact area	End cover side	32.003—32.013 mm (1.2600—1.2604 in.)	When worn or damaged
	Thickness of cotters		1.39—1.42 mm (0.0547—0.0559 in.)	———
Reverse idler gear	Reverse idler gear shaft diameter at needle bearing contact area		14.99—15.00 mm (0.5902—0.5906 in.)	When worn or damaged
	I.D.		20.007—20.020 mm (0.7877—0.7882 in.)	When worn or damaged
	I.D. of reverse idler gear shaft contact area on transmission housing		14.800—14.818 mm (0.5827—0.5834 in.)	———
	I.D. of reverse idler gear shaft holder		14.800—14.824 mm (0.5827—0.5836 in.)	When worn or damaged
ATF pump	ATF pump thrust clearance		0.03—0.06 mm (0.001—0.002 in.)	0.07 mm (0.003 in.)
	Clearance between ATF pump gear and body	Drive gear	0.210—0.265 mm (0.0083—0.0104 in.)	———
		Driven gear	0.070—0.125 mm (0.0028—0.0049 in.)	———
	ATF pump driven gear I.D.		14.016—14.034 mm (0.5518—0.5525 in.)	When worn or damaged
	ATF pump driven gear shaft O.D.		13.980—13.990 mm (0.5504—0.5508 in.)	When worn or damaged
Stator shaft	Needle bearing contact I.D.	Torque converter side	27.000—27.021 mm (1.063—1.064 in.)	When worn or damaged
		ATF pump side	29.000—29.021 mm (1.1417—1.1426 in.)	———
	Sealing ring contact area I.D.		29.000—29.021 mm (1.1417—1.1426 in.)	29.05 mm (1.144 in.)
Reverse shift fork	Fork finger thickness		5.90—6.00 mm (0.232—0.236 in.)	5.40 mm (0.213 in.)
Park gear and pawl			———	When worn or damaged
Servo body	Shift fork shaft bore I.D.		14.000—14.010 mm (0.5512—0.5516 in.)	———
	Shift fork shaft valve bore I.D.		37.000—37.039 mm (1.4567—1.4582 in.)	37.045 mm (1.4585 in.)
Regulator valve body	Sealing ring contact I.D.		29.000—29.021 mm (1.1417—1.1426 in.)	29.05 mm (1.144 in.)

(cont'd)

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coils
Main valve body spring (see page 14-303)	Shift valve A spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Shift valve B spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Shift valve C spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	Relief valve spring		1.0 mm (0.039 in.)	9.6 mm (0.378 in.)	34.1 mm (1.343 in.)	10.2
	Lock-up control valve spring		0.65 mm (0.026 in.)	7.1 mm (0.280 in.)	23.1 mm (0.909 in.)	12.7
	Cooler check valve spring		0.85 mm (0.033 in.)	6.6 mm (0.260 in.)	27.0 mm (1.063 in.)	11.3
	Servo control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	35.7 mm (1.406 in.)	17.2
	Shift valve E spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
Regulator valve body spring (see page 14-305)	Stator reaction spring		4.5 mm (0.177 in.)	35.4 mm (1.394 in.)	30.3 mm (1.193 in.)	1.92
	Regulator valve spring A		1.9 mm (0.075 in.)	14.7 mm (0.579 in.)	80.6 mm (3.173 in.)	16.1
	Regulator valve spring B		1.6 mm (0.063 in.)	9.2 mm (0.362 in.)	44.0 mm (1.732 in.)	12.5
	Torque converter check valve spring		1.2 mm (0.047 in.)	8.6 mm (0.339 in.)	33.8 mm (1.331 in.)	12.2
	Lock-up shift valve spring		1.0 mm (0.039 in.)	6.6 mm (0.260 in.)	35.5 mm (1.398 in.)	18.2
	3rd accumulator spring		2.5 mm (0.098 in.)	14.6 mm (0.575 in.)	29.9 mm (1.177 in.)	4.9
	1st accumulator spring A		2.4 mm (0.094 in.)	18.6 mm (0.732 in.)	49.0 mm (1.929 in.)	7.1
	1st accumulator spring B		2.3 mm (0.091 in.)	12.2 mm (0.480 in.)	31.5 mm (1.240 in.)	6.6
Servo body spring (see page 14-306)	Shift valve D spring		0.8 mm (0.031 in.)	5.6 mm (0.220 in.)	28.1 mm (1.106 in.)	15.9
	4th accumulator spring B		2.3 mm (0.091 in.)	12.2 mm (0.480 in.)	31.5 mm (1.240 in.)	6.6
	4th accumulator spring A		2.4 mm (0.094 in.)	18.6 mm (0.732 in.)	49.0 mm (1.929 in.)	7.1
	2nd accumulator spring B		2.0 mm (0.079 in.)	10.6 mm (0.417 in.)	34.0 mm (1.339 in.)	8.0
	2nd accumulator spring A		2.2 mm (0.087 in.)	16.6 mm (0.654 in.)	48.2 mm (1.898 in.)	8.5
	5th accumulator spring		2.5 mm (0.098 in.)	14.6 mm (0.575 in.)	29.9 mm (1.177 in.)	4.9

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.000—18.025 mm (0.709—0.710 in.)	———
	Clearance between carrier and pinion shaft		0.013—0.054 mm (0.001—0.002 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		28.015—28.045 mm (1.103—1.104 in.)	———
	Clearnace between carrier and driveshaft		0.035—0.086 mm (0.001—0.003 in.)	0.12 mm (0.005 in.)
	Intermediate shaft contact I.D.		28.015—28.045 mm (1.103—1.104 in.)	———
	Clearance between carrier and intermediate shaft		0.065—0.111 mm (0.003—0.004 in.)	0.12 mm (0.005 in.)
	Carrier bearing starting torque (preload)	For new bearing	2.7—3.9 N·m (28—40 kgf·cm, 24—35 lbf·in)	Adjust
		For used bearing	2.5—3.6 N·m (25—37 kgf·cm, 22—32 lbf·in)	Adjust
	Final driven gear backlash	(Reference)	0.086—0.142 mm (0.003—0.006 in.)	0.2 mm (0.008 in.)
A/T differential pinion gear	Backlash		0.05—0.15 mm (0.002—0.006 in.)	———
	I.D.		18.042—18.066 mm (0.7103—0.7113 in.)	———
	Clearance between pinion gear and pinion shaft		0.055—0.095 mm (0.0022—0.0037 in.)	0.12 mm (0.005 in.)

Standards and Service Limits

Steering

Item	Measurement	Qualification	Standard or New
Steering wheel	Rotational play measured at outside edge with engine running		0—10 mm (0—0.39 in.)
	Initial turning load measured at outside edge with engine running		34 N (3.5 kgf, 7.7 lbf)
Gearbox	Angle of rack guide screw loosened from locked position		7±3 °

Suspension

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	0 °00 ′ ±30 ′	
		Rear (without ''C'' marks on the rear upper arm)	−1 °30 ′ $^{+1\,°05\,'}_{-0\,°45\,'}$	
		Rear (with ''C'' marks on the rear upper arm)	−0 °45 ′ $^{+1\,°05\,'}_{-0\,°45\,'}$	
	Caster	Front	7 °00 ′ ±1 °	
	Total toe-in	Front	0±2 mm (0±0.08 in.)	
		Rear	2^{+2}_{-1} mm ($0.08^{+0.08}_{-0.04}$ in.)	
	Front wheel turning angle	Inward	38 °46 ′ ±2 °	
		Outward (reference)	31 °14 ′	
Wheel	Runout	Axial	0—0.7 mm (0—0.03 in.)	2.0 mm (0.08 in.)
		Radial	0—0.7 mm (0—0.03 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play	Front	0—0.05 mm (0—0.002 in.)	
		Rear	0—0.05 mm (0—0.002 in.)	

Brakes

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake	Distance traveled when lever pulled with 196 N (20 kgf, 44 lbf) of force		8 to 10 clicks	
Brake pedal	Pedal height (carpet moved aside)	M/T	153 mm (6.02 in.)	
		A/T	158 mm (6.22 in.)	
	Free play		1—5 mm (0.04—0.20 in.)	
Brake disc	Thickness	Front (except TYPE S)	22.9—23.1 mm (0.90—0.91 in.)	21.0 mm (0.83 in.)
		Front (TYPE S)	24.9—25.1 mm (0.98—0.99 in.)	23.0 mm (0.91 in.)
		Rear	8.9—9.1 mm (0.35—0.36 in.)	8.0 mm (0.31 in.)
	Runout	Front and rear	———	0.04 mm (0.0016 in.)
	Parallelism	Front and rear	———	0.015 mm (0.0006 in.)
Brake pad	Thickness	Front (except TYPE S)	9.6—10.2 mm (0.38—0.40 in.)	1.6 mm (0.06 in.)
		Front (TYPE S)	9.0—9.7 mm (0.35—0.38 in.)	1.6 mm (0.06 in.)
		Rear	8.3—9.4 mm (0.33—0.37 in.)	1.6 mm (0.06 in.)

Air Conditioning

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a (R-134a)
	Capacity of system		400—450 g (14.1—15.8 oz)
Refrigerant oil	Type		SP-10 (P/N 38897-P13-A01)
	Capacity of components	Condenser	50 mL (1 2/3 fl·oz)
		Evaporator	40 mL (1 1/3 fl·oz)
		Each Line and hose	10 mL (1/3 fl·oz)
		Compressor	75—85 mL (2 1/2—2 5/6 fl·oz)
Compressor	Field coil resistance	At 20 ℃ (68 ℉)	3.15 —3.45 Ω
	Pulley-to-armature-plate clearance		0.35—0.65 mm (0.014—0.026 in.)

Design Specifications

Item	Measurement	Qualification	Specification
DIMENSIONS	Overall length		4.544 mm (178.9 in.)
	Overall width		1,752 mm (69.0 in.)
	Overall height		1,435 mm (56.5 in.)
	Wheelbase		2,700 mm (106.3 in.)
	Track	Front	1,499 mm (59.0 in.)
		Rear	1,528 mm (60.2 in.)
	Ground clearance		145 mm (5.7 in.)
	Seating capacity		Five (5)
WEIGHT	Gross Vehicle Weight Rating (GVWR)		See the certification label attached to the driver's doorjamb
ENGINE	Type		Water cooled, 4-stroke DOHC i-VTEC engine
	Cylinder arrangement		Inline 4-cylinder, transverse
	Bore and stroke		86 x 86 mm (3.39 x 3.39 in.)
	Displacement		1,998 cm^3 (122 cu in.)
	Compression ratio	K20Z2	9.6
		K20Z3	11.0
	Valve train		Chain drive, DOHC i-VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Fuel required	K20Z2	Regular UNLEADED gasoline 87 Pump Octane Number or higher
		K20Z3	Premium UNLEADED gasoline 91 Pump Octane Number or higher
STARTER	Type		Gear Reduction
	Nominal output		1.6 kW
	Nominal voltage		12 V
	Hour rating		30 seconds
	Direction of rotation		Clockwise as viewed from drive end
CLUTCH	Type		Single plate dry, diaphragm spring
	Clutch friction material surface area		174 cm^2 (27 sq in.)

Item	Measurement	Qualification	Specification
MANUAL TRANSMISSION (5-speed)	Type		Synchronized, five-speed forward, one reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.267
		2nd	1.880
		3rd	1.212
		4th	0.921
		5th	0.738
		Reverse	3.583
	Final reduction	Type	Single helical gear
		Gear ratio	4.839
MANUAL TRANSMISSION (6-speed)	Type		Synchronized, six-speed forward, one reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	3.267
		2nd	2.130
		3rd	1.517
		4th	1.147
		5th	0.921
		6th	0.659
		Reverse	3.583
	Final reduction	Type	Single helical gear
		Gear ratio	4.765
AUTOMATIC TRANSMISSION	Type		Electronically-controlled automatic, five-speed forward, one reverse three-element torque converter with lock-up clutch
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.651
		2nd	1.516
		3rd	1.081
		4th	0.772
		5th	0.566
		Reverse	2.000
	Final reduction	Type	Single helical gear
		Gear ratio	4.562
STEERING	Type		Electrical power-assisted rack and pinion
	Overall ratio		13.62
	Turns, lock-to-lock		2.65
	Steering wheel diameter		360 mm (14.2 in.)
SUSPENSION	Type	Front	Independent strut with stabilizer, coil spring
		Rear	Independent double wishbone with stabilizer, coil spring
	Shock absorber	Front and rear	Telescopic, hydraulic, nitrogen gas-filled
TIRES	Size of front and rear tires ('06-08 models)	Except TYPE S	P205/55R16 89H
		TYPE S	P215/45R17 87V
	Size of front and rear tires ('09 model)		P215/45R17 87V
	Size of spare tire ('06-07 models)	Except TYPE S	T125/70D15 95M
		TYPE S	T135/80R16 101M
	Size of spare tire ('08-09 models)		T135/80R16 101M

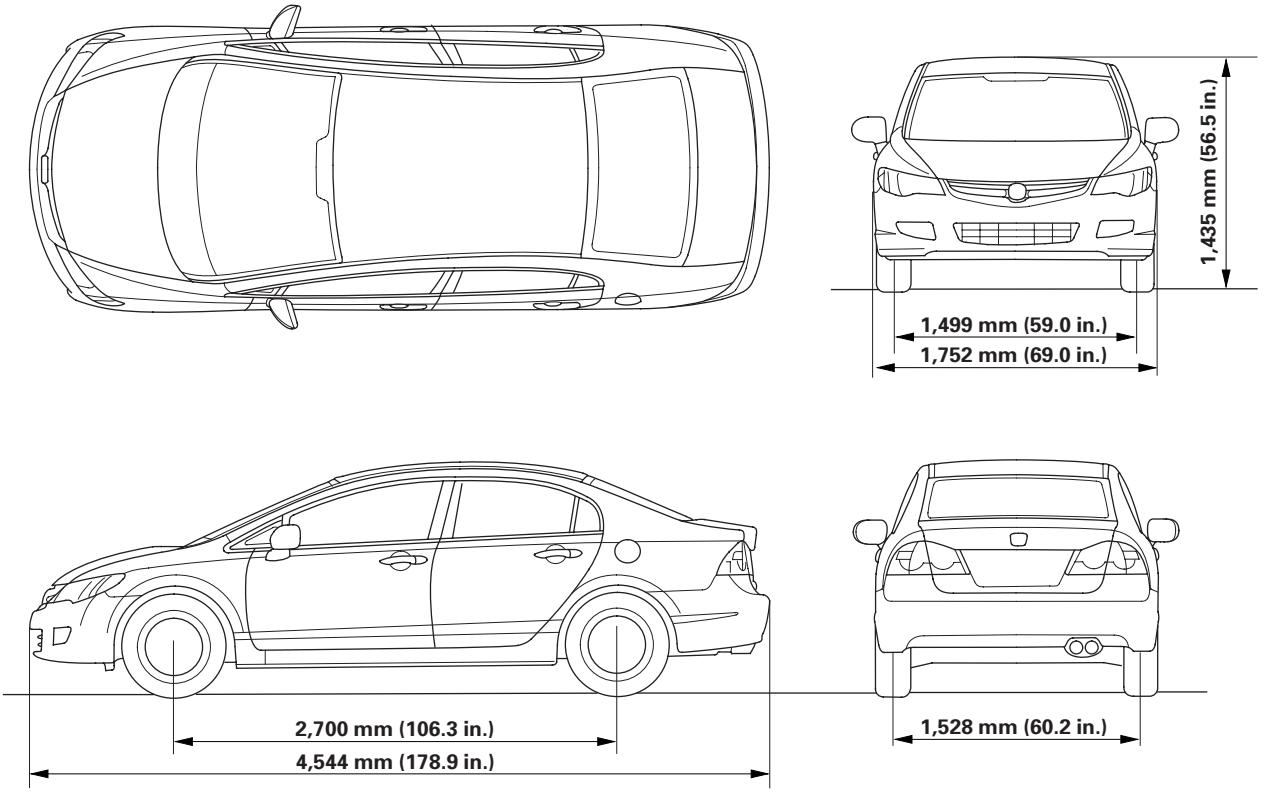
(cont'd)

Design Specifications

Item	Measurement	Qualification	Specification
WHEEL ALIGNMENT	Camber	Front	0 °00 ′
		Rear (without "C" marks on the rear upper arm)	—1 °30 ′
		Rear (with "C" marks on the rear upper arm)	—0° 45 ′
	Caster	Front	7 °00 ′
	Total toe-in	Front	0 mm (0 in.)
		Rear	2 mm (0.08 in.)
	Front wheel turning angle	Inward	38 °46 ′
		Outward (reference)	31 °14 ′
BRAKES	Type of service brake	Front	Power-assisted self-adjusting ventilated disc
		Rear	Power-assisted self-adjusting solid disc
	Type of parking brake		Mechanical actuating, rear wheels
	Pad friction surface area	Front (except Type S)	48.4 cm^2 (7.50 sq in.) x 2
		Front (Type S)	33.8 cm^2 (5.24 sq in.) x 2
		Rear	20.6 cm^2 (3.19 sq in.) x 2
AIR CONDITIONING	Compressor	Type	Scroll
		Capacity	77.1 mL (4.7 cu in.)/rev.
		Maximum speed	10,000 rpm
		Lubricant capacity	75 mL (2 1/2 fl·oz)
		Lubricant type	SP-10
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin
	Blower	Type	Stabilized swirling flow
		Motor type	220 W/12 V
		Speed control	Infinitely variable
		Maximum capacity	485 m^3 (17.100 cu ft)/h
	Temperature control		Air-mix type
	Compressor clutch	Type	Dry, single plate, poly V-belt drive
		Electrical power consumption at 20 ℃ (68 ℉)	42 W maximum at 12 V
	Refrigerant	Type	HFC-134a (R-134a)
		Capacity	400—450 g (14.1—15.9 oz)

Item	Measurement	Qualification	Specification
ELECTRICAL RATINGS	Battery		12 V—47 Ah/20 HR (12 V—38 Ah/5 HR)
	Fuses	Under-hood fuse/relay box ('06-07 models)	100 A, 80 A, 70 A, 50 A, 40 A, 30 A, 20 A, 15 A, 10 A, 7.5 A
		Under-hood fuse/relay box ('08-09 models)	100 A, 70 A, 60 A, 50 A, 40 A, 30 A, 20 A, 15 A, 10 A, 7.5 A
		Under-dash fuse/relay box	30 A, 20 A, 15 A, 10 A, 7.5 A
	Light bulbs	Headlight high beam	12 V—60 W (HB3)
		Headlight low beam	12 V—51 W (HB4)
		Headlight low beam (HID)	12 V—35 W (D2R)
		Front turn signal lights	12 V—24/2.2 CP (Amber)
		Front side marker lights	12 V—2 CP
		Side turn signal lights	LED
		Front parking lights	12 V—3 CP
		Front fog lights (TYPE S, PREMIUM ('08 model), TECH PKG)	12 V—55 W (H11)
		Rear turn signal lights	12 V—21 W (Amber)
		Rear side marker lights	12 V—3 CP
		Brake/taillights	12 V—21/5 W
		Taillights	12 V—5 W
		High mount brake light (except TYPE S)	12 V—21 W
		High mount brake light (TYPE S)	LED
		Back-up lights	12 V—16 W
		License plate lights	12 V—5 W
		Ceiling light	12 V—8 W
		Trunk light	12 V—5 W
		Front individual map lights	12 V—8 W
		Gauge lights	LED
		Indicator lights	LED
		Ambient light	LED
		Door courtesy lights	12 V—3.4 W
		Vanity mirror lights	12 V—2 W
		Glove box light	12 V—3.4 W
		Footwell lights (TYPE S)	LED
	Washer reservoir	Capacity	4.5 L (4.8 US qt)

Body Specifications



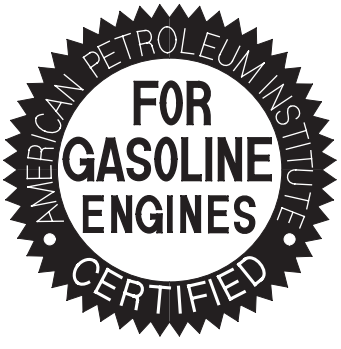
Maintenance

Lubricants and Fluids

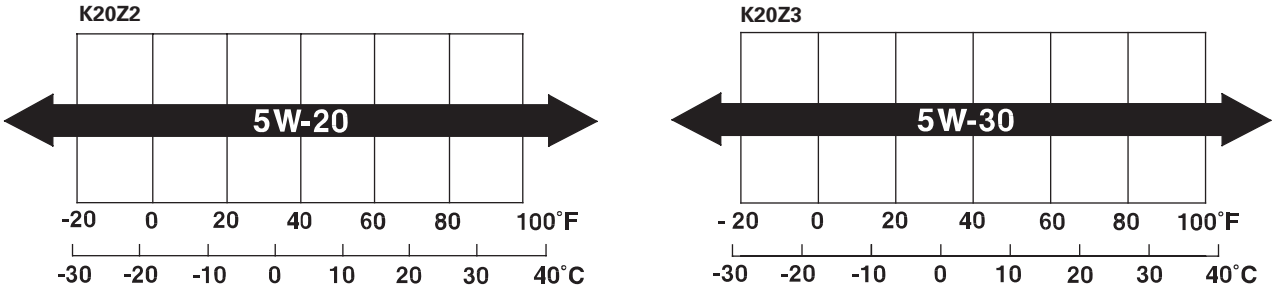
For details of the lubrication points and the type of lubricants to be applied, refer to the illustrated index and the various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

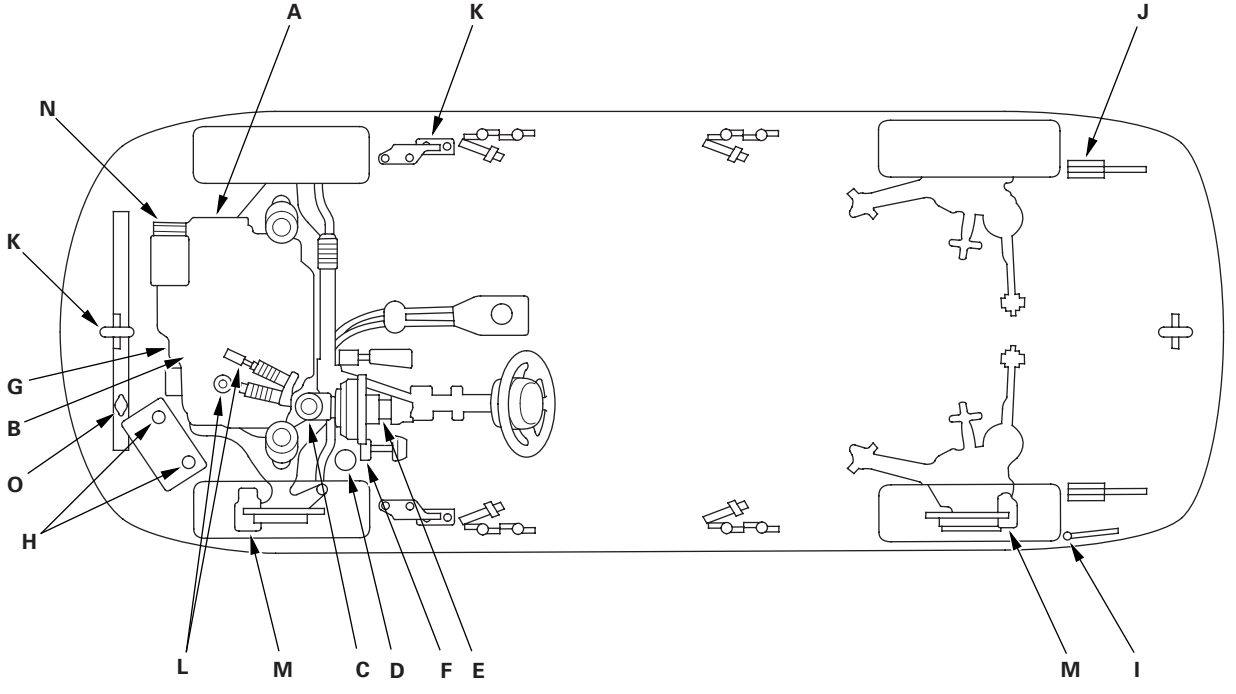
Application		Lubricant or Fluid
A	Engine	Acura Motor Oil: • K20Z2: P/N CA66808 (5W-20) • K20Z3: P/N CA66807 (5W-30) Look for the API certification seal on the oil container. Make sure it says ''For Gasoline Engines.'' SAE viscosity: See chart.
B	Manual transmission	Acura Manual Transmission Fluid (MTF): P/N 08798-9033C Always use Acura MTF. Using motor oil can cause stiffer shifting because it does not contain the proper additives.
	Automatic transmission	Acura Automatic Transmission Fluid (ATF-Z1): P/N CA66704 Always use Acura ATF-Z1. Using a non-Acura ATF can affect shift quality.
C D	Brake system (including VSA lines) Clutch system (manual transmission)	Honda DOT 3 Brake Fluid: P/N 08798-9008 Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
E F G H I J K	Brake booster clevis pin Clutch master cylinder clevis pin (manual transmission) Release fork (manual transmission) Battery terminals Fuel fill door Trunk hinges Hood hinges and hood latch	Multipurpose Grease
L M	Shift cable ends (manual transmission) Caliper piston seal and boot, caliper pins and boots	Honda Silicone Grease: P/N 08C30-B0234M
N	Air conditioning compressor	Compressor Oil: SP-10 (P/N 38897-P13-A01AH) for refrigerant HFC-134a (R-134a)
O	Cooling system	Honda Long Life Antifreeze/Coolant Type 2: P/N CA66688

API CERTIFICATION SEAL



Recommended Engine Oil
Engine oil viscosity for ambient temperature ranges

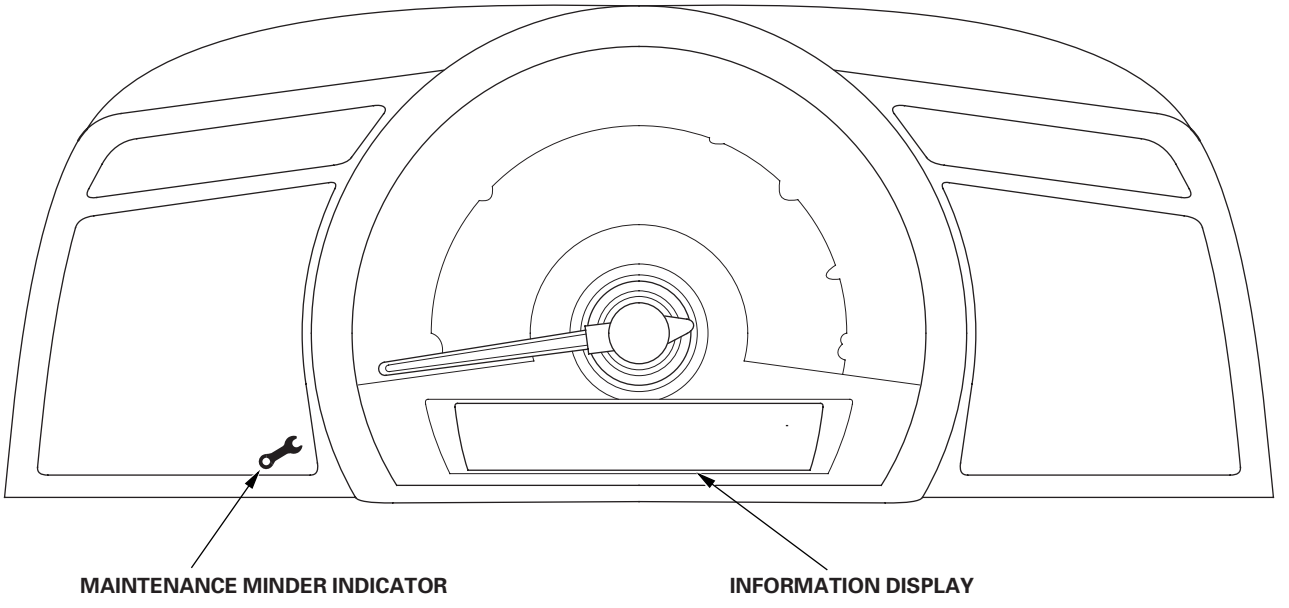




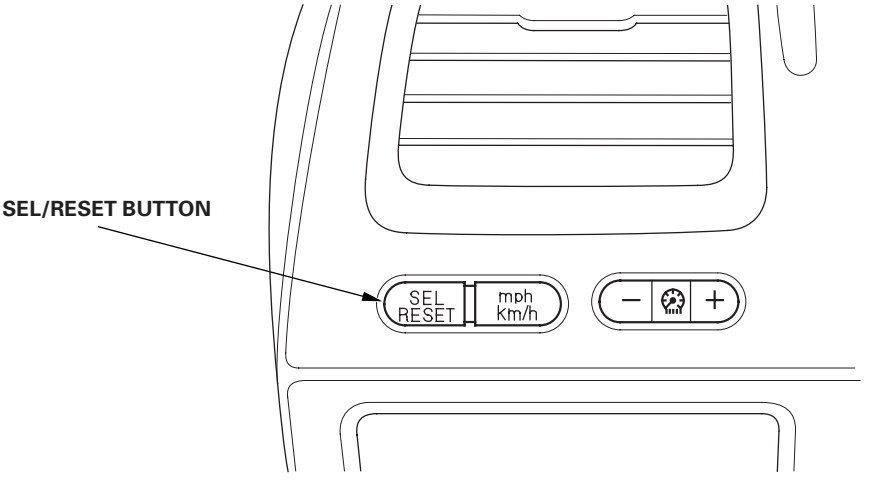
General Information

Information Display

The maintenance minder is an important feature of the information display. Based on engine and transmission operating conditions, the Acura CSX's onboard computer (ECM/PCM) calculates the remaining engine oil and the automatic transmission fluid life. The system also displays the remaining engine oil life along with the code(s) for other scheduled maintenance items needing service.



Driver's Side Dashboard:

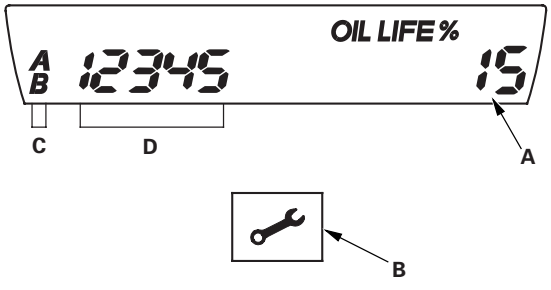


Service Information

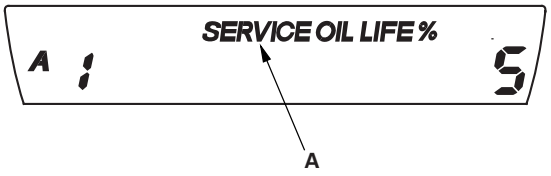
1. The remaining engine oil life (A) is shown as a percentage on the information display. To see the current engine oil life, turn the ignition switch to ON (II), then push and release the SEL/RESET button repeatedly until the engine oil life displays.

2. When the ignition switch is ON (II), and the remaining engine oil life is 6 % to 15 %, the remaining engine oil life (A) and other scheduled maintenance item(s) needing service are displayed. The maintenance minder indicator (B) also comes on when the engine oil life is 15 % or less. To cancel the display and the indicator, press SEL/RESET button.

   - Complete list of maintenance main items (C) (see page 3-7).
   - Complete list of maintenance sub items (D) (see page 3-8).



3. When the ignition switch is ON (II), and the remaining engine oil life is 1 % to 5 %, the message ''SERVICE'' (A) is displayed along with engine oil life and the same maintenance item code(s).



4. When the ignition switch is ON (II), and the remaining engine oil life is 0 %, the engine oil life indicator (A) blinks. Pressing SEL/RESET button cancels the display, but the maintenance minder indicator stays on.

5. If the indicated maintenance is not done, the engine oil life indicator shows a negative mileage, for example ''—10,'' on the display. If the negative mileage is between 0 and —9, the indicator is displayed for only a few seconds when the ignition switch is turned to ON (II). The negative mileage remains displayed after the vehicle is driven more than 10 km after 0 % oil life is reached, and the display cannot be canceled.
   This means the indicated maintenance item(s) should have been done more than 10 km ago.

(cont'd)

General Information (cont'd)

Resetting Maintenance Information Display

NOTE:
- The vehicle must be stopped to reset the display.
- If a required service is done and the display is not reset, or the maintenance display is reset without doing the service, the system will not show the proper maintenance timing. This can lead to serious mechanical problems because there will be no accurate record of when the required maintenance is needed.
- The engine oil life and the maintenance item(s) can be only reset independently with the HDS.

1. Turn the ignition switch to ON (II).
2. Push and release the SEL/RESET button repeatedly until the engine oil life indicator is displayed.
3. Press and hold the SEL/RESET button for about 10 seconds. The engine oil life indicator and the maintenance item code(s) will blink, then release the button.

   NOTE: If you are resetting the display when the engine oil life is more than 15 %, make sure the maintenance item(s) requiring service are done before resetting the display.
4. Press and hold the SEL/RESET button for another 5 seconds. The maintenance item code(s) will disappear, and the engine oil life will reset to ''100''.

Resetting Individual Maintenance Items

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module/powertrain control module (ECM/PCM). If it doesn't communicate, troubleshoot the DLC circuit (see page 11-6).
4. Select GAUGES in the BODY ELECTRICAL with the HDS.
5. Select ADJUSTMENT in the GAUGES with the HDS.
6. Select SERVICE REMINDER in the ADJUSTMENT with the HDS.
7. Select RESET in the SERVICE REMINDER with the HDS.
8. Select the individual maintenance item you wish to reset.

Maintenance Main Items

If the message ''SERVICE'' does not appear more than 12 months after the display is reset, change the engine oil every year.

NOTE:
- Replace the brake fluid every 3 years independent of the maintenance messages in the information display.
- Inspect idle speed every 160,000 miles (256,000 km).
- Adjust the valves during services A, B, 1, 2 or 3, only if they are noisy.

Symbol	Maintenance Main Items
A	Replace engine oil (see page 8-10). Engine oil capacity without oil filter: • K20Z2: 4.0 L (4.2 US qt) • K20Z3: 4.2 L (4.4 US qt)
B	Replace engine oil and oil filter (see page 8-11). Engine oil capacity with oil filter: • K20Z2: 4.2 L (4.4 US qt) • K20Z3: 4.4 L (4.6 US qt)
	Check front and rear brakes (see page 19-3). • Check pad and disc for wear (thickness), damage, and cracks. • Check calipers for damage, leaks, and tightness of mounting bolts.
	Check parking brake adjustment (see page 19-7). Check the number of clicks (8 to 10) when the parking brake lever is pulled with 196 N (20 kgf, 44 lbf) of force.
	Inspect tie-rod ends, steering gearbox, and gearbox boots (see page 17-5). • Check steering linkage. • Check boots for damage and leaking grease. • Check fluid lines for damage and leaks.
	Inspect suspension components (see page 18-3). • Check bolts for tightness. • Check condition of ball joint boots for deterioration and damage.
	Inspect driveshaft boots (see page 16-4). Check boots for cracks and boot bands for tightness.
	Inspect brake hoses and lines including VSA lines (see page 19-37). Check the master cylinder and VSA modulator-control unit for damage or leakage.
	Inspect all fluid levels and condition of fluids. • Engine coolant (see page 10-7) • Automatic transmission fluid (ATF-Z1) (see page 14-231) • Manual transmission fluid (MTF) 5M/T (see page 13-5), 6M/T (see page 13-82) • Clutch fluid (see page 12-7) • Brake fluid (see page 19-9) • Windshield washer fluid (see page 22-234)
	Inspect exhaust system: K20Z2 (see page 9-13), K20Z3 (see page 9-14) Check catalytic converter heat shields, exhaust pipes, and muffler for damage, leaks, and tightness.
	Inspect fuel lines* (see page 11-326) and connections* (see page 11-328). Check for loose connections, cracks, and deterioration; retighten loose connections and replace damaged parts.

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the client's emissions warranties. However, Acura recommends that all maintenance services be done at the recommended interval, to ensure long-term reliability.

Maintenance Sub Items

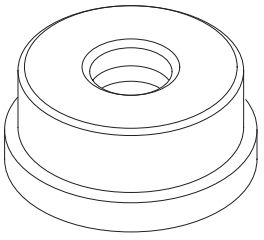
Number	Maintenance Sub Items
1	Rotate tires, and check tire inflation and condition. Follow the pattern shown in the Owner's Manual.
2	Replace air cleaner element (see page 11-346). Replace every 15,000 miles (24,000 km) if the vehicle is driven in dusty conditions.
	Replace dust and pollen filter (see page 21-75). • If the vehicle is driven mostly in urban areas that have high concentrations of dust, pollen, or soot in the air, replace every 15,000 miles (24,000 km). • Replace the filter whenever airflow from the heating and air conditioning system is less than normal.
	Inspect drive belt (see page 4-30). Look for cracks and damage, then check the position of the drive belt auto-tensioner indicator.
3	Replace automatic transmission fluid (see page 14-232). Capacity: 2.9 L (3.1 US qt); use Acura ATF-Z1.
	Replace manual transmission fluid. 5M/T (see page 13-5), 6M/T (see page 13-82) Capacity: 1.5 L (1.6 US qt); use Acura MTF.
4	Replace spark plugs (see page 4-21). • K20Z2: Use SKJ20DR-M11 (DENSO). • K20Z3: Use SK22PR-M11S (DENSO).
	Inspect valve clearance (cold). • K20Z2 (see page 6-12) Intake: 0.21—0.25 mm (0.008—0.010 in.), Exhaust: 0.28—0.32 mm (0.011—0.013 in.) • K20Z3 (see page 6-14) Intake: 0.21—0.25 mm (0.008—0.010 in.), Exhaust: 0.25—0.29 mm (0.010—0.011 in.)
5	Replace engine coolant (see page 10-8). Capacity (including the reservoir): • K20Z2: M/T 4.3 L (1.14 US gal), A/T 4.2 L (1.11 US gal) • K20Z3: 4.5 L (1.19 US gal) Use Honda Long Life Antifreeze/Coolant Type 2.

DYNOMITE -2009-

Engine Electrical

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07746-0010300	Attachment, 42 x 47 mm	1
②	07749-0010000	Driver	1



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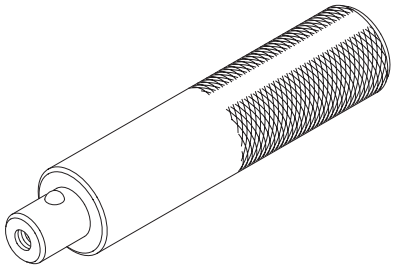

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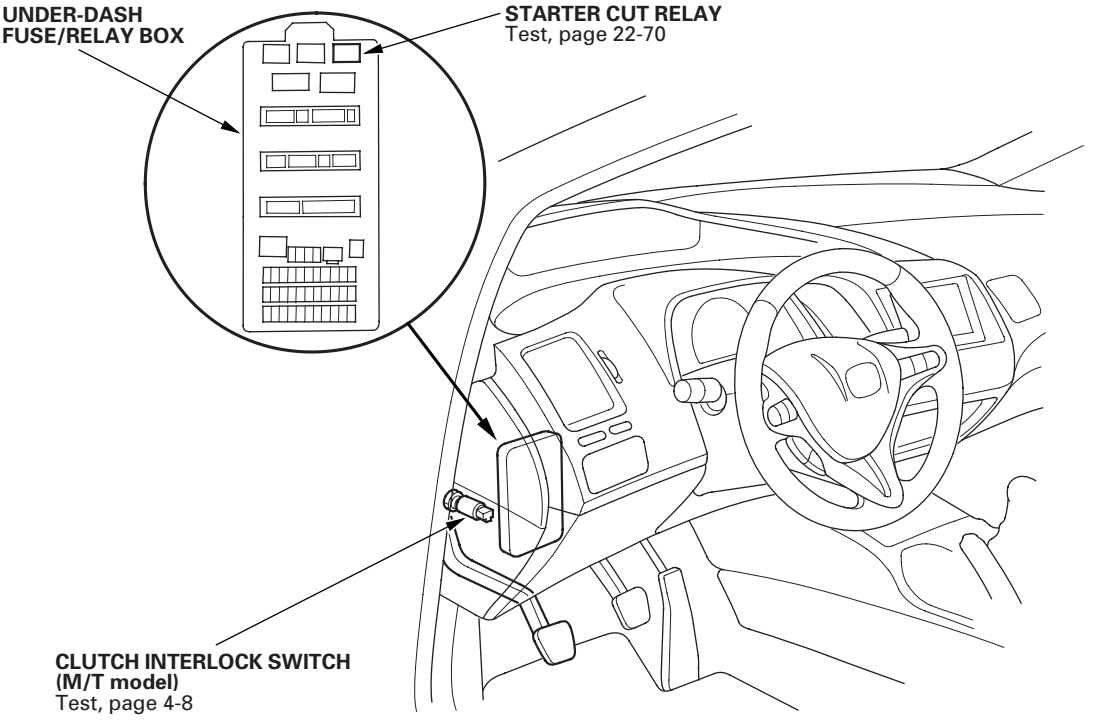
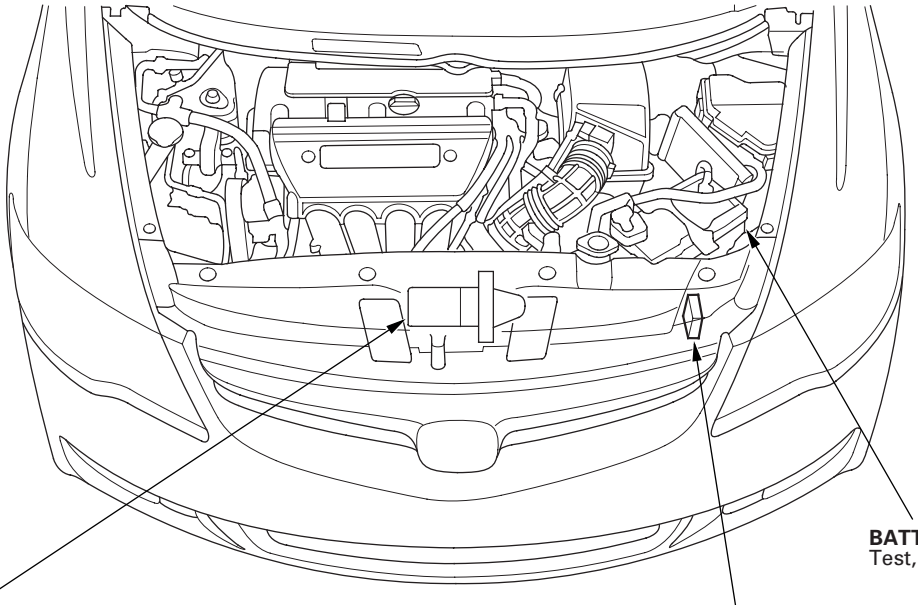
Component Location Index

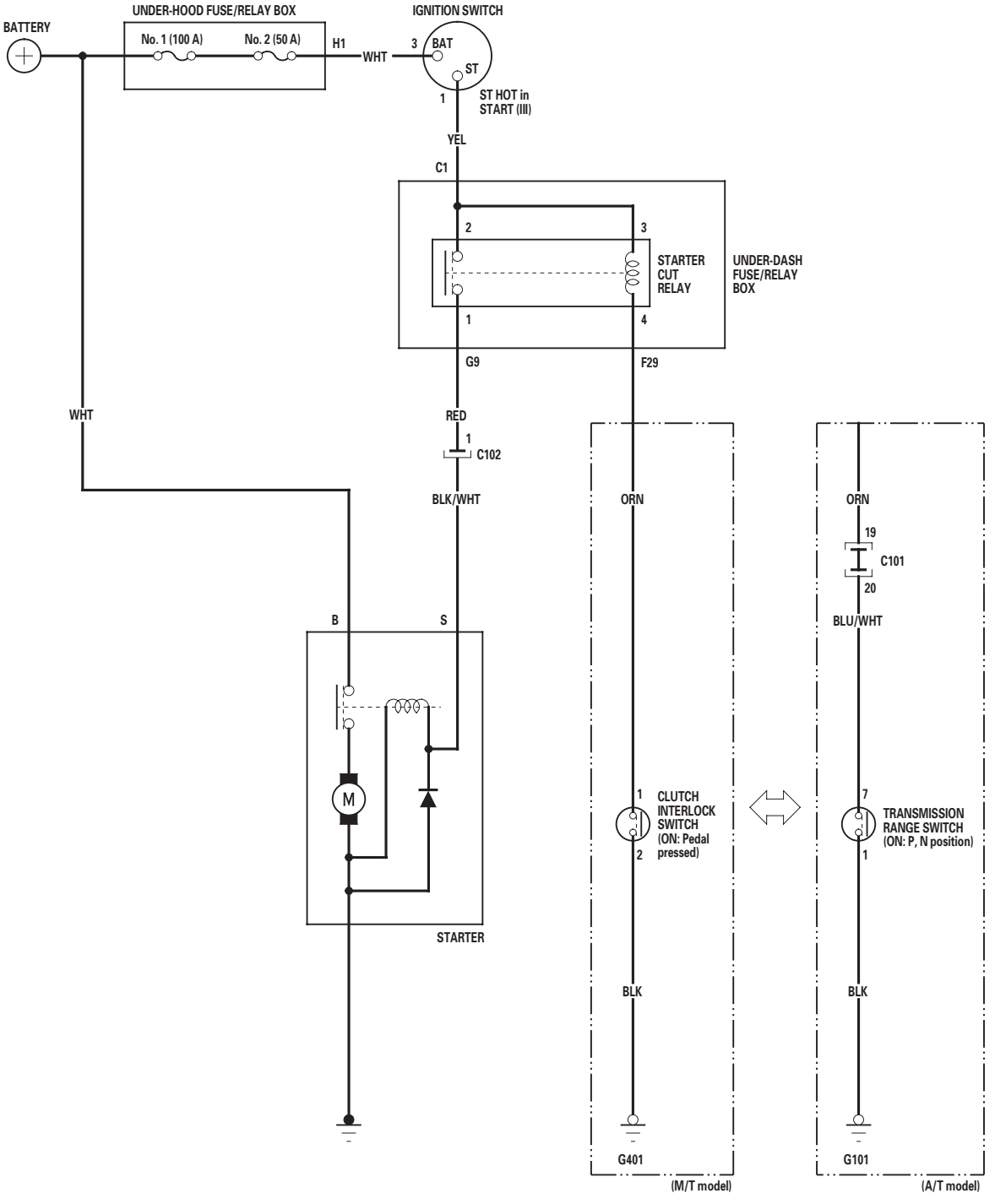




Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Engine does not start (does not crank)	1. Check for loose battery terminals or connections. 2. Test the battery for a low state of charge (see page 22-67). 3. Check the starter (see page 4-6). 4. Check the starter cut relay (see page 22-70). 5. Check the clutch interlock switch (M/T model) (see page 4-8). 6. Check the transmission range switch (A/T model) (see page 14-265). 7. Check the ignition switch or wire (see page 22-72).	Poor ground at G101 (A/T model) or G401 (M/T model)
Engine cranks, but does not start	1. Check for PGM-FI DTCs (see page 11-3). 2. Check for IMMOBI status and function (see page 22-325). 3. Check the fuel pressure (see page 11-325). 4. Check for a plugged or damaged fuel line (see page 11-326). 5. Check for a plugged fuel filter (see page 11-337). 6. Check the throttle body (see page 11-343). 7. Check for low engine compression (see page 6-7). 8. Check for a damage or broken cam chain (see page 6-21). 9. Do the engine control module (ECM)/powertrain control module (PCM) reset in the PGM-FI INSPECTION menu to cancel the ALL INJECTORS STOP with the Honda Diagnostic System (HDS).	• Empty fuel tank • Weak or fouled spark plugs
Engine is hard to start	1. Check for PGM-FI DTCs (see page 11-3). 2. Check the fuel pressure (see page 11-325). 3. Check for a plugged or damaged fuel line (see page 11-326). 4. Check for a plugged fuel filter (see page 11-337).	Weak or fouled spark plugs
Engine cranks slowly	1. Check for loose battery terminals or connections. 2. Test the battery for a low state of charge (see page 22-67). 3. Check the starter for binding (see page 4-13). 4. Check for excessive drag in the engine.	

Circuit Diagram



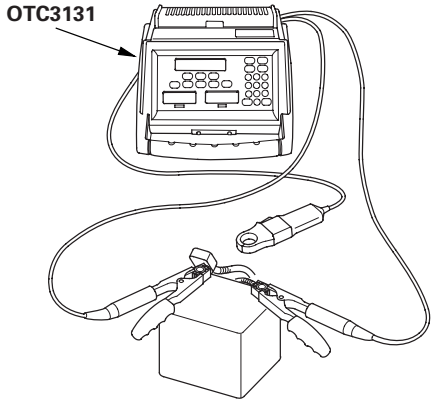
Starter System Circuit Troubleshooting

Special Tools Required
Alternator, Regulator, Battery & Starter tester OTC3131
Available through the Honda Canada Inc. Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

NOTE:
- Air temperature must be within 15—38 ℃ (59—100 ℉) during this procedure.
- After this inspection, you must reset the engine control module (ECM)/powertrain control module (PCM). Otherwise, the ECM/PCM will continue to stop the fuel injectors from operating.
- The battery must be in good condition and fully charged.

1. Connect the alternator, regulator, battery & starter tester (OTC3131) to the battery as shown.

   NOTE: The probe is not used for battery testing.



2. Do the BATTERY TEST.

   Does the display indicate GOOD or GOOD, LOW CHARGE?

   YES—The battery is OK. Go to step 3.

   NO—If the display indicates BAD BATTERY, replace the battery, then retest. If the display indicates CHARGE & RETEST, charge the battery, then retest.

3. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

4. Turn the ignition switch to ON (II).

5. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

6. Select ALL INJECTORS STOP in the PGM-FI INSPECTION menu with the HDS.

7. Set the parking brake, then with the shift lever in N or P (A/T model) or the clutch pedal pressed (M/T model), turn the ignition switch to START (III).

   Does the starter crank the engine normally?

   YES—The starting system is OK. Go to step 14.

   NO—Go to step 8.

8. Turn the ignition switch to LOCK (0).

9. Check the electrical connections at the battery, the negative battery cable to the body, the engine ground cables, and the starter for looseness and corrosion. Then try cranking the engine again.

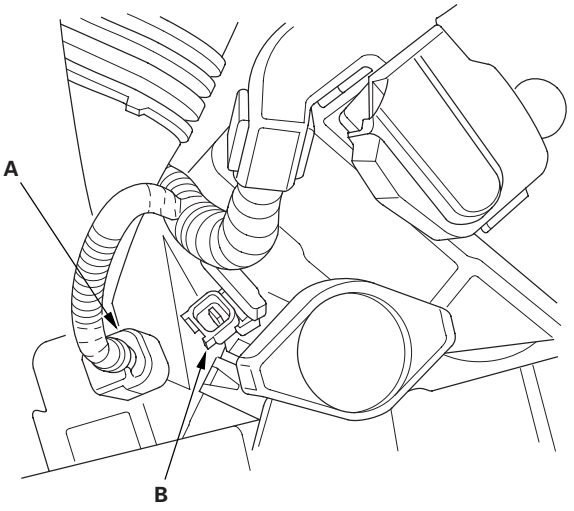
   Does the starter crank the engine normally?

   YES—Repairing the loose connection corrected the problem. The starting system is OK. Go to step 14.

   NO—Based on the following symptoms, take the appropriate action: ■

   - If the starter does not crank the engine at all, go to step 10.
   - If the starter cranks the engine erratically or too slowly, go to step 12.
   - If the starter does not disengage from the flywheel ring gear (M/T model) or torque converter ring gear (A/T model) when you release the key, replace the starter, or remove and disassemble it, and check for the following:
     – Starter solenoid and switch malfunction
     – Dirty drive gear or damaged overrunning clutch

10. Make sure the shift lever is in N or P (A/T model) or neutral (M/T model), then disconnect the engine wire harness 1P connector (A). Connect a jumper wire from the battery positive terminal to the starter subharness 1P connector (B).



Does the starter crank the engine?

YES—Go to step 11.

NO—Check the starter subharness. If the wire is OK, remove the starter (see page 4-10), then repair or replace (see page 4-13) it as necessary. ■

11. Check the following items in the order listed until you find the problem circuit:

NOTE: After the open circuit or high resistance in the circuit is found and repaired, go to step 14.

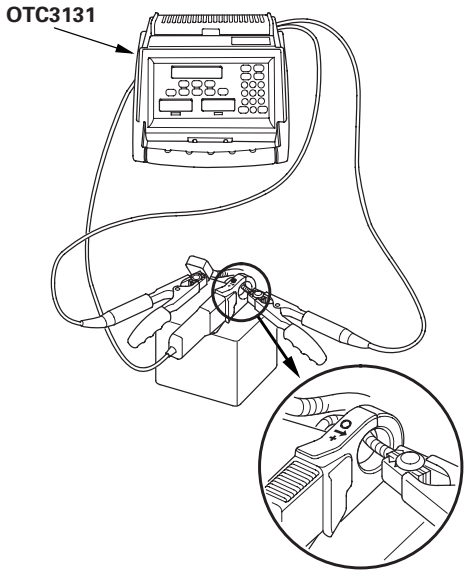
- Check for an open or short in the YEL wire and connectors between the driver's under-dash fuse/relay box and the ignition switch.
- Check for an open or short in the RED wire and connectors between the under-dash fuse/relay box and the engine wire harness 1P connector.
- Check for an open or short in the ORN wire and connectors between the under-dash fuse/relay box and the clutch interlock switch (M/T model).
- Check for an open or short in the ORN wire, BLU/WHT wire and connectors between the under-dash fuse/relay box and the transmission range switch (A/T model).
- Check for poor ground at G401 (M/T model) or G101 (A/T model).
- Check for a faulty ignition switch (see page 22-72).
- Check for a faulty clutch interlock switch (M/T model) (see page 4-8).
- Check for a faulty transmission range switch (A/T model) (see page 14-265).
- Check for a faulty starter cut relay (see page 22-70).

(cont'd)

Starter System Circuit Troubleshooting (cont'd)

12. Do the STARTING TEST with the alternator, regulator battery & starter tester.

    NOTE: The probe is used for starter testing.



    Does the display indicate cranking voltage greater than or equal to 8.5 V and the current draw less than or equal to 380 A?

    YES—Go to step 13.

    NO—Replace the starter, or remove and disassemble it, and check for these problems: ■

    - Drag in the starter armature
    - Short in the armature winding
    - Excessive drag in the engine
    - Open circuit in starter armature commutator segments
    - Excessively worn starter brushes
    - Open circuit in the starter brushes
    - Dirty or damaged helical splines or drive gear
    - Faulty overrunning clutch

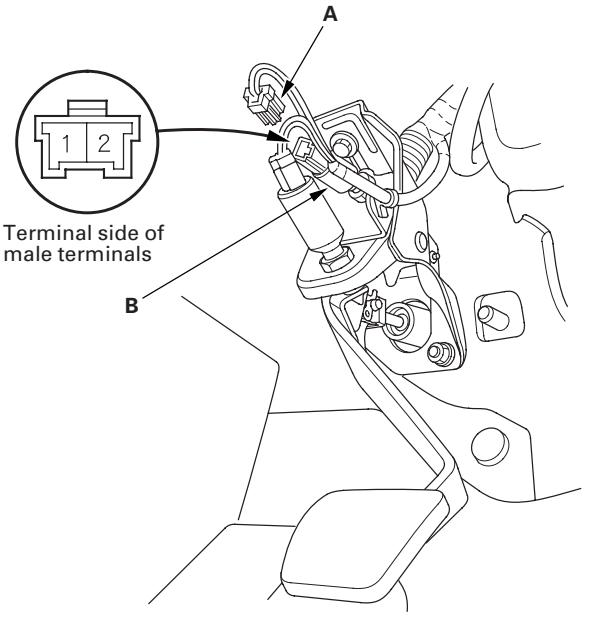
13. Remove the starter, and inspect its drive gear and the flywheel ring gear (M/T model) or the torque converter ring gear (A/T model) for damage. Replace any damaged parts.

14. Select ECM/PCM reset (see page 11-4) in the PGM-FI INSPECTION menu to cancel ALL INJECTORS STOP with the HDS.

Clutch Interlock Switch Test

M/T model

1. Disconnect the clutch interlock switch 2P connector (A).



2. Remove the clutch interlock switch (B).

3. Check for continuity between the terminals according to the table.

    - If the continuity is not as specified, replace the clutch interlock switch (see page 12-8).
    - If OK, install the clutch interlock switch, and adjust the pedal height (see page 12-8).

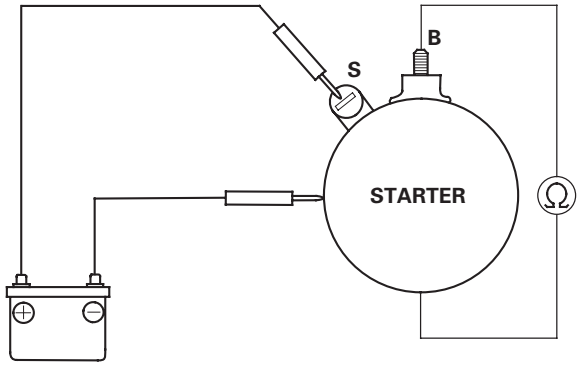
Terminal / Position	1	2
Clutch Interlock Switch (PRESSED)	○	○
Clutch Interlock Switch (RELEASED)		

Starter Performance Test

1. Remove the starter (see page 4-10).

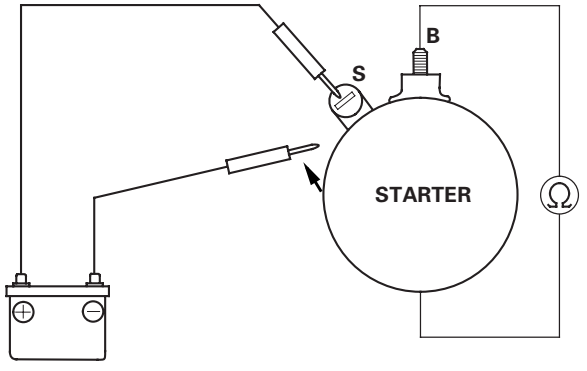
2. Make the connections for this test using the thickest (gauge) wire possible (preferably the same gauge as used on the vehicle).

   NOTE: To avoid damaging the starter, never leave the battery connected for more than 10 seconds.



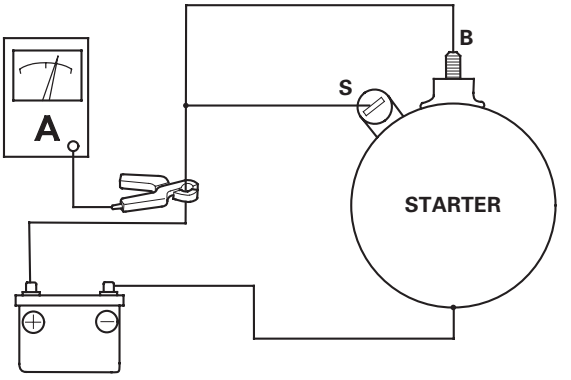
3. Connect the battery as shown, and check for continuity between the B terminal and the starter body. If there is continuity, it is working properly.

4. Disconnect the battery from the starter body, and check for continuity between the B terminal and the starter body. If there is no continuity, it is working properly.



5. Firmly clamp the starter in a vise.

6. Connect the starter to the battery as shown, and confirm that the motor runs.



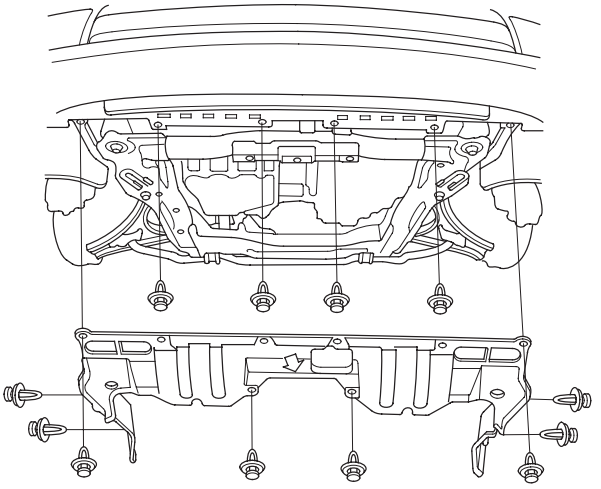
7. If the electric current meets the specification when the battery voltage is at 11.5 V, the starter is working properly.

   Specification
   Electric Current: 80 A or less

Starter Removal and Installation

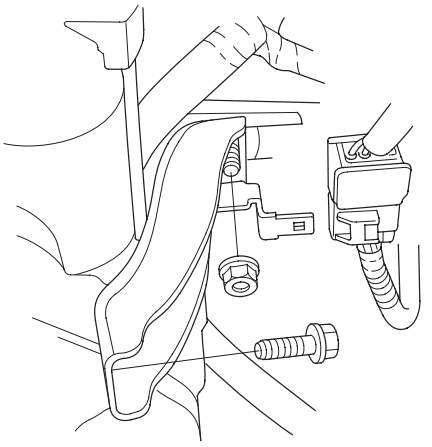
Removal

1. Do the battery terminal disconnection procedure (see page 22-68).
2. Remove the splash shield.

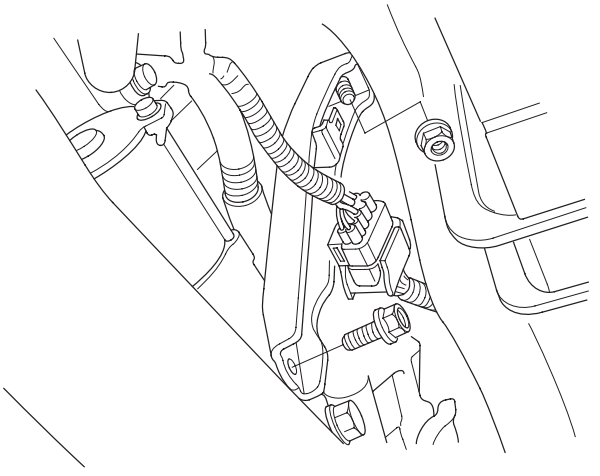


3. Remove the intake manifold bracket.

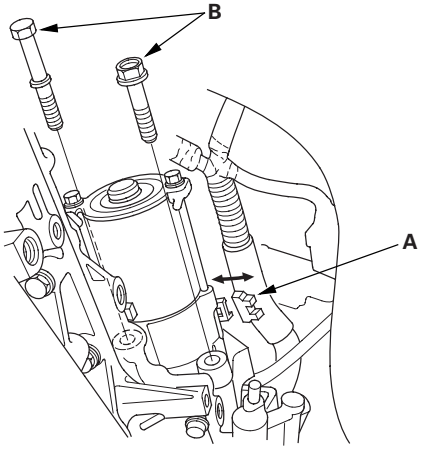
K20Z2 engine



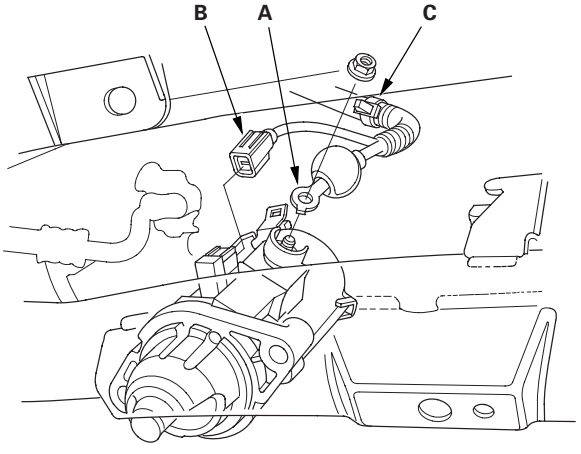
K20Z3 engine



4. Remove the harness clamp (A), then the two bolts (B) securing the starter, then remove the starter from the engine.



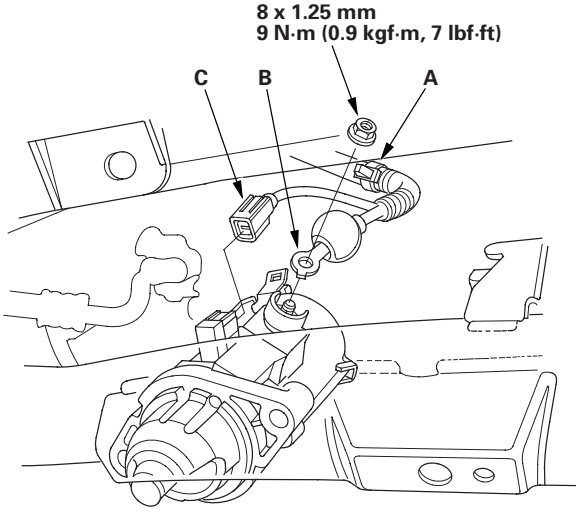
5. Disconnect the positive starter cable (A) and the S terminal connector (B).



6. Remove the harness clamp (C), then remove the starter.

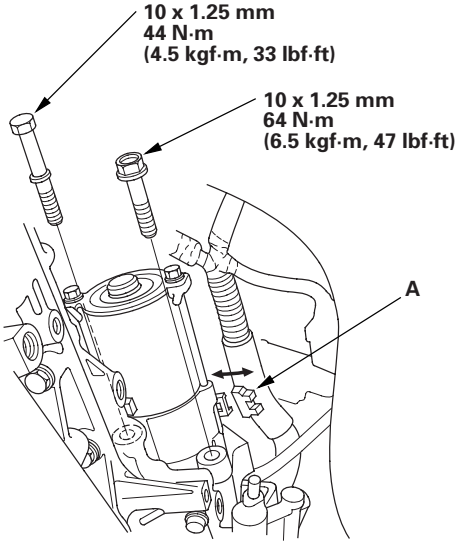
Installation

1. Install the harness clamp (A).



2. Connect the positive starter cable (B) and S terminal connector (C). Make sure the starter cable crimped side of the ring terminal faces away from the starter when you connect it.

3. Install the starter, and tighten the two bolts, then install the harness clamp (A).



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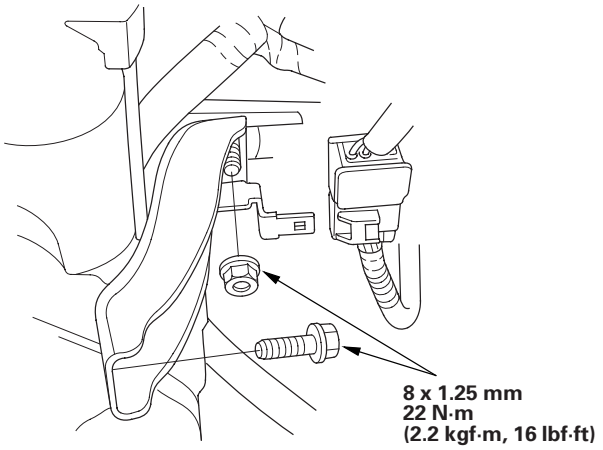
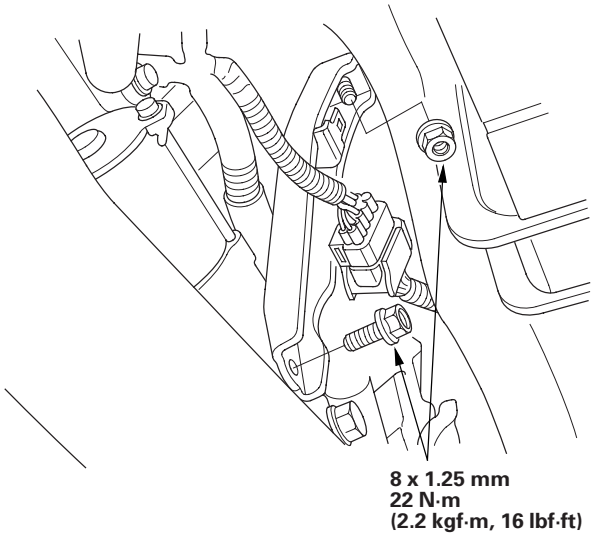
Starter Removal and Installation (cont'd)

4. Install the intake manifold bracket.

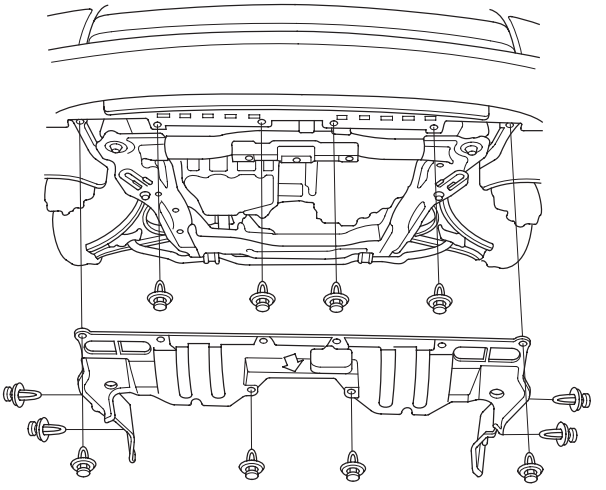
K20Z2 engine



K20Z3 engine



5. Install the splash shield.

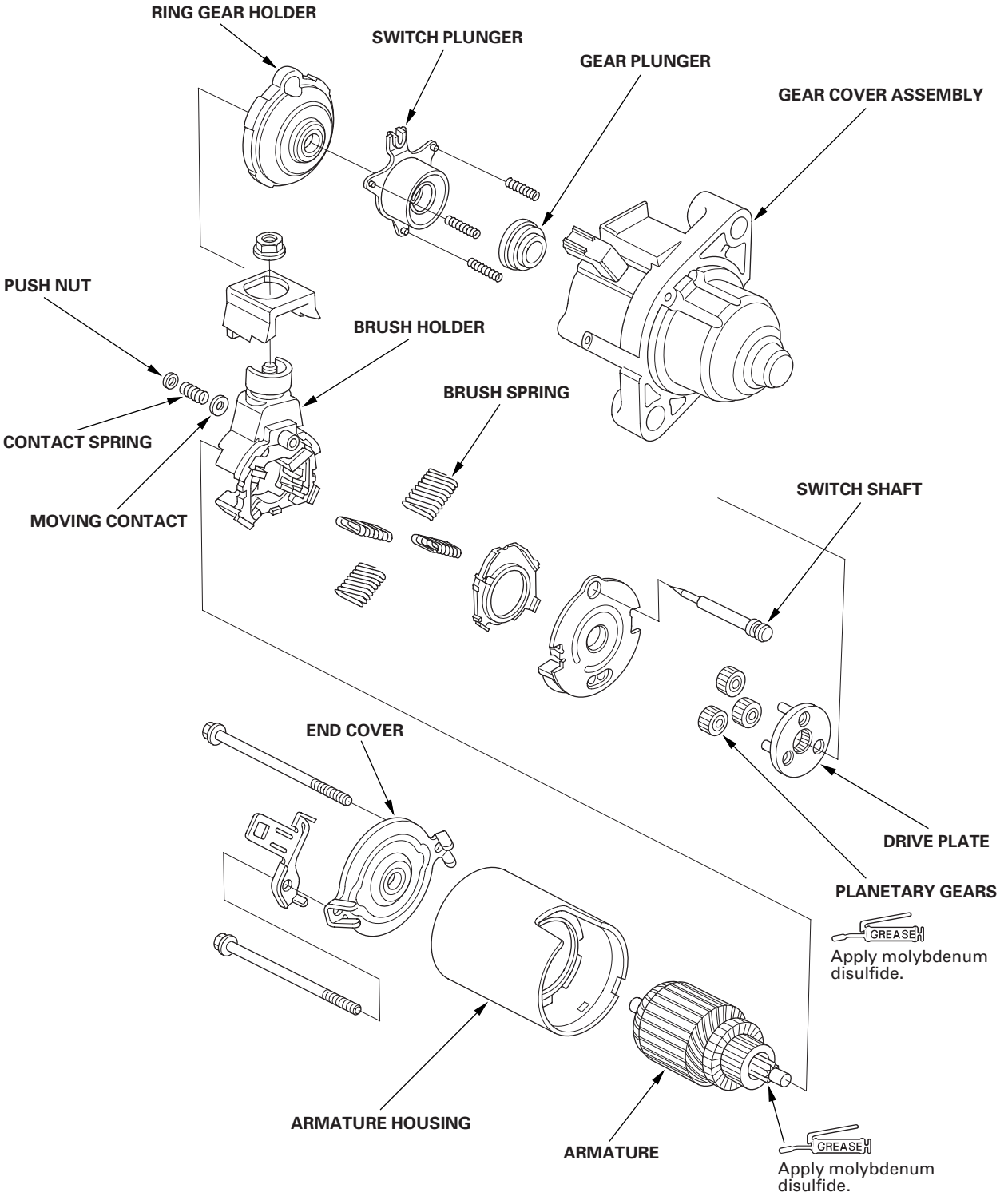


6. Do the battery terminal reconnection procedure (see page 22-68).

7. Start the engine to make sure the starter works properly.

Starter Overhaul

Disassembly/Reassembly



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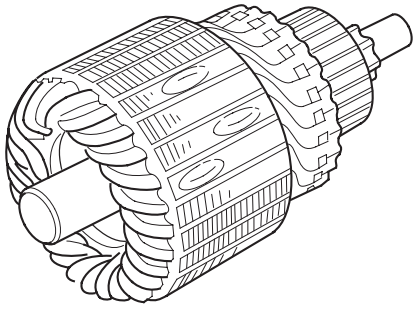
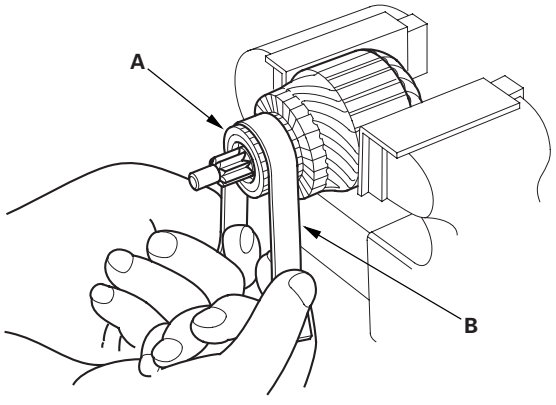
Starter Overhaul (cont'd)

Armature Inspection and Test

1. Remove the starter (see page 4-10).
2. Disassemble the starter as shown at the beginning of this procedure.
3. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.

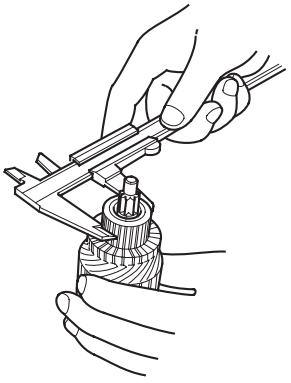


4. Check the commutator (A) surface. If the surface is dirty or burnt, resurface it with an emery cloth or a lathe to the specifications in step 5, or recondition with #500 or #600 sandpaper (B).



5. Check the commutator diameter. If the diameter is below the service limit, replace the armature.

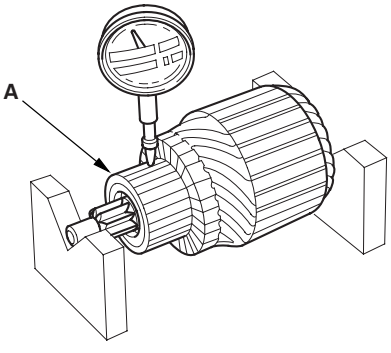
Commutator Diameter
Standard (New): 28.0—28.1 mm (1.102—1.106 in.)
Service Limit: 27.5 mm (1.083 in.)



6. Measure the commutator (A) runout.

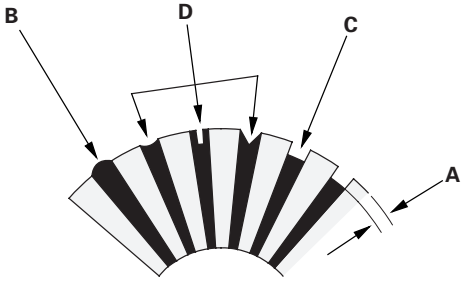
- If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
- If the commutator runout is not within the service limit, replace the armature.

Commutator Runout
Standard (New): 0.02 mm (0.0008 in.) max.
Service Limit: 0.05 mm (0.002 in.)

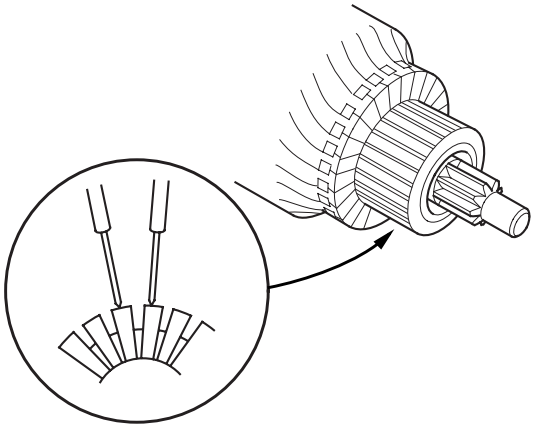


7. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

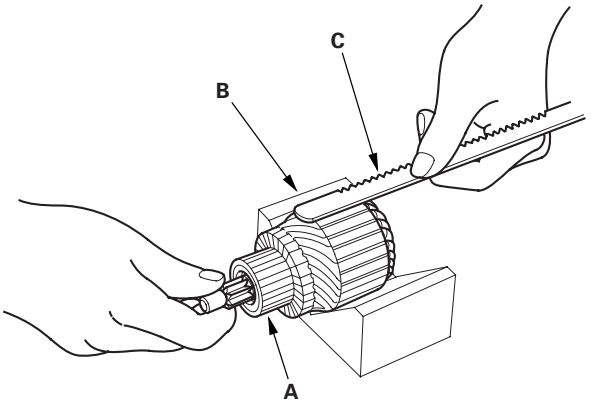
Commutator Mica Depth
Standard (New): 0.40—0.50 mm (0.016—0.020 in.)
Service Limit: 0.15 mm (0.006 in.)



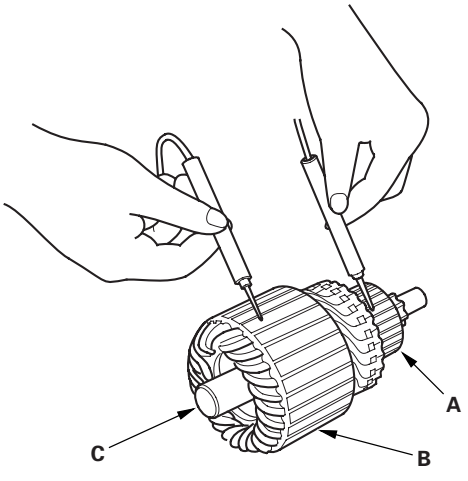
8. Use an ohmmeter to check for continuity between the segments of the commutator. If there is an open circuit between any of the segments, replace the armature.



9. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attracted to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



10. Use an ohmmeter check for continuity between the commutator (A) and the armature coil core (B), and the between the commutator and the armature shaft (C). If there is continuity, replace the armature.



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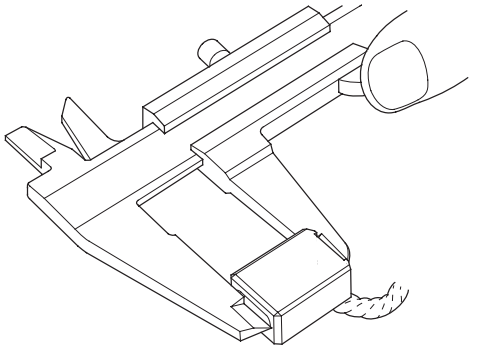
Starter Overhaul (cont'd)

Starter Brush Inspection

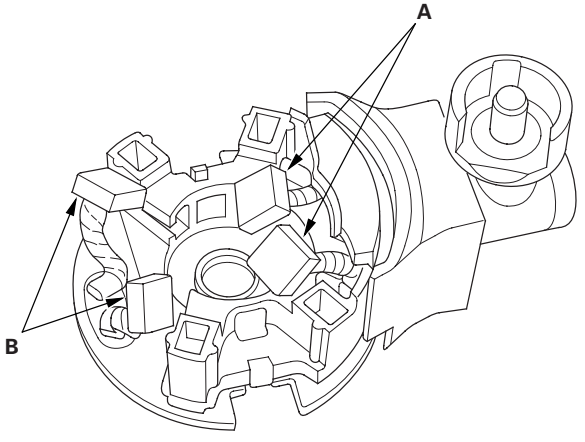
11. Measure the brush length. If it is shorter than the service limit, replace the brush holder assembly.

Brush Length
Standard (New): 11.1—11.5 mm (0.44—0.45 in.)
Service Limit: 4.3 mm (0.17 in.)



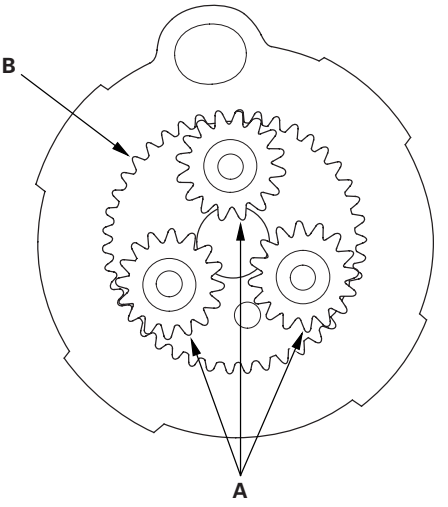
Starter Brush Holder Test

12. Check for continuity between the (+) brushes (A) and the (—) brushes (B). If there is continuity, replace the brush holder assembly.



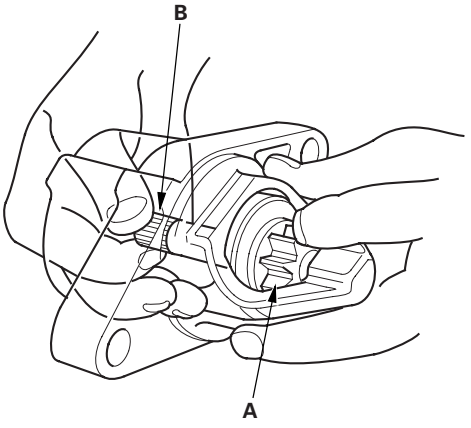
Planetary Gear Inspection

13. Check the planetary gears (A) and the internal ring gear (B). Replace them if they are worn or damaged.



Overrunning Clutch Inspection

14. While holding the drive gear (A), turn the gear shaft (B) counterclockwise. Check that the drive gear comes out to the other end. If the drive gear does not move smoothly, replace the gear cover assembly.



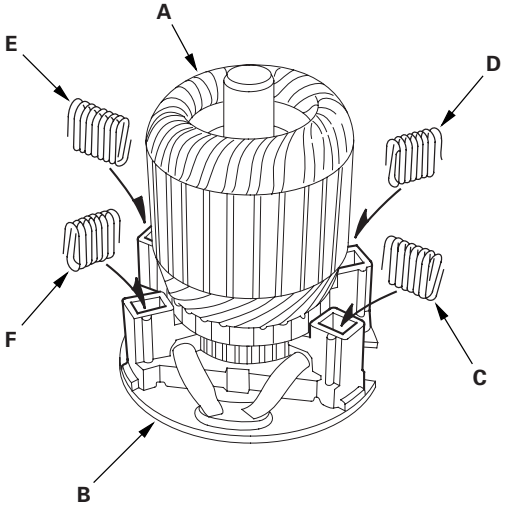
15. While holding the drive gear, turn the gear shaft clockwise. The gear shaft should turn freely. If the gear shaft does not turn freely, replace the gear cover assembly.

16. If the drive gear is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately.
Check the condition of the flywheel ring gear (M/T model), or the torque converter ring gear (A/T model) to see if the starter drive gear teeth are damaged.

Starter Reassembly

17. Install the brush into the brush holder, and set the armature (A) in the brush holder (B).

NOTE: To seat the new brushes, slip a strip of #500 or #600 sandpaper, with the grit side up, between the commutator and each brush, and smoothly turn the armature. The contact surface of the brushes will be sanded to the same contour as the commutator.

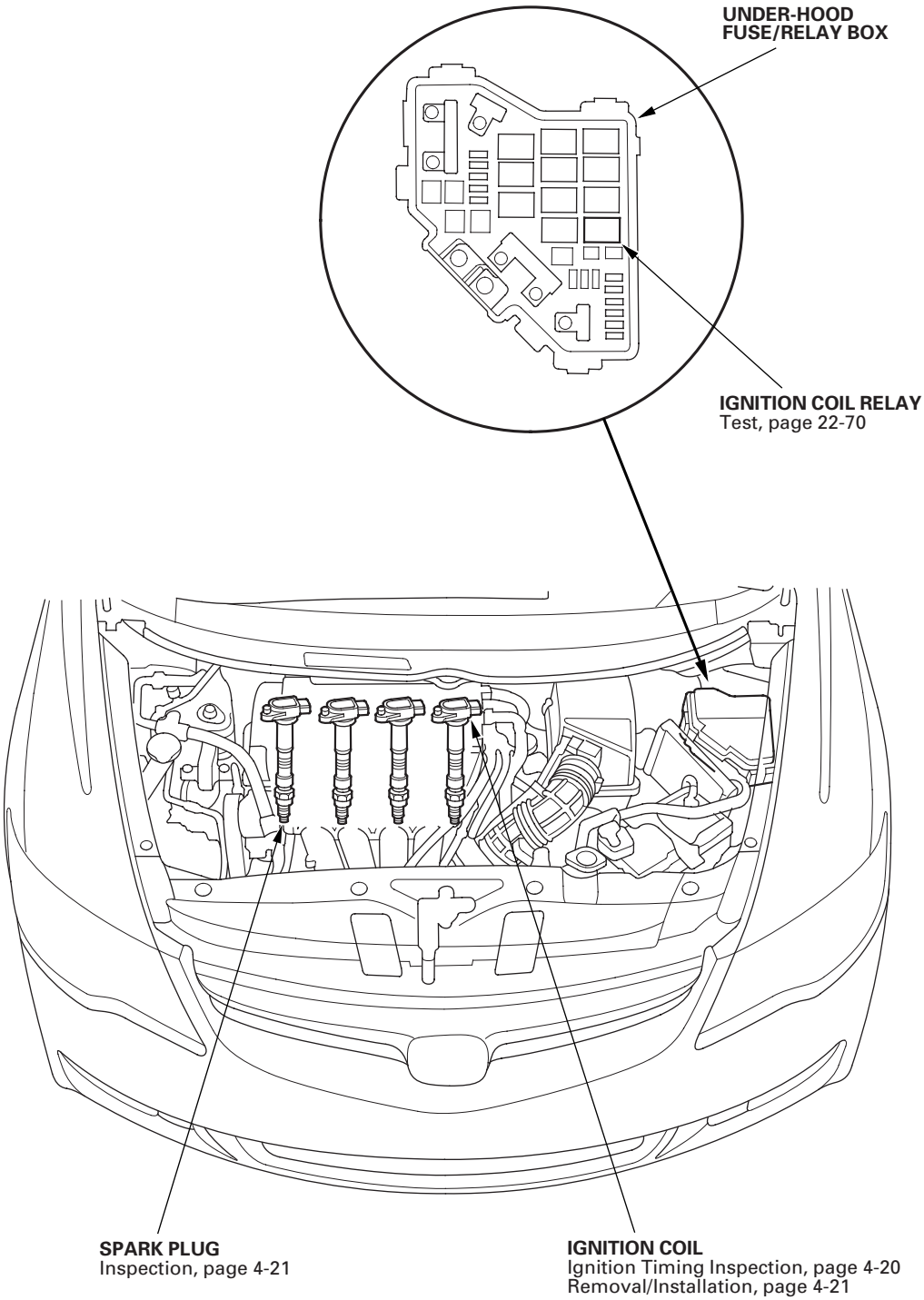


18. While squeezing a spring (C), insert it in the hole on the brush holder, and push it until it bottoms. Repeat this for the other three springs (D, E, and F).

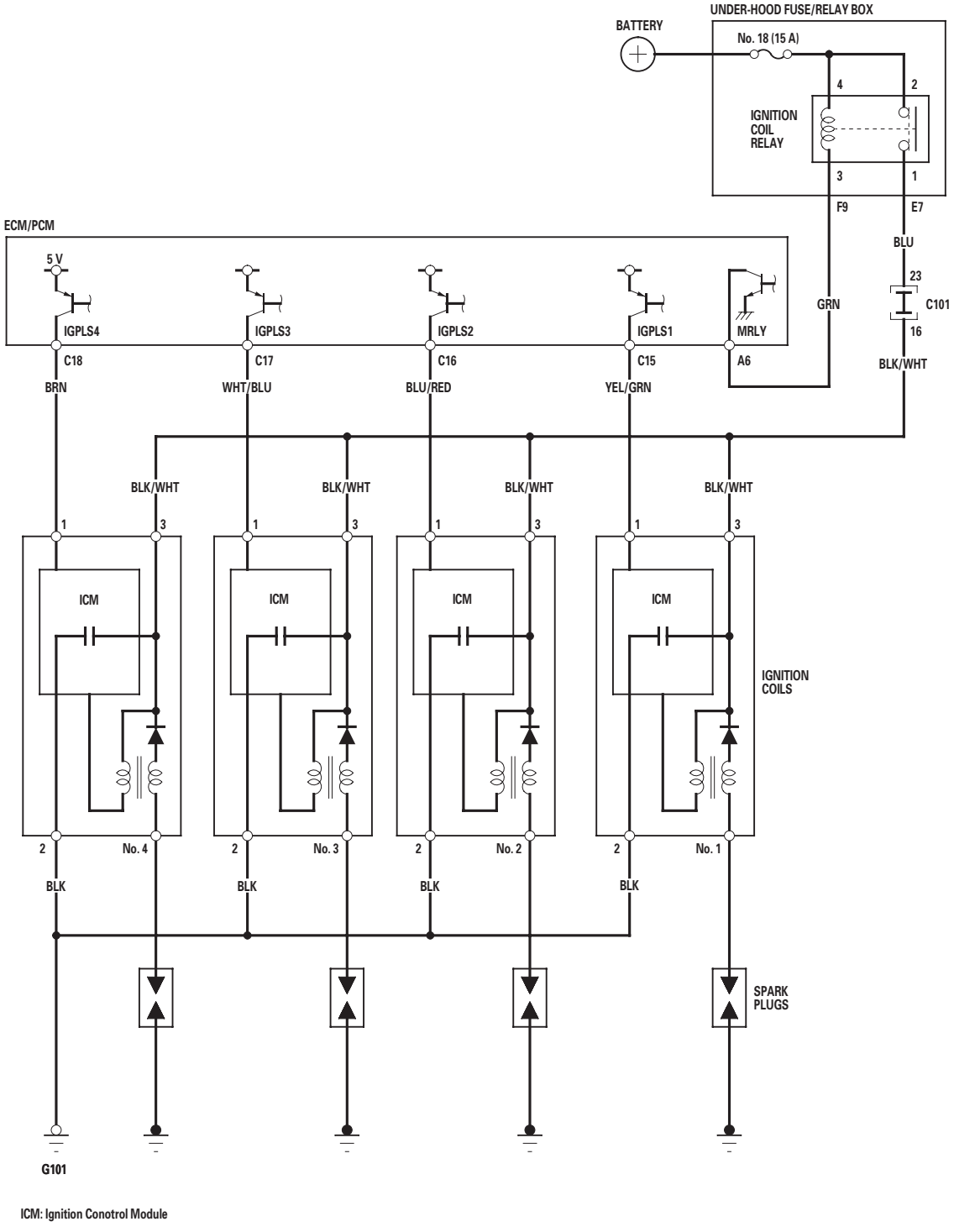
19. Install the armature and the brush holder assembly into the housing.

NOTE: Make sure the armature stays in the holder.

Component Location Index



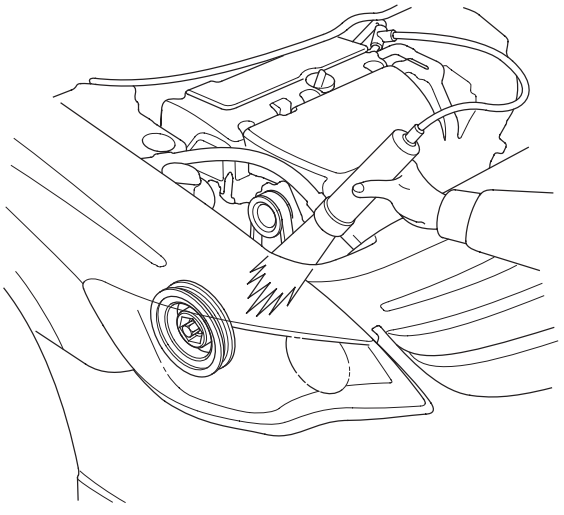
Circuit Diagram



ICM: Ignition Conotrol Module

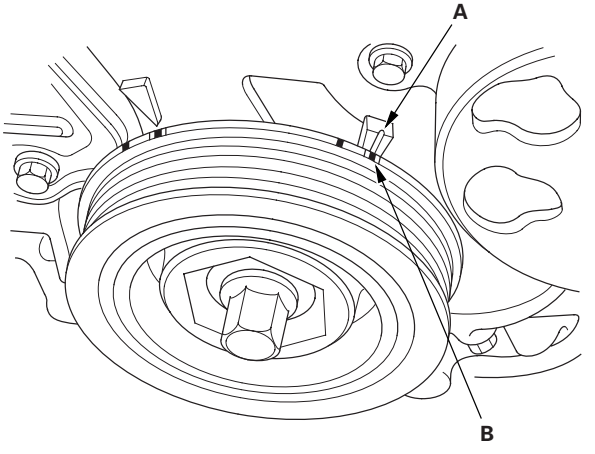
Ignition Timing Inspection

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
4. Check for DTCs (see page 11-3). If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Start the engine. Hold the engine speed at 3,000 rpm with no load (in N or P (A/T model) or neutral (M/T model)) until the radiator fan comes on, then let it idle.
6. Check the idle speed (see page 11-309).
7. Jump the SCS line with the HDS.
8. Connect the timing light to the service loop (white tape).



9. Aim the light toward the pointer (A) on the cam chain case. Check the ignition timing under a no load condition (headlights, blower fan, rear window defogger, and air conditioner are turned off).

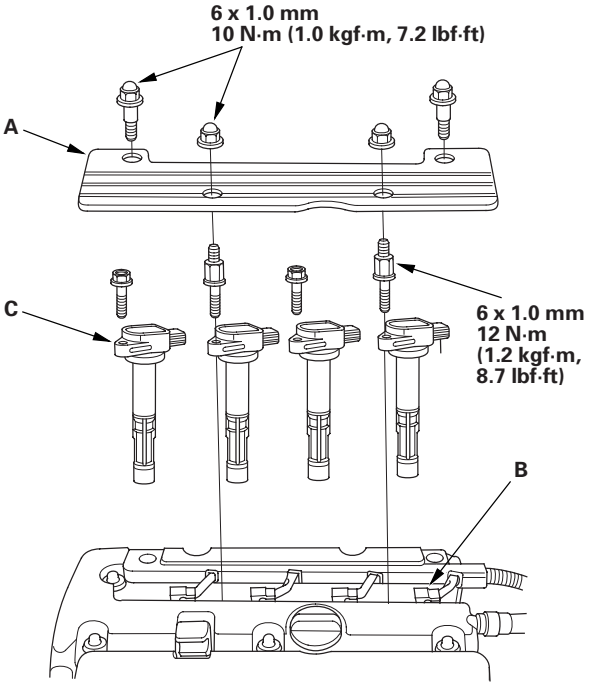
Ignition Timing
M/T model: 8 °±2 °BTDC (RED mark (B)) at idle in neutral
A/T model: 8 °±2 °BTDC (RED mark (B)) at idle in N or P



10. If the ignition timing differs from the specification, check the cam timing. If the cam timing is OK, update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the system work properly, and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228).
11. Disconnect the HDS and the timing light.

Ignition Coil Removal/Installation

1. Remove the ignition coil cover (A).



2. Disconnect the ignition coil connectors (B), then remove the ignition coils (C).

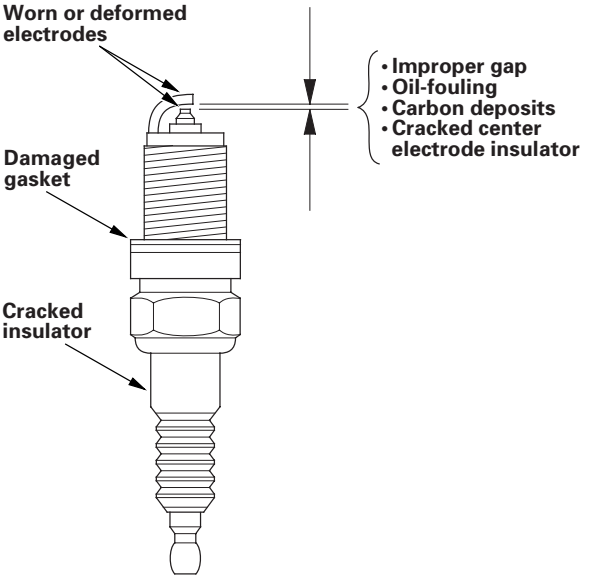
3. Install the ignition coils in the reverse order of removal.

Spark Plug Inspection

1. Remove the spark plugs, then inspect the electrodes and the ceramic insulator.

   - Burned or worn electrodes may be caused by these conditions:
     – Advanced ignition timing
     – Loose spark plug
     – Plug heat range too hot
     – Insufficient cooling

   - Fouled plugs may be caused by these conditions:
     – Retarded ignition timing
     – Oil in combustion chamber
     – Incorrect spark plug gap
     – Plug heat range too cold
     – Excessive idling/low speed running
     – Clogged air cleaner element
     – Deteriorated ignition coils



2. If the spark plug electrode is dirty or contaminated, clean the electrode with a plug cleaner.

   NOTE:
   - Do not use a wire brush or scrape the iridium electrode since this will damage the electrode.
   - When using a sand blaster spark plug cleaner, do not clean for more than 20 seconds to avoid damaging the electrode.

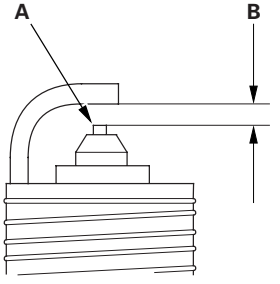
(cont'd)

Spark Plug Inspection (cont'd)

3. Replace the plug at the specified interval or if the center electrode (A) is rounded, or if the spark plug gap (B) is out of specification. Use only the listed spark plugs.

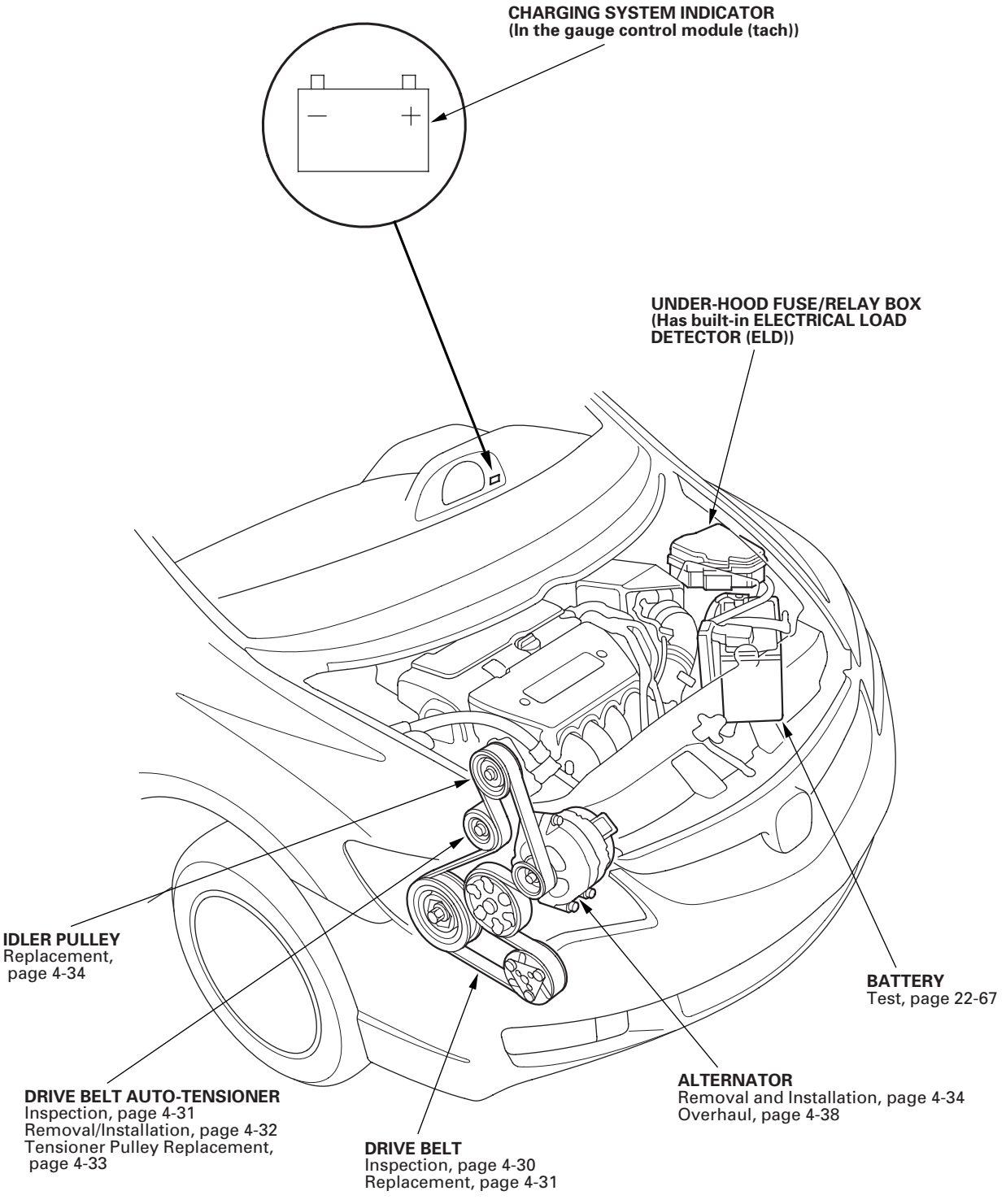
   NOTE: Do not adjust the gap of iridium tip plugs.

   Spark Plugs
   K20Z2 engine
   DENSO: SKJ20DR-M11
   K20Z3 engine
   DENSO: SK22PR-M11S
   Electrode Gap
   Standard(New): 1.0—1.1 mm (0.039—0.043 in.)



4. Apply a small amount of anti-seize compound to the plug threads, and screw the plugs into the cylinder head, finger-tight. Torque them to 18 N·m (1.8 kgf·m, 13 lbf·ft).

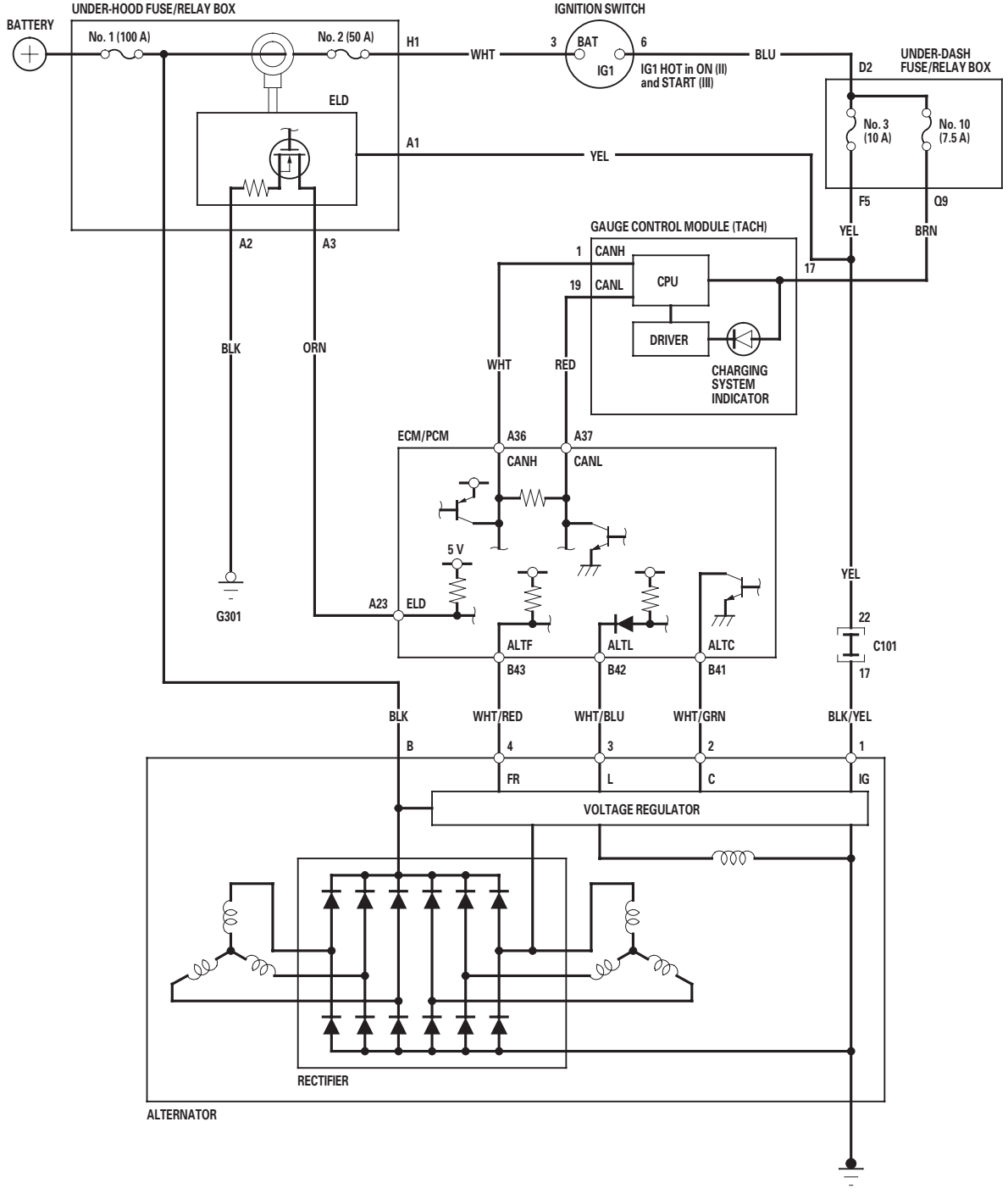
Component Location Index



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Charging system indicator does not come on with the ignition switch in ON (II)	Troubleshoot the charging system indicator circuit (see page 4-26).	
Charging system indicator stays on	1. Troubleshoot the charging system indicator circuit (see page 4-26). 2. Check for a broken drive belt (see page 4-30). 3. Check the drive belt auto-tensioner (see page 4-31). 4. Check for PGM-FI DTCs (see page 11-3).	
Battery discharged	1. Check for a poor connection at the battery terminal. 2. Check for a broken drive belt (see page 4-30). 3. Test the battery (see page 22-67). 4. Troubleshoot the alternator and regulator circuit (see page 4-28). 5. Check the drive belt auto-tensioner (see page 4-31). 6. Check for excessive parasitic electrical current draw with the ignition switch to LOCK (0), and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for same models.	
Battery overcharged	1. Test the battery (see page 22-67). 2. Troubleshoot the alternator and regulator circuit (see page 4-28).	

Circuit Diagram



Charging System Indicator Circuit Troubleshooting

NOTE: Check for stored DTCs in the PGM-FI before troubleshooting the charging system indicator.

1. Turn the ignition switch to ON (II).

   Does the charging system indicator come on?

   YES—Go to step 2.

   NO—Go to step 14.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

   Does the charging system indicator go off?

   YES—Charging system indicator circuit is OK. Go to the alternator and regulator circuit troubleshooting (see page 4-28). ■

   NO—Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see page 22-241).

   Does the charging system indicator flash?

   YES—Go to step 4.

   NO—Replace the gauge control module (tach) (see page 22-277). ■

4. Turn the ignition switch to LOCK (0).

5. Disconnect the alternator 4P connector.

6. Turn the ignition switch to ON (II).

   Does the charging system indicator go off?

   YES—Replace the alternator (see page 4-34), or repair the alternator (see page 4-38). ■

   NO—Go to step 7.

7. Turn the ignition switch to LOCK (0).

8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

9. Turn the ignition switch to ON (II).

10. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

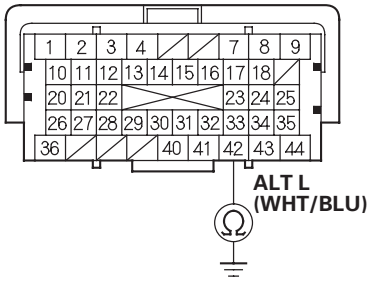
11. Jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

    NOTE: This step must be done to protect the ECM/PCM from damage.

12. Disconnect ECM/PCM connector B (44P).

13. Check for continuity between ECM/PCM connector terminal B42 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between alternator 4P connector terminal No. 3 and ECM/PCM connector terminal B42. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

14. Do the gauge control module self-diagnostic function procedure (see page 22-241).

    Does the charging system indicator flash?

    YES—Go to step 15.

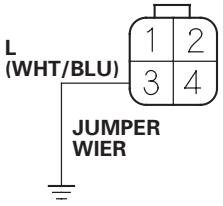
    NO—Replace the gauge control module (tach) (see page 22-277). ■

15. Turn the ignition switch to LOCK (0).

16. Disconnect the alternator 4P connector.

17. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

18. Turn the ignition switch to ON (II).

    Does the charging system indicator come on?

    YES—Replace the alternator (see page 4-34), or repair the alternator (see page 4-38). ■

    NO—Disconnect the jumper wire, then go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Connect the HDS to the DLC (see step 2 on page 11-3).

21. Turn the ignition switch to ON (II).

22. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

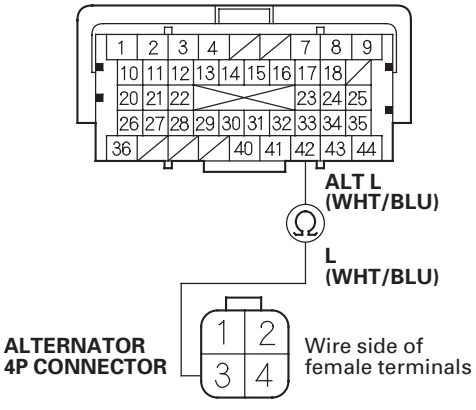
23. Jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

    NOTE: This step must be done to protect the ECM/PCM from damage.

24. Disconnect ECM/PCM connector B (44P).

25. Check for continuity between ECM/PCM connector terminal B42 and alternator 4P connector terminal No. 3.

ECM/PCM CONNECTOR B (44P)
Terminal side of female terminals



Is there continuity?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

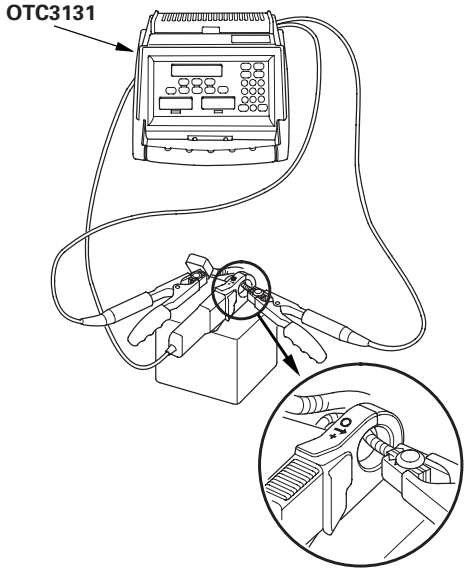
NO—Repair open in the wire between alternator 4P connector terminal No. 3 and ECM/PCM connector terminal B42. ■

Alternator and Regulator Circuit Troubleshooting

Special Tools Required
Alternator, Regulator, Battery & Starter tester OTC3131
Available through the Honda Canada Inc. Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

1. Make sure the battery connections are good and the battery is sufficiently charged.

2. Connect the alternator, regulator, battery & starter tester (OTC3131) to the battery as shown.



3. Start the engine. Hold the engine speed at 3,000 rpm with no load (in N or P (A/T model) or neutral (M/T model)) until the radiator fan comes on, then let it idle.

4. Do the CHARGING SYSTEM TEST.

   Does the display indicate the voltage is within 13.5— 15.1 V the amperage is 87.5 A or more?

   YES—Go to step 5.

   NO—If the voltage is less than 13.5 V, go to alternator control circuit troubleshooting (see page 4-29). If the voltage is over 15.1 V and amperage is less than 87.5 A, replace the alternator (see page 4-34) or repair the alternator (see page 4-38).

5. Check the diode condition on the display.

   Does the display indicate GOOD?

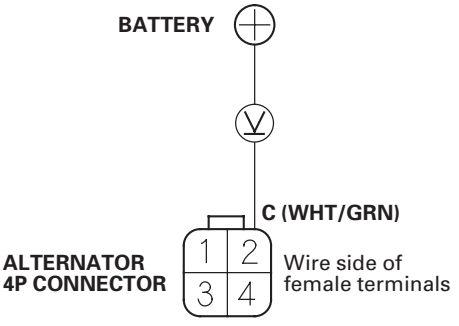
   YES—The diode is OK. Troubleshooting is complete. ■

   NO—If the display indicates BAD, replace the alternator (see page 4-34) or repair the alternator (see page 4-38), then retest.

   NOTE: If the display indicates N/A, the diode pattern could not be diagnosed. Repeat the test again. If test is complete, use multimeter to perform further pinpoint testing, then retest.

Alternator Control Circuit Troubleshooting

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
4. Check for DTCs (see page 11-3). If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Disconnect the alternator 4P connector.
6. Start the engine, and turn on the headlights to high beam.
7. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.



Is there 1 V or less?

YES—Go to step 11.

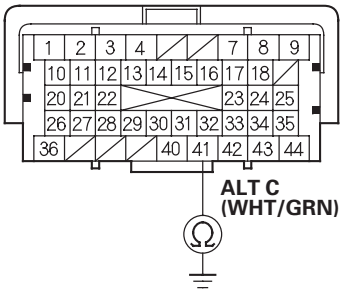
NO—Go to step 8.

8. Jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

   NOTE: This step must be done to protect the ECM/PCM from damage.

9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between ECM/PCM connector terminal B41 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between alternator 4P connector terminal No. 2 and ECM/PCM connector terminal B41. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

11. Jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

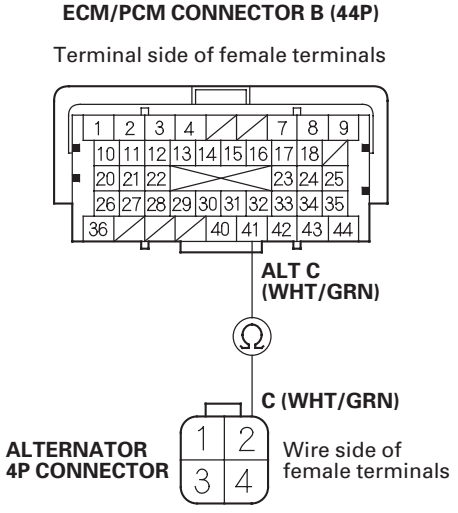
    NOTE: This step must be done to protect the ECM/PCM from damage.

12. Disconnect ECM/PCM connector B (44P).

(cont'd)

Alternator Control Circuit Troubleshooting (cont'd)

13. Check for continuity between ECM/PCM connector terminal B41 and alternator 4P connector terminal No. 2.



Is there continuity?

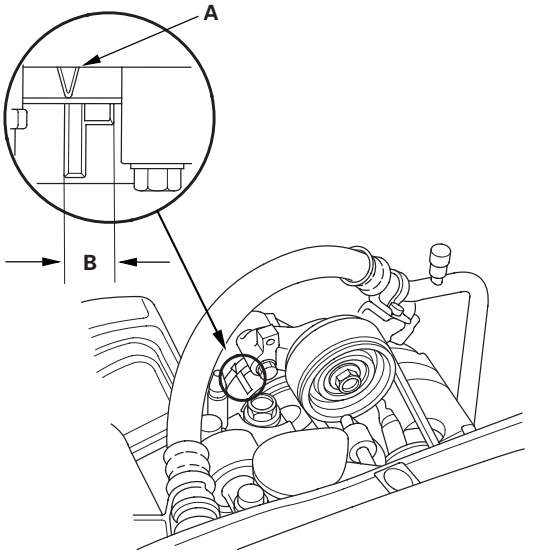
YES—Replace the alternator (see page 4-34), or repair the alternator (see page 4-38). ■

NO—Repair open in the wire between alternator 4P connector terminal No. 2 and ECM/PCM connector terminal B41. ■

Drive Belt Inspection

1. Inspect the belt for cracks or damage. If the belt is cracked or damaged, replace it (see page 4-31).

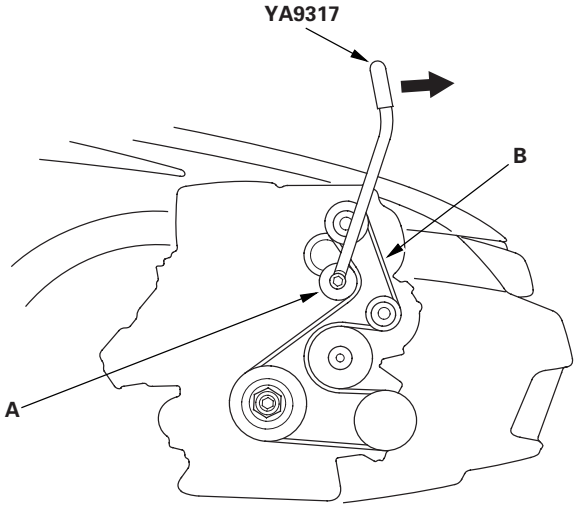
2. Check the position of the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see page 4-31).



Drive Belt Replacement

Special Tools Required
Belt tension release tool Snap-on YA9317 or equivalent, commercially available

1. Move the auto-tensioner (A) using the belt tension release tool to relieve tension from the drive belt (B), then remove the drive belt.



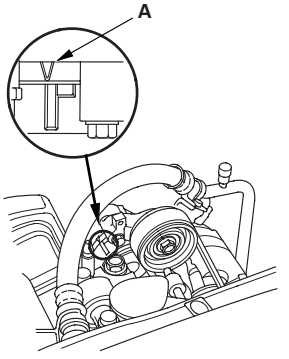
2. Install the new drive belt in the reverse order of removal.

Drive Belt Auto-tensioner Inspection

Special Tools Required
Belt tension release tool Snap-on YA9317 or equivalent, commercially available

1. Turn the ignition switch to ON (II), and make sure the A/C switch is OFF, then turn the ignition switch to LOCK (0).

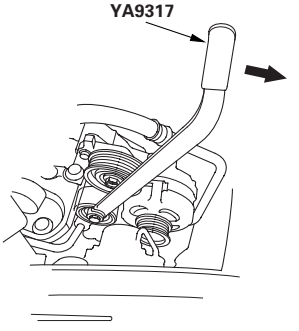
2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine then check the position again with the engine idling. If the position of the indicator moves or fluctuates very much, replace the auto-tensioner (see page 4-32).



3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the tensioner pulley (see page 4-33).

4. Remove the drive belt (see page 4-31).

5. Move the auto-tensioner within its limit using the belt tension release tool in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or you hear abnormal noise, replace the auto-tensioner (see page 4-32).

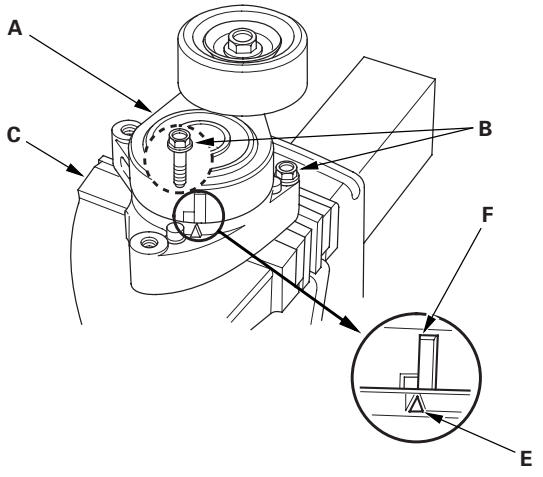


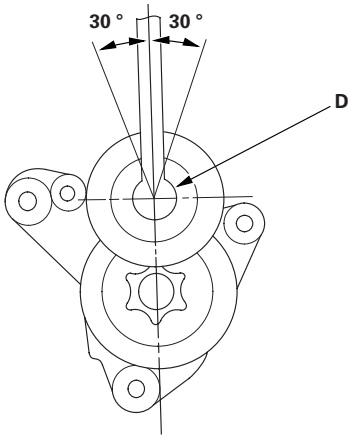
(cont'd)

Drive Belt Auto-tensioner Inspection (cont'd)

6. Remove the auto-tensioner (see page 4-32).

7. Clamp the auto-tensioner (A) by using two 8 mm bolts (B) and a vise (C) as shown. Do not clamp the auto-tensioner itself.





8. Set the torque wrench (D) on the pulley bolt, and align it as shown.

9. Align the indicator's pointer (E) on the tensioner base with center mark (F) on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.

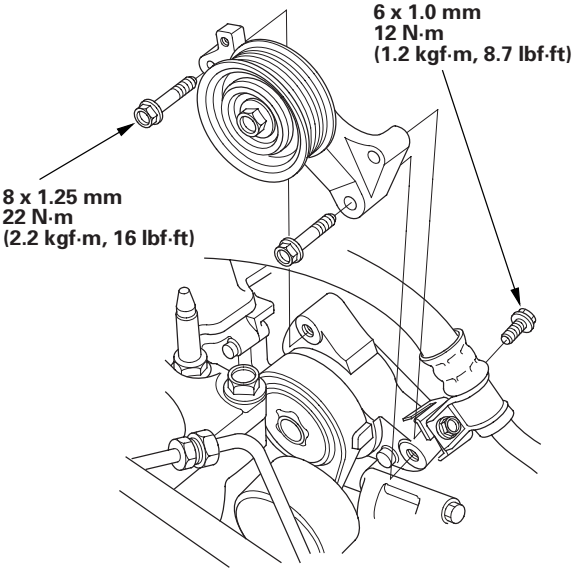
   NOTE: If the indicator exceeds the center mark, recheck the torque.

   Auto-tensioner Spring Torque:
   32.5—39.7 N·m (3.31—4.05 kgf·m, 23.9—29.3 lbf·ft)

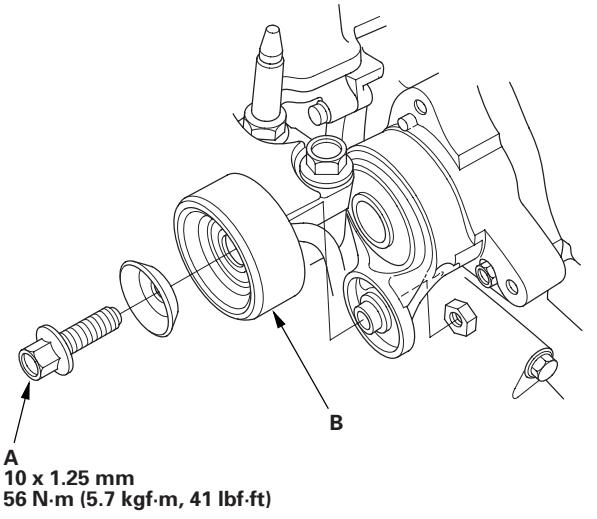
Drive Belt Auto-tensioner Removal/ Installation

1. Remove the drive belt (see page 4-31).

2. Remove the idler pulley base.



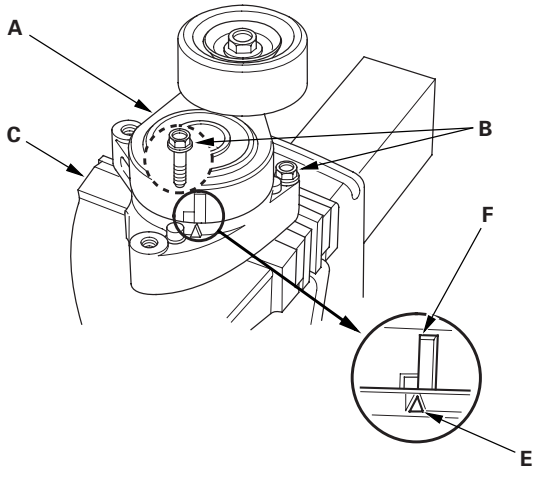
3. Remove the pulley bolt (A), then remove the tensioner pulley (B).

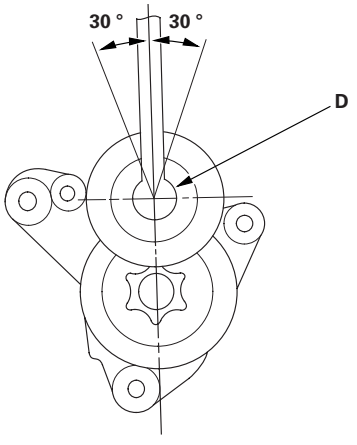


Drive Belt Auto-tensioner Inspection (cont'd)

6. Remove the auto-tensioner (see page 4-32).

7. Clamp the auto-tensioner (A) by using two 8 mm bolts (B) and a vise (C) as shown. Do not clamp the auto-tensioner itself.





8. Set the torque wrench (D) on the pulley bolt, and align it as shown.

9. Align the indicator's pointer (E) on the tensioner base with center mark (F) on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.

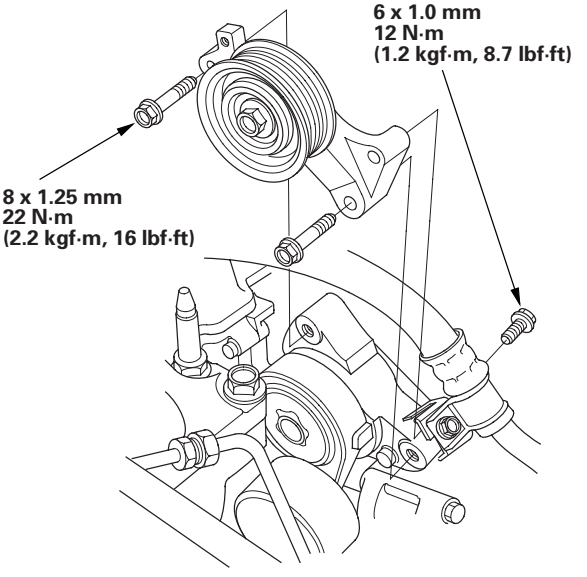
   NOTE: If the indicator exceeds the center mark, recheck the torque.

   Auto-tensioner Spring Torque:
   32.5—39.7 N·m (3.31—4.05 kgf·m, 23.9—29.3 lbf·ft)

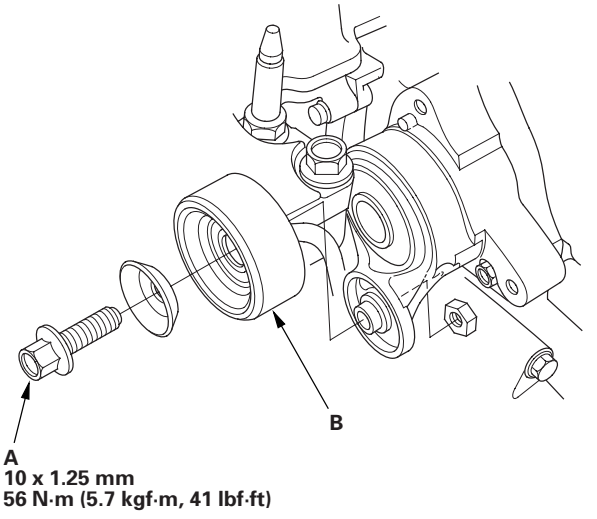
Drive Belt Auto-tensioner Removal/ Installation

1. Remove the drive belt (see page 4-31).

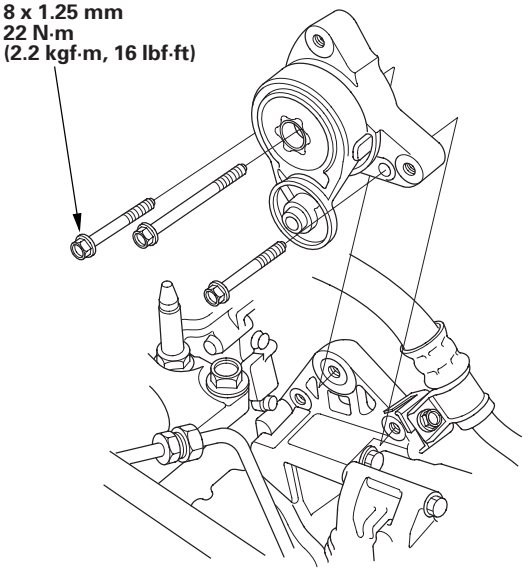
2. Remove the idler pulley base.



3. Remove the pulley bolt (A), then remove the tensioner pulley (B).



4. Remove the auto-tensioner.

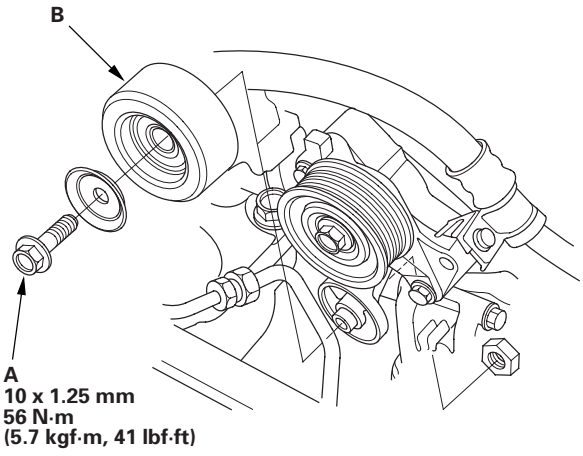


5. Install the auto-tensioner in the reverse order of removal.

Tensioner Pulley Replacement

1. Remove the drive belt (see page 4-31).

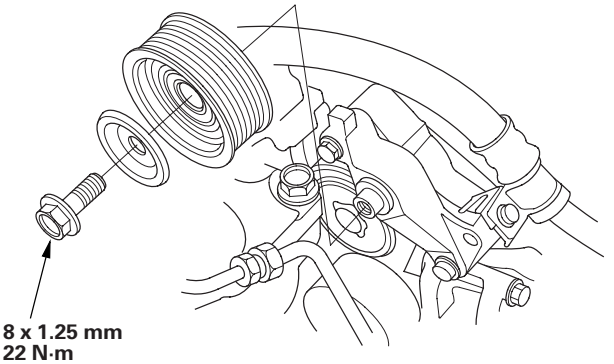
2. Remove the pulley bolt (A), then remove the tensioner pulley (B).



3. Install the tensioner pulley in the reverse order of removal.

Idler Pulley Replacement

1. Remove the drive belt (see page 4-31).
2. Remove the idler pulley.

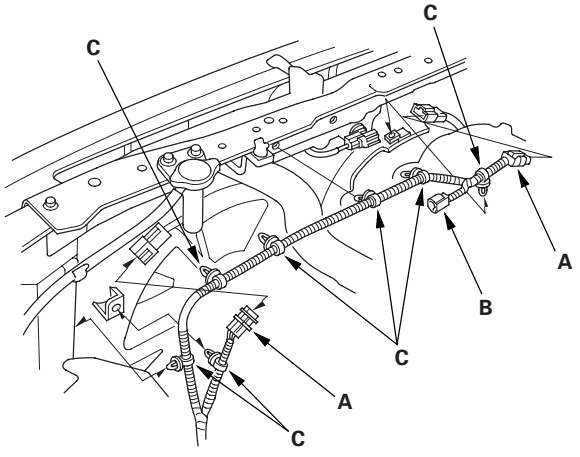


3. Install the idler pulley in the reverse order of removal.

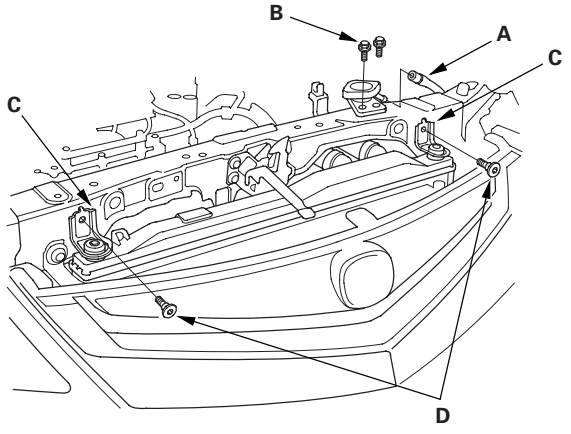
Alternator Removal and Installation

Removal

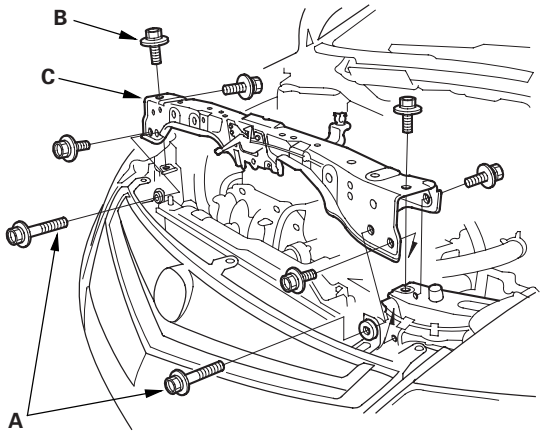
1. Do the battery terminal disconnection procedure (see page 22-68).
2. Remove the drive belt (see page 4-31).
3. Remove the front grille cover (see page 20-163).
4. Disconnect the fan motor connectors (A) and the hood switch connector (B), then remove the harness clamps (C).



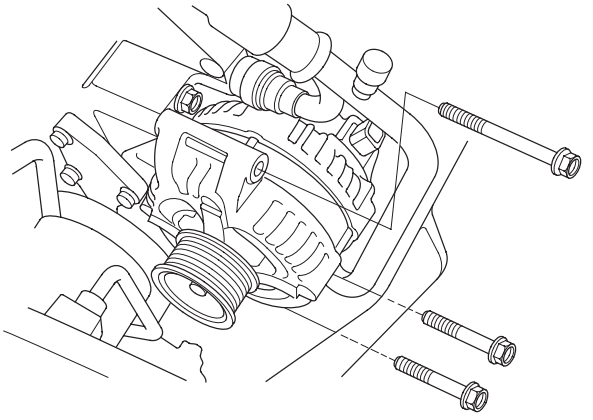
5. Disconnect the reservoir hose (A), and remove the radiator cap base mounting bolts (B), the radiator upper brackets (C) and the bolts (D).



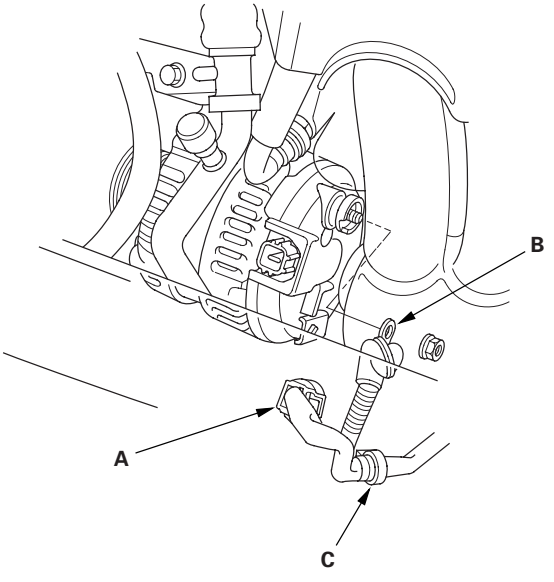
6. Remove the A/C condenser bracket mounting bolts (A) and the bulkhead mounting bolts (B), then remove the bulkhead (C).



7. Remove the three bolts securing the alternator.



8. Disconnect the alternator connector (A), and the positive alternator cable (B) and remove the harness clamp (C), then remove the alternator.

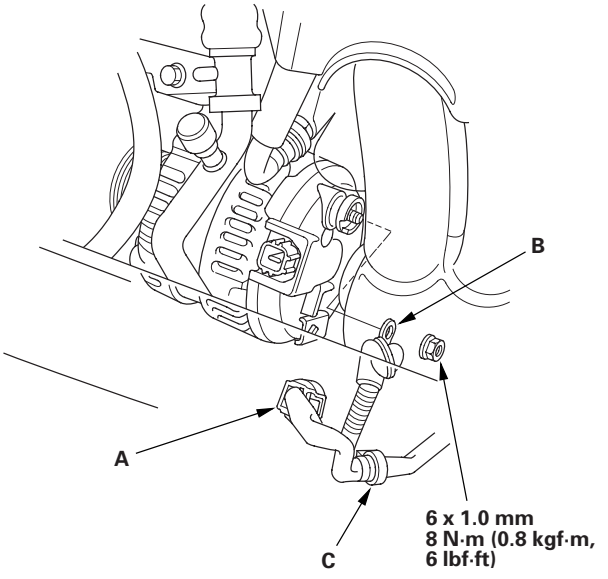


(cont'd)

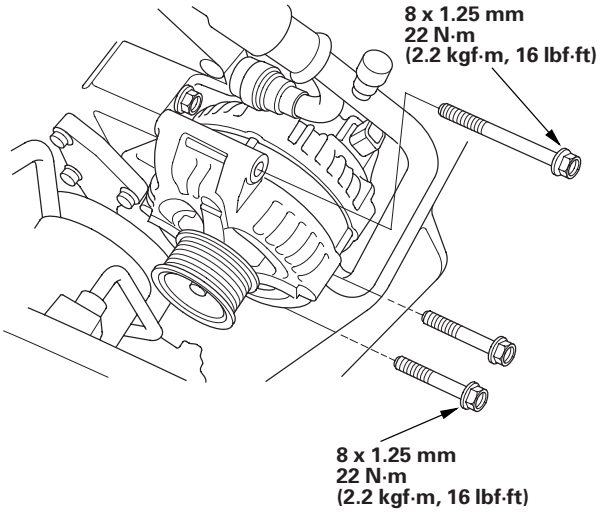
Alternator Removal and Installation (cont'd)

Installation

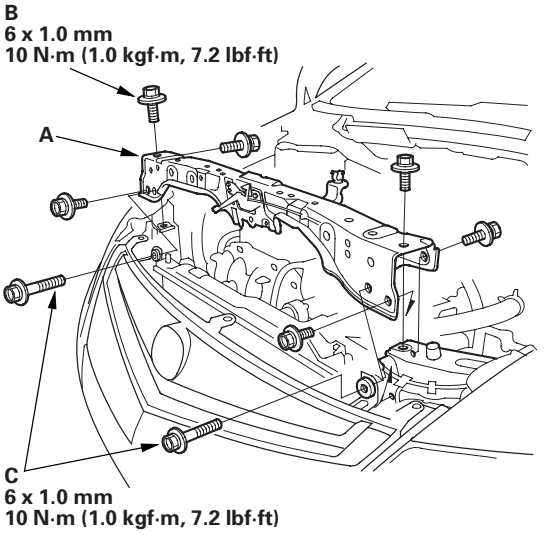
1. Install the alternator, then connect the alternator connector (A) and the positive alternator cable (B) and install the harness clamp (C). Make sure the crimped side of the ring terminal faces away from the alternator when you connect it.



2. Tighten the three bolts securing the alternator.

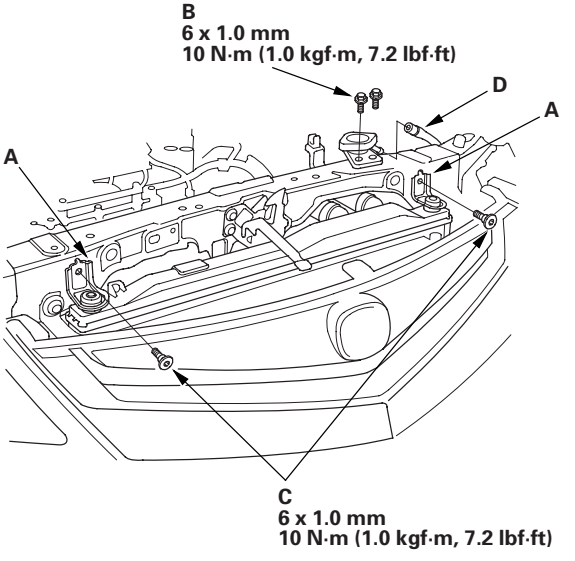


3. Install the bulkhead (A), then install the bulkhead mounting bolts (B) and the A/C condenser bracket mounting bolts (C).

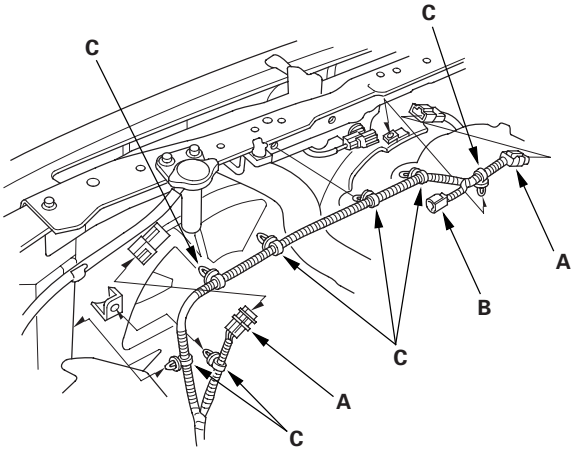


4. Apply body paint to the bulkhead mounting bolts.

5. Install the radiator upper brackets (A), the radiator cap base mounting bolts (B), and the bolts (C), and connect the reservoir hose (D).



6. Connect the fan motor connectors (A) and the hood switch connector (B), then install the harness clamps (C).



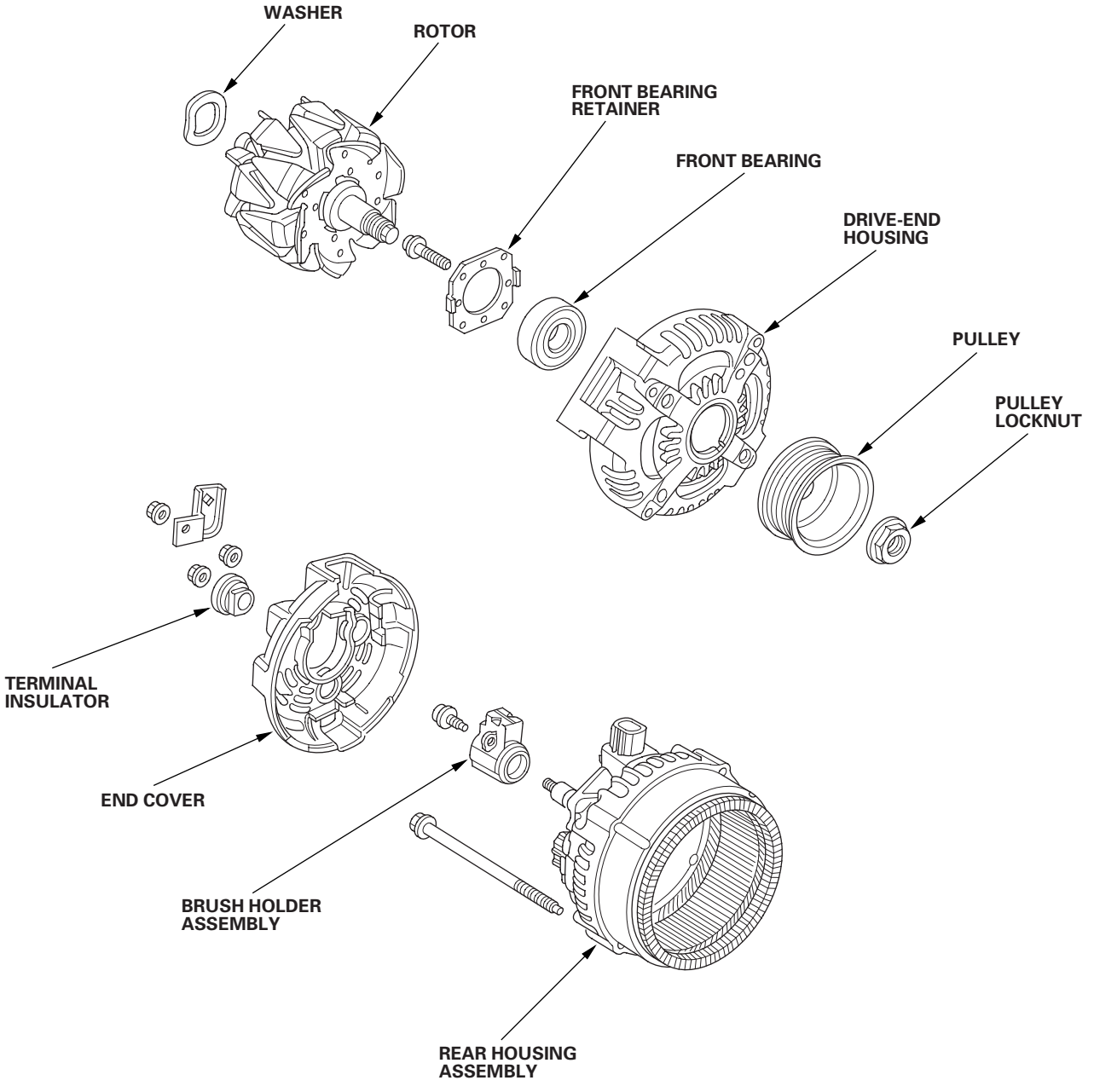
7. Install the front grille cover (see page 20-163).

8. Install the drive belt (see page 4-31).

9. Do the battery terminal reconnecting procedure (see page 22-68).

Alternator Overhaul

Exploded View



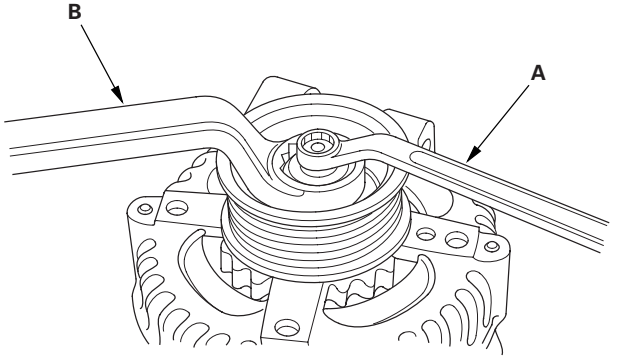
Special Tools Required
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

NOTE: Refer to the Exploded View as needed during this procedure.

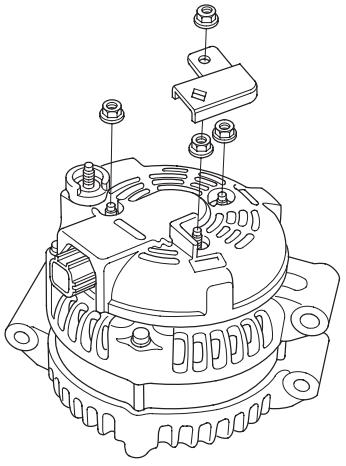
1. Test the alternator and regulator before you remove them (see page 4-28).

2. Remove the alternator (see page 4-34).

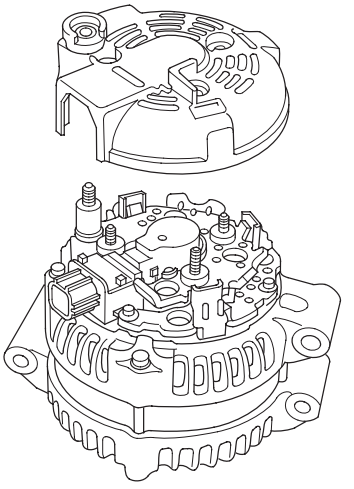
3. If the front bearing needs replacing, remove the pulley locknut with a 10 mm wrench (A) and a 22 mm wrench (B). If necessary, use an impact wrench.



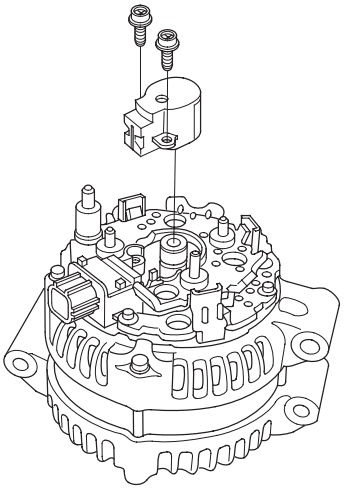
4. Remove the harness stay and the three flange nuts from the alternator.



5. Remove the end cover.



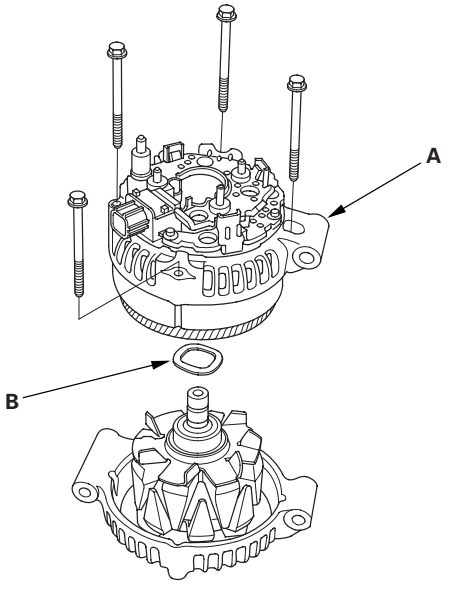
6. Remove the brush holder assembly.



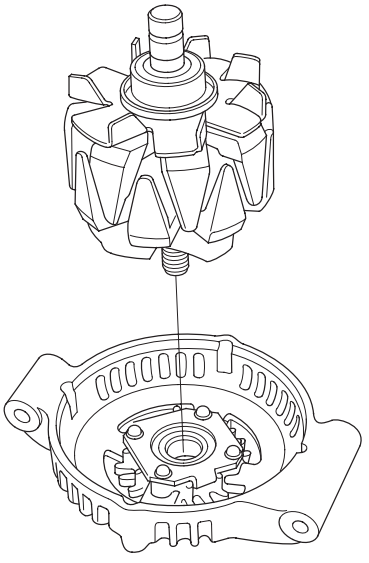
(cont'd)

Alternator Overhaul (cont'd)

7. Remove the four through bolts, then remove the rear housing assembly (A), and washer (B).



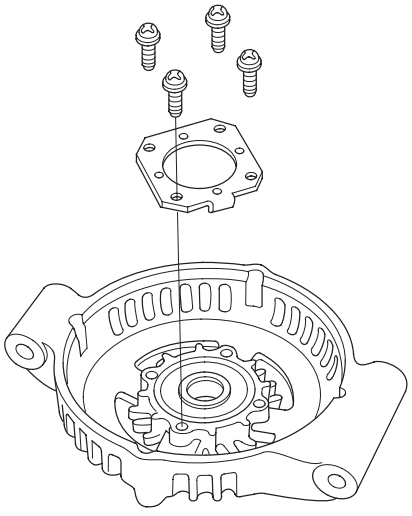
8. If you are not replacing the front bearing, go to step 13. Remove the rotor from the drive-end housing.



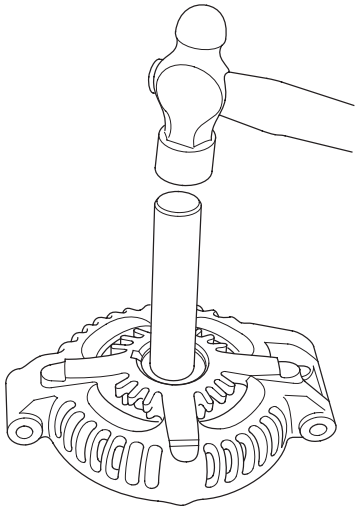
9. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive-end housing for seizure marks.

   - If the rotor is damaged, replace the rotor assembly.
   - If the rotor is OK, go to step 10.

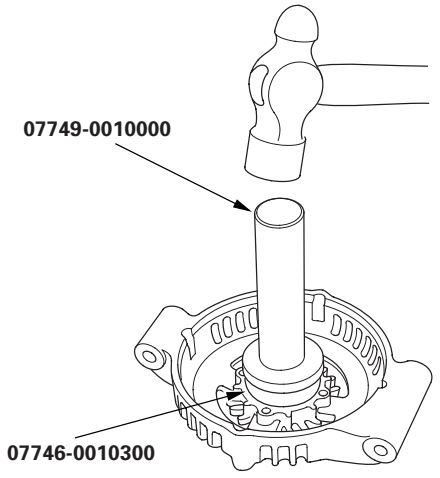
10. Remove the front bearing retainer.



11. Drive out the front bearing with a brass drift and a hammer.



12. Install a new front bearing in the drive-end housing with a hammer, the driver, and the attachment, 42 x 47 mm.

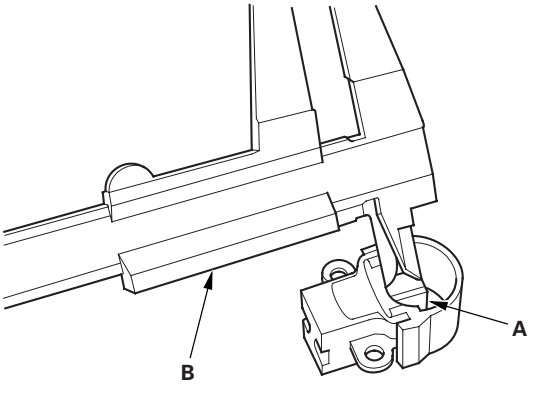


Alternator Brush Inspection

13. Measure the length of both brushes (A) with a vernier caliper (B).

- If either brush is shorter than the service limit, replace the brush holder assembly.
- If brush length is OK, go to step 14.

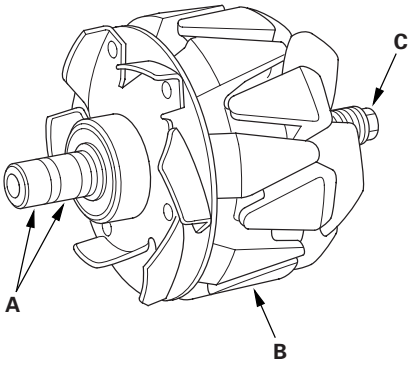
Alternator Brush Length
Standard (New): 10.5 mm (0.41 in.)
Service Limit: 1.5 mm (0.06 in.)



Rotor Slip Ring Test

14. Check for continuity between the slip rings (A).

- If there is continuity, go to step 15.
- If there is no continuity, replace the rotor assembly.



15. Check for continuity between each slip ring and the rotor (B) and the rotor shaft (C).

- If there is no continuity, replace the rear housing assembly, and go to step 16.
- If there is continuity, replace the rotor assembly.

(cont'd)

Alternator Overhaul (cont'd)

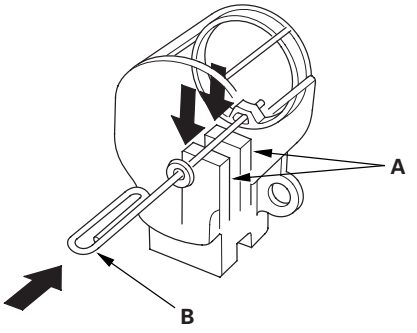
Alternator Reassembly

16. If you removed the pulley, put the rotor in the drive-end housing, then tighten its locknut to 110 N·m (11.2 kgf·m, 81.0 lbf·ft).

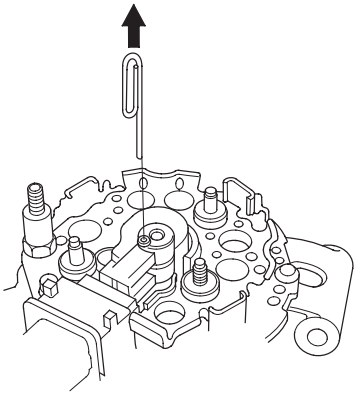
17. Remove any grease or any oil from the slip rings.

18. Put the rear housing assembly and the drive-end housing/rotor assembly together, tighten the four through bolts.

19. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.6 mm (0.06 in.) diameter) to hold them there.



20. Install the brush holder assembly, and pull out the pin or drill bit.

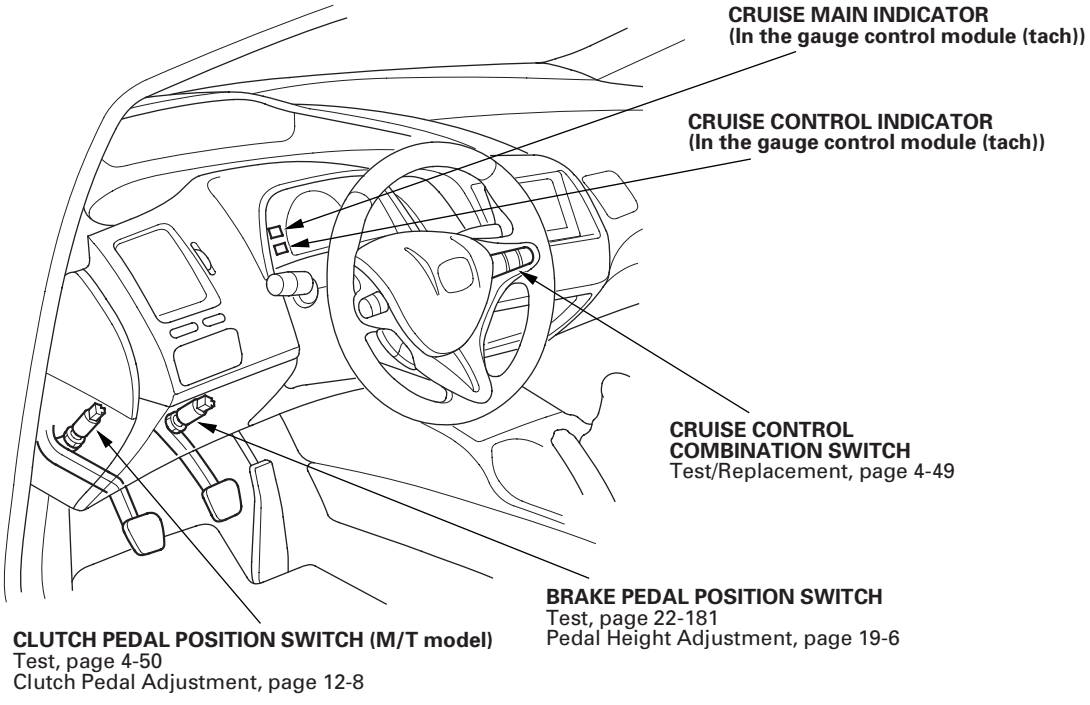


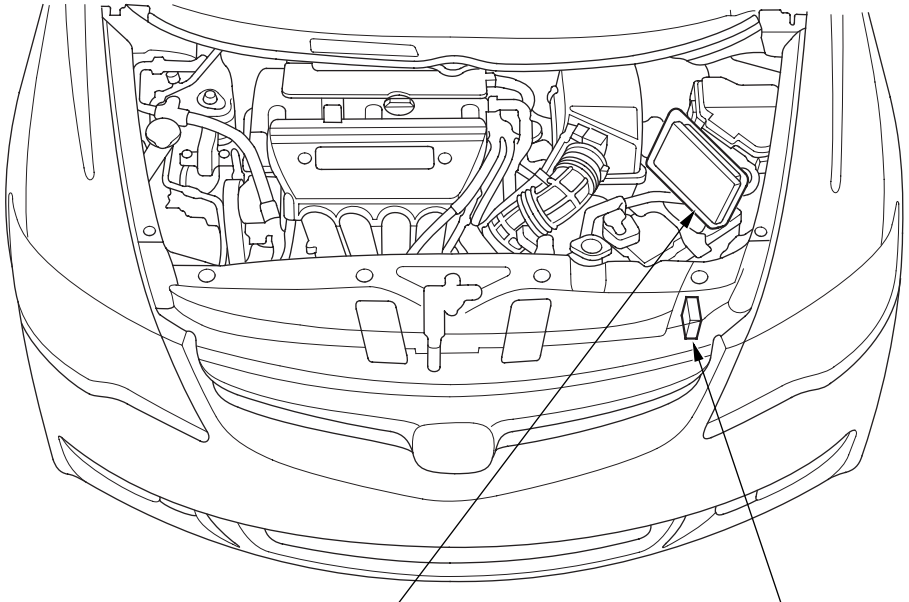
21. Install the end cover.

22. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.

23. Install the alternator (see page 4-36) and the drive belt (see page 4-31).

Component Location Index



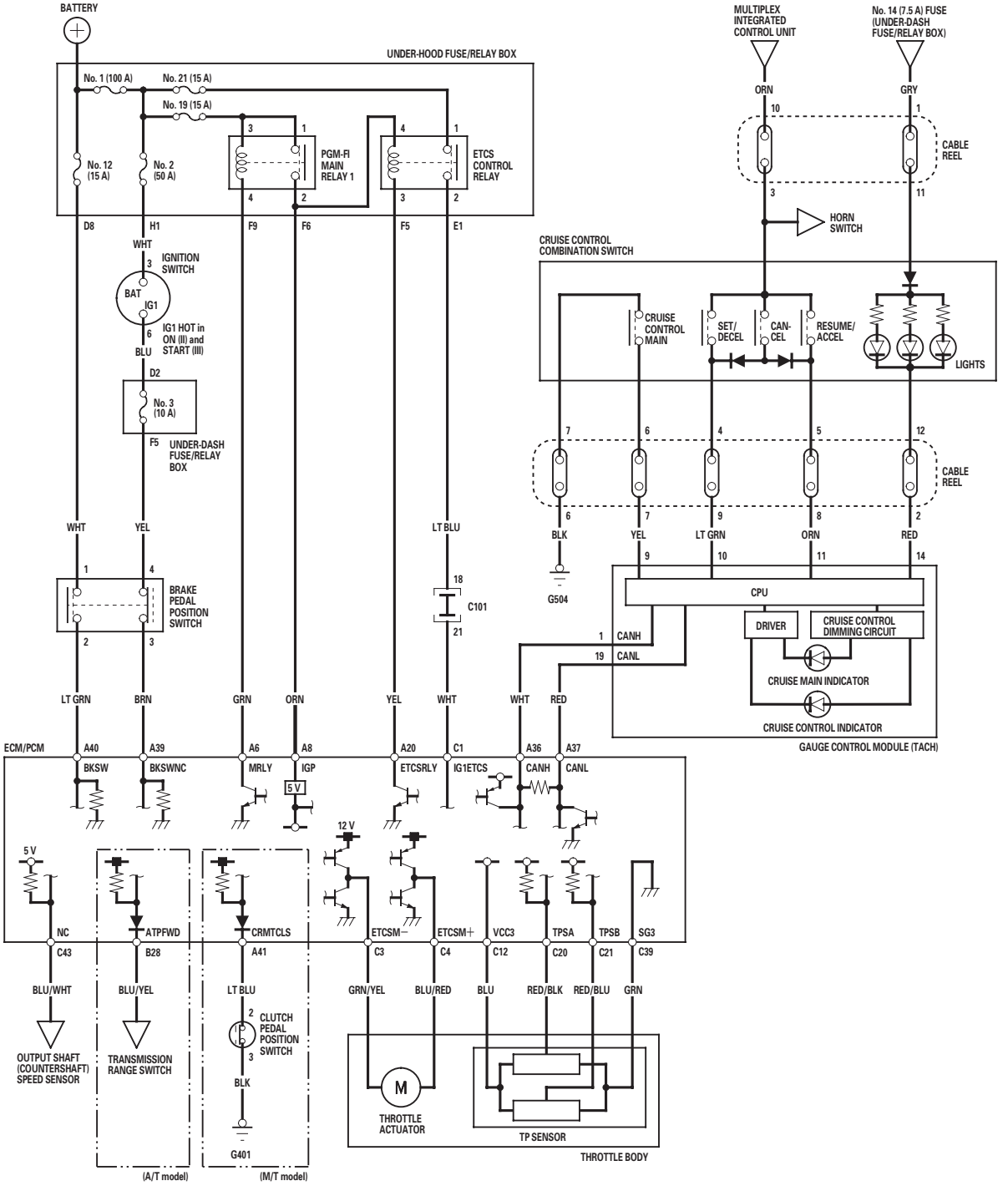


Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	1. Check for PGM-FI DTCs (see page 11-3). 2. Check the No. 3 (10 A) fuse in the under-dash fuse/relay box. 3. Do the cruise control combination switch test (see page 4-49). 4. Do the cruise control input test (see page 4-47).	Poor ground G101 (A/T model) or G401 (M/T model)
Cruise control can be set, but the cruise main indicator does not come on	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the gauge control module self-diagnostic function procedure (see page 22-241). 3. Do the cruise control input test (see page 4-47). Test the cruise control main switch signal input.	Faulty gauge control module (tach)
Cruise control can be set, but the cruise control indicator does not come on	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the gauge control module self-diagnostic function procedure (see page 22-241). 3. Do the cruise control input test (see page 4-47). Test the cruise control indicator signal input.	Faulty gauge control module (tach)
Vehicle does not accelerate accordingly when the resume/accel button is pressed	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the cruise control combination switch test (see page 4-49). 3. Do the cruise control input test (see page 4-47). Test the cruise control resume/accel switch signal input.	Open circuit, loose or disconnected terminal: ORN
Set speed does not cancel when the brake pedal is pressed	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the brake pedal position switch test (see page 22-181). 3. Do the cruise control input test (see page 4-47). Test the brake pedal position switch signal input.	• Short to power on the BRN wire • Faulty brake pedal position switch
Set speed does not cancel (engine rpm stays high) when the clutch pedal is pressed (M/T model)	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the clutch pedal position switch test (see page 4-50). 3. Do the cruise control input test (see page 4-47). Test the clutch pedal position switch signal input.	• Short to ground in the LT BLU wire • Faulty clutch pedal position switch
Set speed does not cancel when the cruise control main button is pressed	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the cruise control combination switch test (see page 4-49). 3. Do the cruise control input test (see page 4-47). Test the cruise control main switch signal input.	Short to power on the YEL wire
Set speed does not cancel when the cancel button is pressed	1. Check for PGM-FI DTCs (see page 11-3). 2. Do the cruise control combination switch test (see page 4-49). 3. Do the cruise control input test (see page 4-47). Test the cruise control cancel switch signal input.	Open circuit, loose or disconnected terminals: LT GRN or ORN

Symptom	Diagnostic procedure	Also check for
Set speed does not resume when the resume/accel button is pressed (with the cruise control main button pressed on, and set speed temporarily canceled by pressing the brake pedal)	1. Check for PGM-FI DTCs (see page 11-3). 2. Check the brake pedal position switch adjustment (see page 19-6). 3. Do the cruise control combination switch test (see page 4-49). 4. Do the cruise control input test (see page 4-47). Test the cruise control resume/accel switch signal input. Test the brake pedal position switch signal input.	• Open circuit, loose or disconnected terminal: ORN • Faulty brake pedal position switch
Set speed does not resume when the resume/accel button is pressed (with the cruise control main button pressed on, and set speed temporarily canceled by pressing the clutch pedal) (M/T model)	1. Check for PGM-FI DTCs (see page 11-3). 2. Check the clutch pedal position switch adjustment (see page 12-8). 3. Do the cruise control combination switch test (see page 4-49). 4. Do the cruise control input test (see page 4-47). Test the cruise control resume/accel switch signal input. Test the clutch pedal position switch signal input.	• Open circuit, loose or disconnected terminal: ORN • Faulty clutch pedal position switch
With the ignition switch in ON (II), and the lighting switch turned on, the cruise control combination switch illumination does not come on	Check the cruise control combination switch (see page 4-49).	

Circuit Diagram



Cruise Control Input Test

NOTE: Always make sure that you have the latest Honda Diagnostic System (HDS) software before doing the input tests.

1. Connect the HDS to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
4. Go to PGM-FI, and check for DTCs (see page 11-3).
5. Do the following tests while monitoring parameters in the PGM-FI DATA LIST with the HDS.

   NOTE: Intermittent failures are often caused by loose circuit connections. While monitoring cruise control inputs, flex the circuit wires, and note if any of the test results change.

Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Brake pedal position switch signal	Brake pedal pressed, then released	CRUISE BRAKE SW should indicate OFF when the brake pedal is pressed and ON when the brake pedal is released.	• Faulty brake pedal position switch • Blown No. 3 (10 A) fuse in the under-dash fuse/relay box • An open in the wire between the ECM/PCM and the brake pedal position switch • A wire shorted to ground between the ECM/PCM and the brake pedal position switch
Clutch pedal position switch signal (M/T model)	Clutch pedal pressed, then released	SHIFT/CLUTCH SW should indicate ON when the clutch pedal is pressed and OFF when the clutch pedal is released.	• Faulty clutch pedal position switch • An open in the wire between the ECM and the clutch pedal position switch • A wire shorted to ground between the ECM and the clutch pedal position switch • Poor ground G401
Transmission range switch signal (A/T model)	Shift lever in D and S	SHIFT/CLUTCH SW should indicate ON in P, R, and N, and OFF in D and S.	• Faulty transmission range switch • An open in the wire between the PCM and the transmission range switch • A wire shorted to ground between the PCM and the transmission range switch • Poor ground G101
Cruise control main switch signal	Cruise control main switch pressed and released	CRUISE MASTER (MAIN) SW should indicate ON when the cruise control main button is pressed and OFF when the cruise control main button is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • An open in the wire between the gauge control module (tach) and the cruise control combination switch • A wire shorted to ground between the gauge control module (tach) and the cruise control combination switch • Poor ground G504

(cont'd)

Cruise Control Input Test (cont'd)

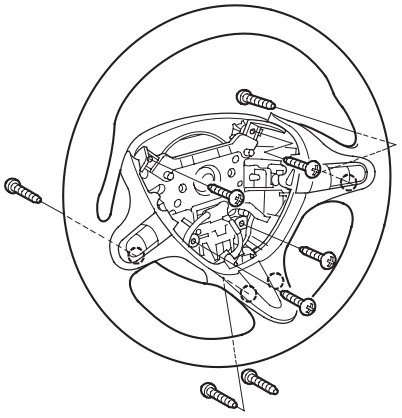
Signal to be tested	Test condition	Parameter: Desired result	Possible cause if result is not obtained
Set switch signal	Set/decel button pressed and released	CRUISE SET SW should indicate ON when the set/decel button is pressed and OFF when the set/decel button is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • An open in the wire between the gauge control module (tach) and the cruise control combination switch • A wire shorted to ground between the gauge control module (tach) and the cruise control combination switch
Resume switch signal	Resume/accel button pressed and released	CRUISE RESUME SW should indicate ON when the resume/accel button is pressed and OFF when the resume/ accel button is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • An open in the wire between the gauge control module (tach) and the cruise control combination switch • A wire shorted to ground between the gauge control module (tach) and the cruise control combination switch
Cancel switch signal	Cancel button pressed and released	CRUISE CANCEL SW should indicate ON when the cancel button is pressed and OFF when the cancel button is released.	• Faulty cruise control combination switch • Faulty gauge control module (tach) • An open in the wire between the gauge control module (tach) and the cruise control combination switch • A wire shorted to ground between the gauge control module (tach) and the cruise control combination switch
Cruise control indicator signal	Start the engine, press the cruise control main button on, and drive the vehicle to speeds over 40 km/h (25 mph). Set and cancel the cruise control.	CRUISE INDICATOR should indicate ON when the cruise control is set and OFF when the cruise control is canceled.	• Faulty ECM/PCM • Cruise control was not set at the test by other malfunction • Faulty gauge control module (tach)

Cruise Control Combination Switch Test/Replacement

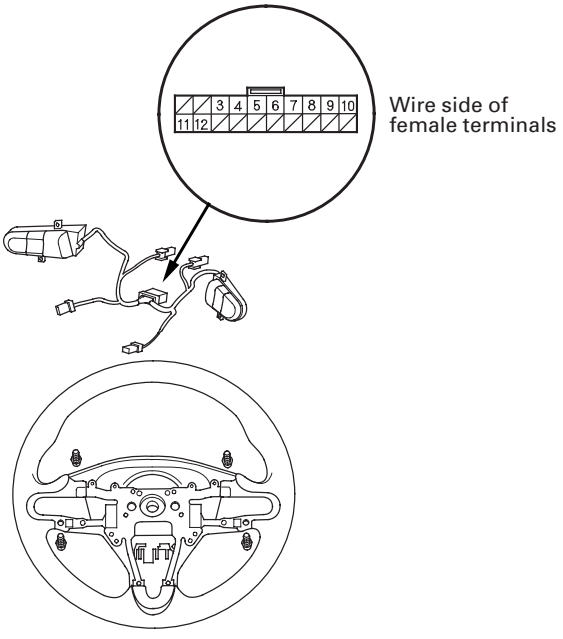
SRS components are located in this area. Review the SRS component locations (see page 24-11), and precautions and procedures (see page 24-13), before doing repairs or service.

1. Remove the driver's airbag (see page 24-188).

2. Remove the steering wheel trim.



3. Remove the cruise control combination switch.



4. Check for continuity between the terminals in each cruise control combination switch position according to the table.

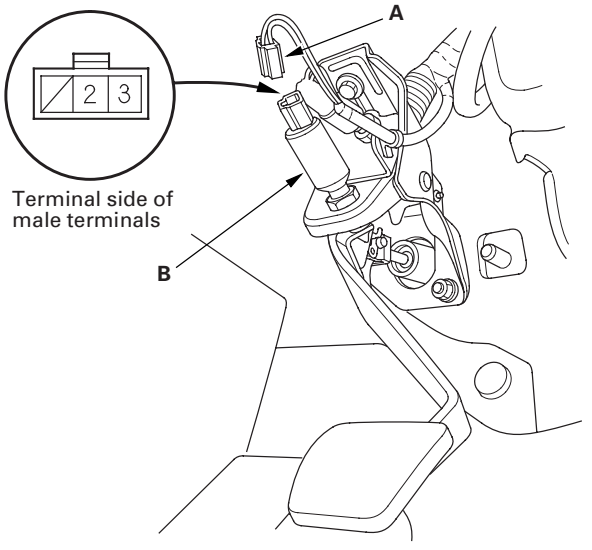
   - If there is continuity, and it matches the table, but the cruise control combination switch failure occurred on the cruise control input test, check and repair the wire harness on the switch circuit.
   - If there is no continuity in one or more positions, replace the cruise control combination switch.

Terminal / Position	6	7	3		5	4
Cruise control main switch (ON)	○	○				
Cruise control main switch (OFF)						
Set/decel (PRESSED)			○			○
Resume/accel (PRESSED)			○		○	
Cancel (PRESSED)			○		○	○

Clutch Pedal Position Switch Test

M/T model

1. Disconnect the clutch pedal position switch 3P connector (A).



2. Remove the clutch pedal position switch (B).

3. Check for continuity between the terminals according to the table.

   - If the continuity is not as specified, replace the clutch pedal position switch (see page 12-8).
   - If OK, install the clutch pedal position switch, and adjust the pedal height (see page 12-8).

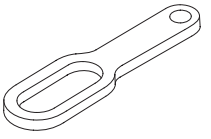
Terminal / Position	2	3
Clutch Pedal Position Switch (PRESSED)	○	○
Clutch Pedal Position Switch (RELEASED)		

Engine Mechanical

Engine Assembly

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAK-SNAA120	Universal Lifting Eyelet	1



①

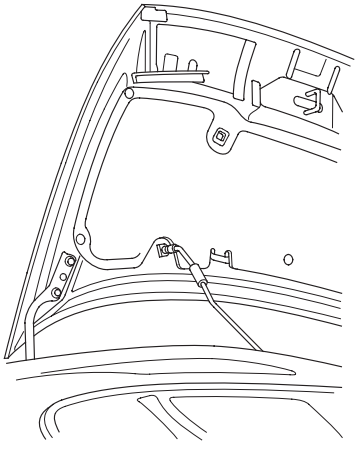
Engine Removal

Special Tools Required
- Engine hanger adapter VSB02C000015 *
- Engine support hanger, A and Reds AAR-T1256 *
- 2006 Civic engine hanger VSB02C000025 *
- Front subframe adapter VSB02C000016 *
- Universal lifting eyelet 07AAK-SNAA120

* : These special tools are available through Honda Canada Inc. Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the wire and terminals, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

1. Secure the hood in the wide open position (support rod in the lower hole).



2. Relieve the fuel pressure (see page 11-322).

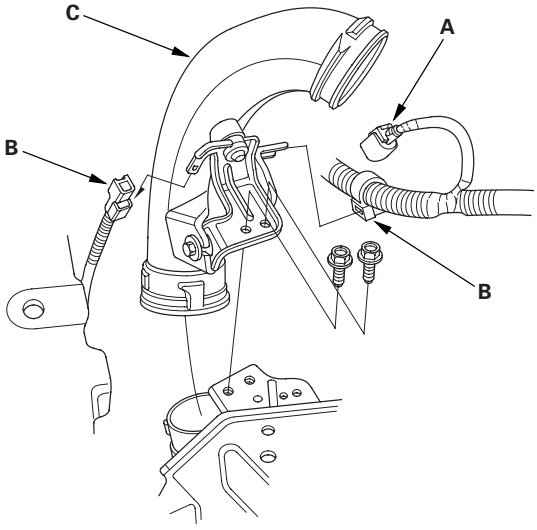
3. Do the battery removal procedure (see page 22-69).

4. Disconnect the vacuum hose and the breather pipe, then remove the intake air duct (see step 2 on page 9-3).

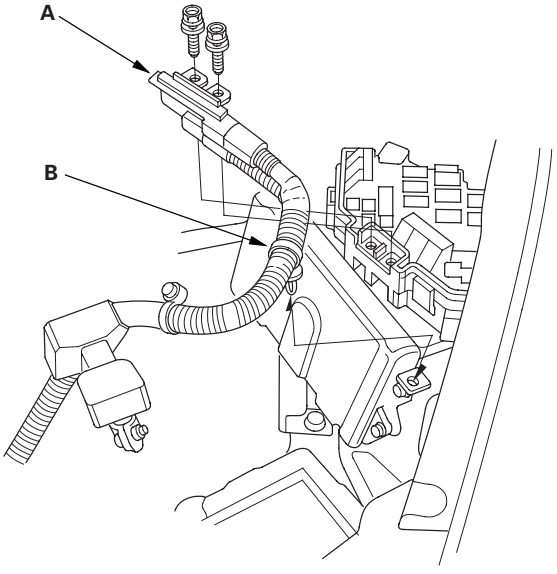
5. Remove the air cleaner assembly (see page 11-345).

6. Remove the under-cowl panel (see step 4 on page 20-164).

7. Disconnect the connector (A), and remove the harness clamps (B), then remove the pipe (C).



8. Disconnect the battery cables (A) from the under-hood fuse/relay box.

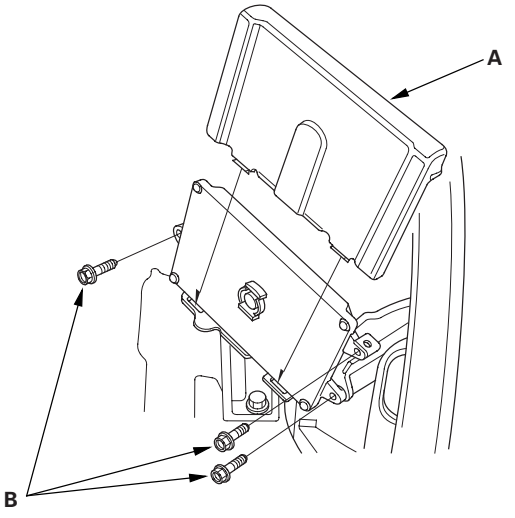


9. Remove the harness clamp (B).

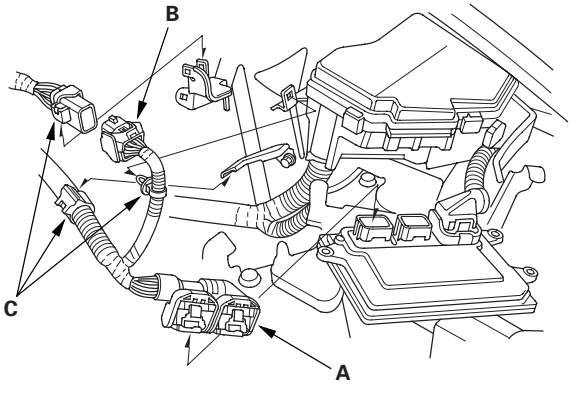
(cont'd)

Engine Removal (cont'd)

10. Remove the engine control module (ECM)/ powertrain control module (PCM) cover (A), then remove the three bolts (B) securing the ECM/PCM.

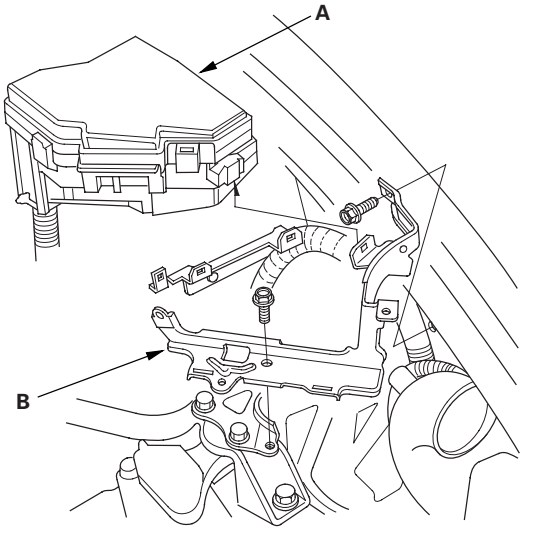


11. Disconnect the ECM/PCM connectors (A) and the engine wire harness connector (B).

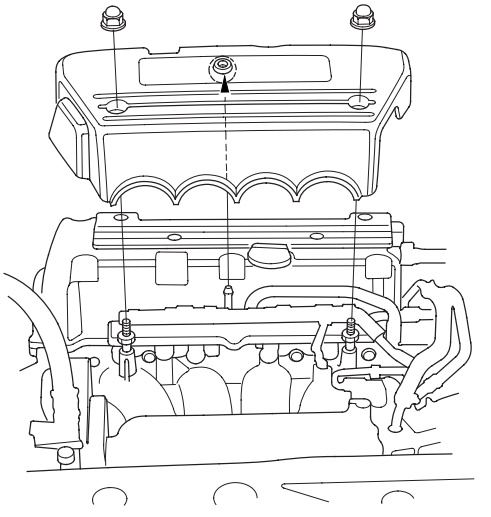


12. Remove the harness clamps (C).

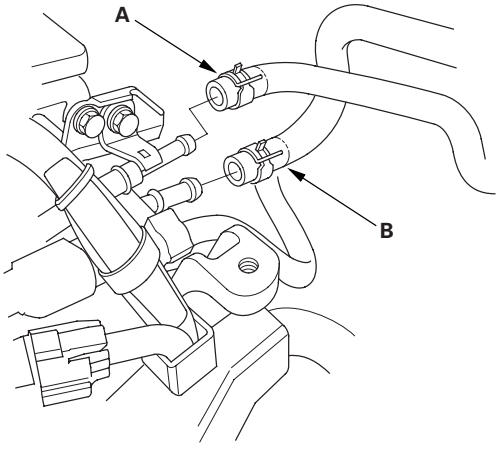
13. Remove the under-hood fuse/relay box (A) from the ECM/PCM bracket (B), then remove the ECM/PCM bracket.



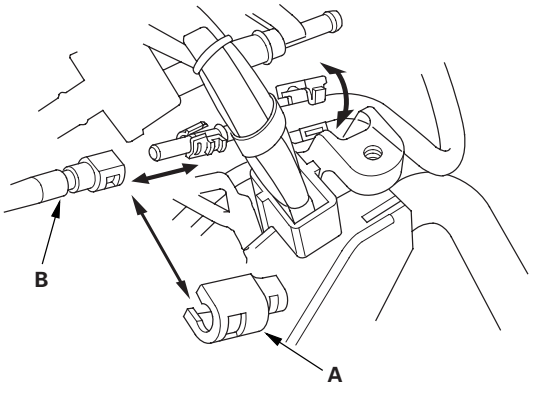
14. K20Z3 engine: Remove the engine cover.



15. Disconnect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).



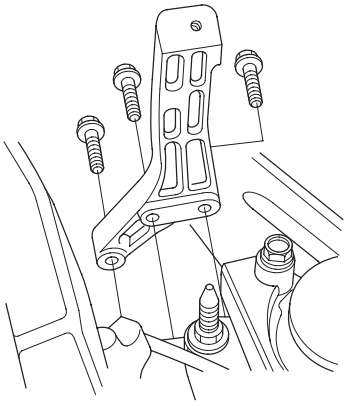
16. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-329).



17. M/T model: Remove the shift cables. Do not bend the cables excessively (see step 7 on page 13-8).

18. M/T model: Remove the clutch slave cylinder, and the clutch line bracket mounting bolt (see step 5 on page 13-7).

19. M/T model: Remove the air cleaner bracket.



20. Remove the drive belt (see page 4-31).

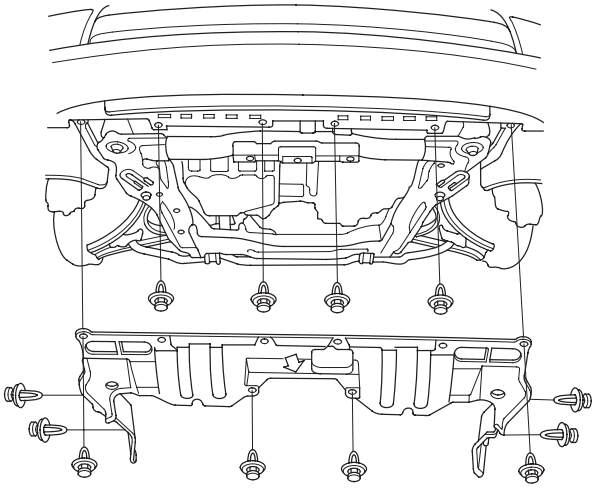
21. Remove the idler pulley base (see step 2 on page 4-32).

22. Wait until the engine is cool, then carefully remove the radiator cap.

23. Raise the vehicle on the lift.

24. Remove the front wheels.

25. Remove the splash shield.



26. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-8).

(cont'd)

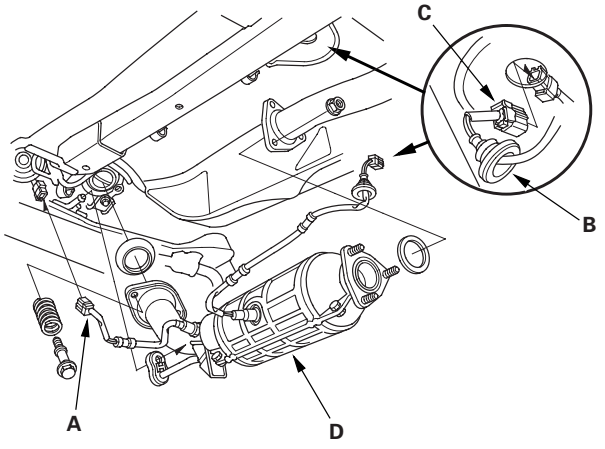
Engine Removal (cont'd)

27. Drain the engine oil (see page 8-10).

28. Drain the transmission fluid:

    - Manual transmission (see step 3 on page 13-5)
    - Automatic transmission (see step 3 on page 14-232)

29. Disconnect the air fuel ratio (A/F) sensor connector (A).



30. Remove the grommet (B), then disconnect the secondary heated oxygen sensor (secondary HO2S) connector (C).

31. Remove the three way catalytic converter (TWC) (D).

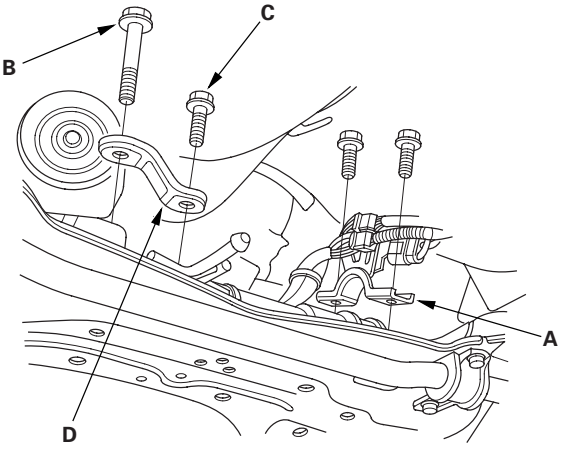
32. A/T model: Remove the shift cable. Do not bend the cables excessively (see step 39 on page 14-239).

33. Separate the stabilizer links (see page 18-25).

34. Separate the knuckles from the lower arms (see step 6 on page 18-21).

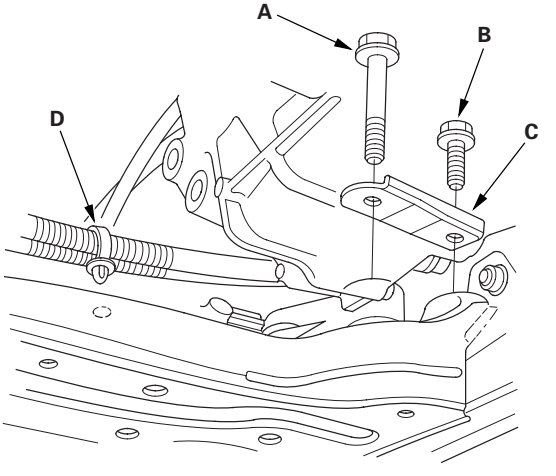
35. Remove the driveshafts (see page 16-4). Coat all precision-finished surfaces with new engine oil. Tie plastic bags over the driveshaft ends.

36. Remove the steering gearbox bracket (A).



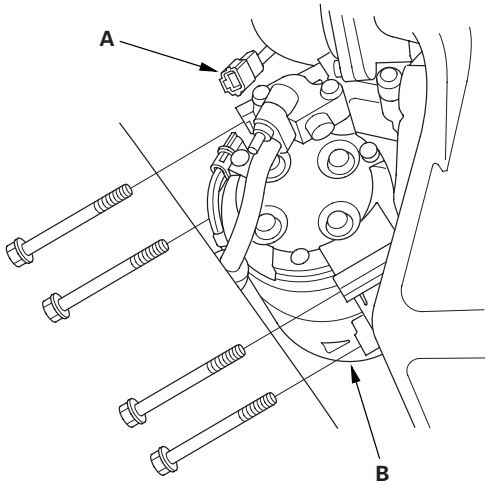
37. Remove the steering gearbox mounting bolt (B), the stiffener mounting bolt (C), and the stiffener (D).

38. Remove the steering gearbox mounting bolt (A), the stiffener mounting bolt (B), and the stiffener (C).



39. Remove the harness clamp (D) from the subframe.

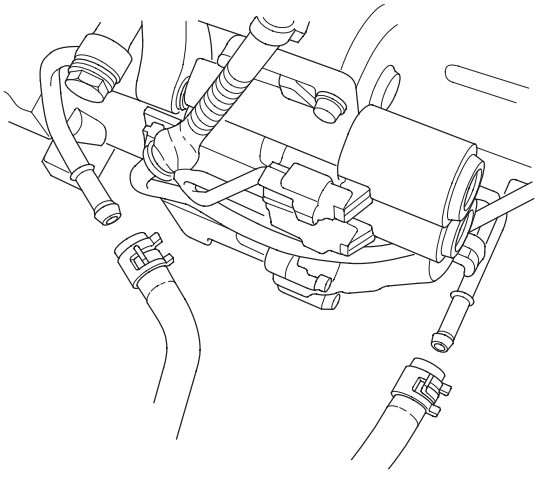
40. Disconnect the A/C compressor clutch connector (A), then remove the A/C compressor (B) without disconnecting the A/C hoses.



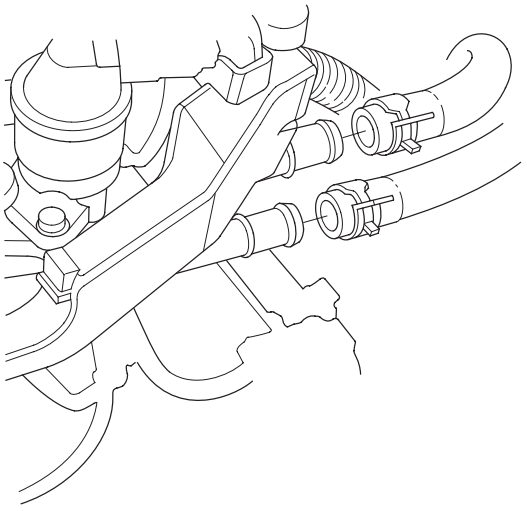
41. Lower the vehicle on the lift.

42. Remove the radiator (see page 10-19).

43. A/T model: Disconnect the automatic transmission fluid (ATF) cooler hoses from the transmission, then plug the lines and hoses.

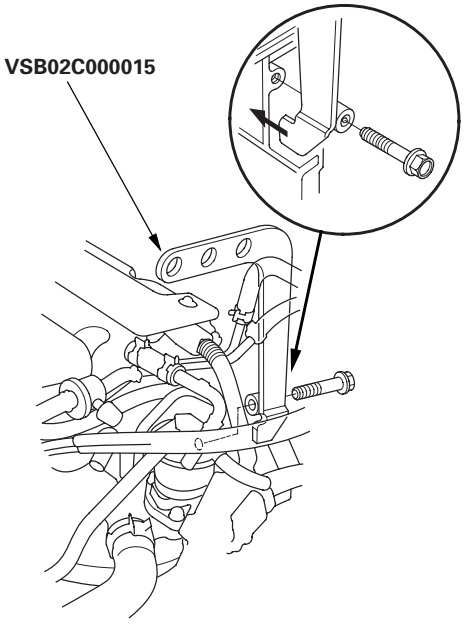


44. Disconnect the heater hoses.



45. Install the bulkhead (see step 13 on page 10-21).

46. Attach the engine hanger adapter (VSB02C000015) to the threaded hole in the cylinder head.

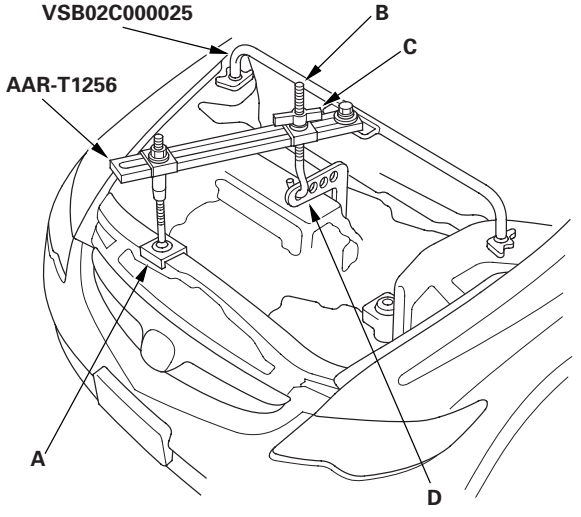


(cont'd)

Engine Removal (cont'd)

47. Install the front leg assembly (A), the hook (B), and the wing nut (C) to an A and Reds engine support hanger (AAR-T1256) onto the 2006 civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wing nut by hand to lift and support the engine/transmission.

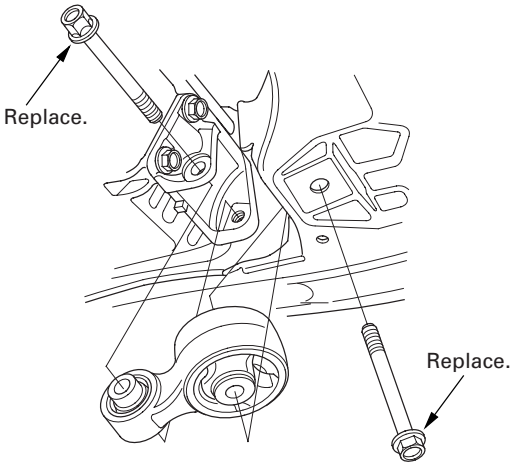
    NOTE: Be careful when working around the windshield.



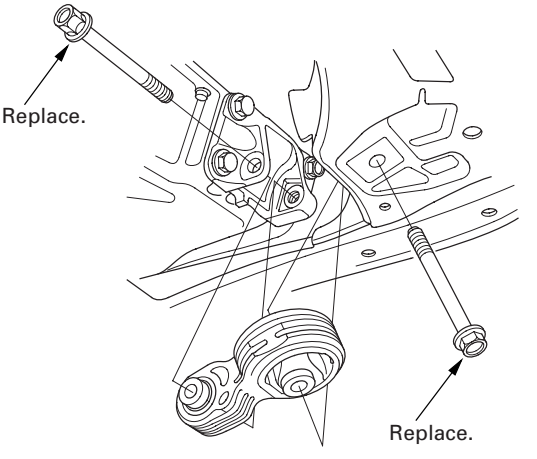
48. Raise the vehicle on the lift.

49. Remove the lower torque rod.

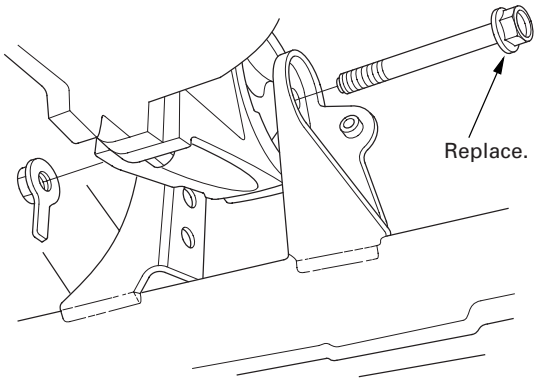
M/T model



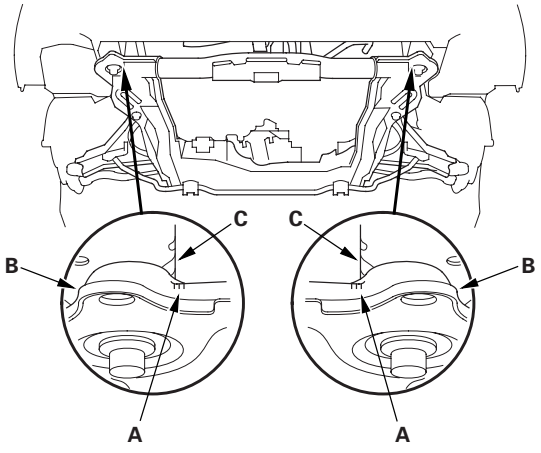
A/T model



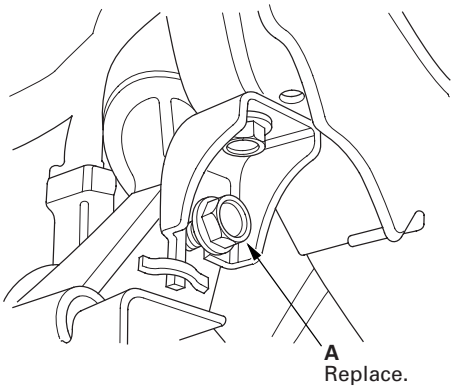
50. M/T model: Remove the front mount mounting bolt.



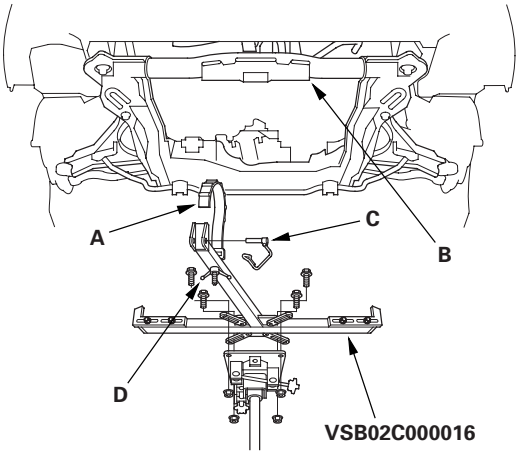
51. Make appropriate reference lines (A) at both sides of the front subframe (B) that line up with the edges (C) on the body.



52. Loosen the mid-stiffener mounting bolts (A) on both sides.



53. Attach the front subframe adapter (VSB02C000016) to the subframe, and hang the belt (A) of the front subframe adapter over the front of the subframe (B). Secure the belt with its stop (C), then tighten the wing nut (D).

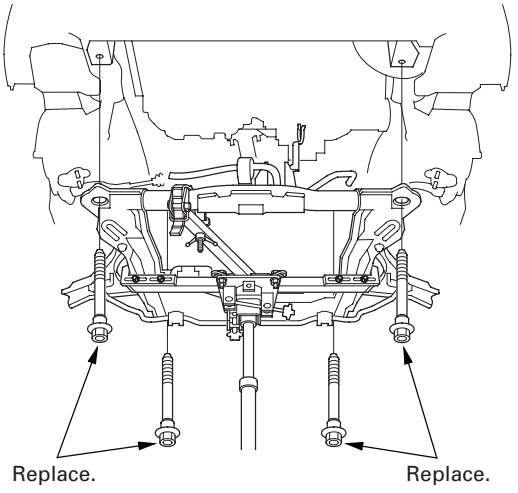


54. Raise the jack, and line up the slots in the front subframe adapter arms with the bolt holes on the jack base, then securely attach them with four bolts.

(cont'd)

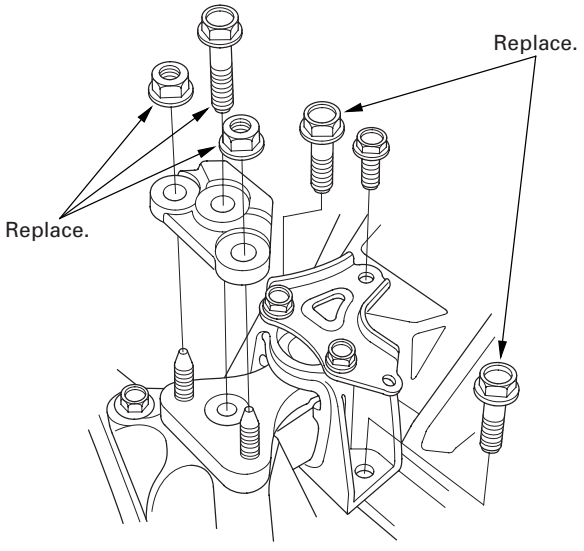
Engine Removal (cont'd)

55. Remove the front subframe.

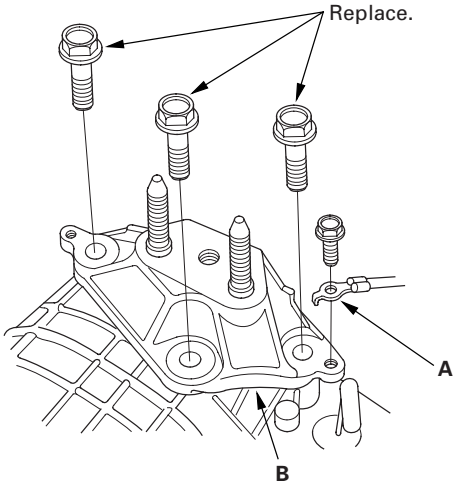


56. Lower the vehicle on the lift.

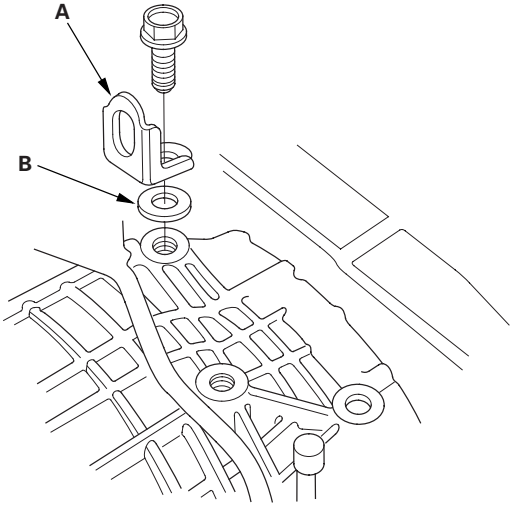
57. A/T model: Remove the transmission mount.



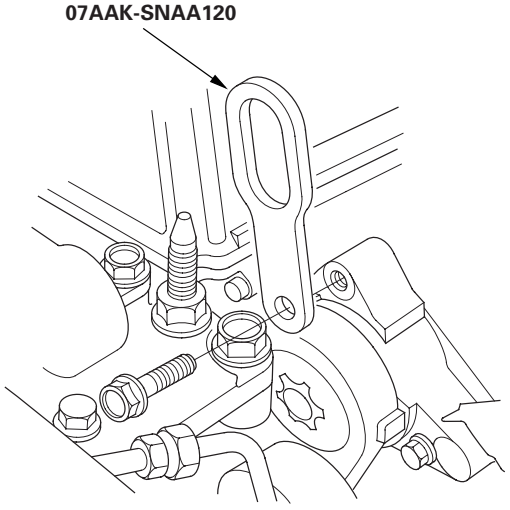
58. A/T model: Remove the ground cable (A), then remove the transmission mount bracket (B).



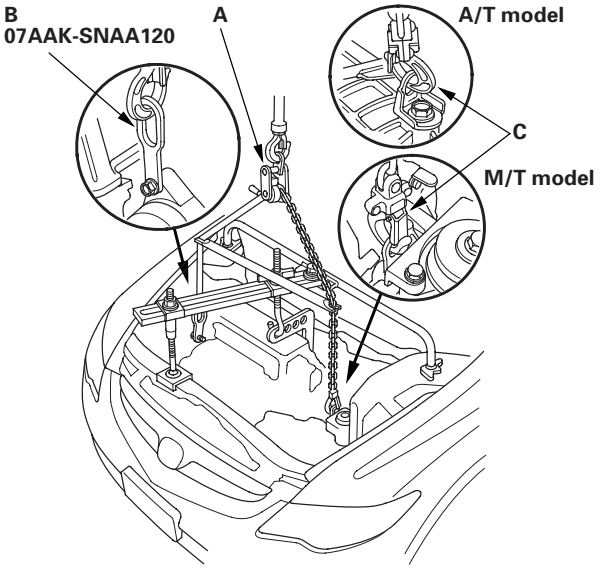
59. A/T model: Install the transmission hanger bracket (P/N 21232-RCT-A00) (A) and a washer (B) on the transmission.



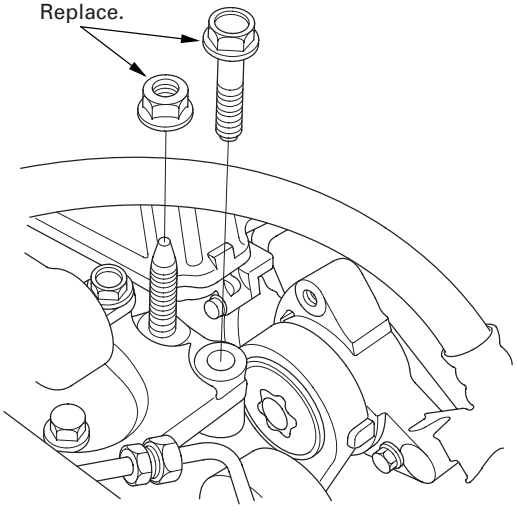
60. Install the universal lifting eyelet (07AAK-SNAA120).



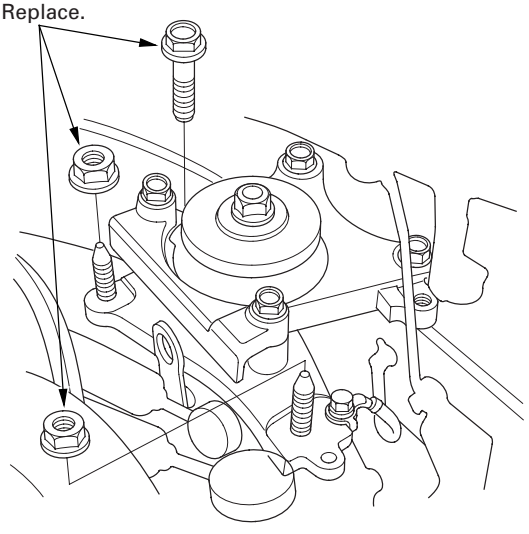
61. Attach a chain hoist (A) to the universal lifting eyelet (B) and the transmission hook (C), then lift the engine/transmission until it's securely supported by the chain hoist, and remove the engine hanger.



62. Remove the side engine mount bracket mounting bolt and nut.



63. M/T model: Remove the transmission mount bracket mounting bolt and nuts.



(cont'd)

Engine Removal (cont'd)

64. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.

65. Slowly lower the engine/transmission about 150 mm (6 in.). Check once again that all hoses and electrical wiring are disconnected and free from the engine/transmission, then lower it all the way.

66. Disconnect the chain hoist from the engine/transmission.

67. Raise the vehicle on the lift, then remove the engine/transmission from under the vehicle.

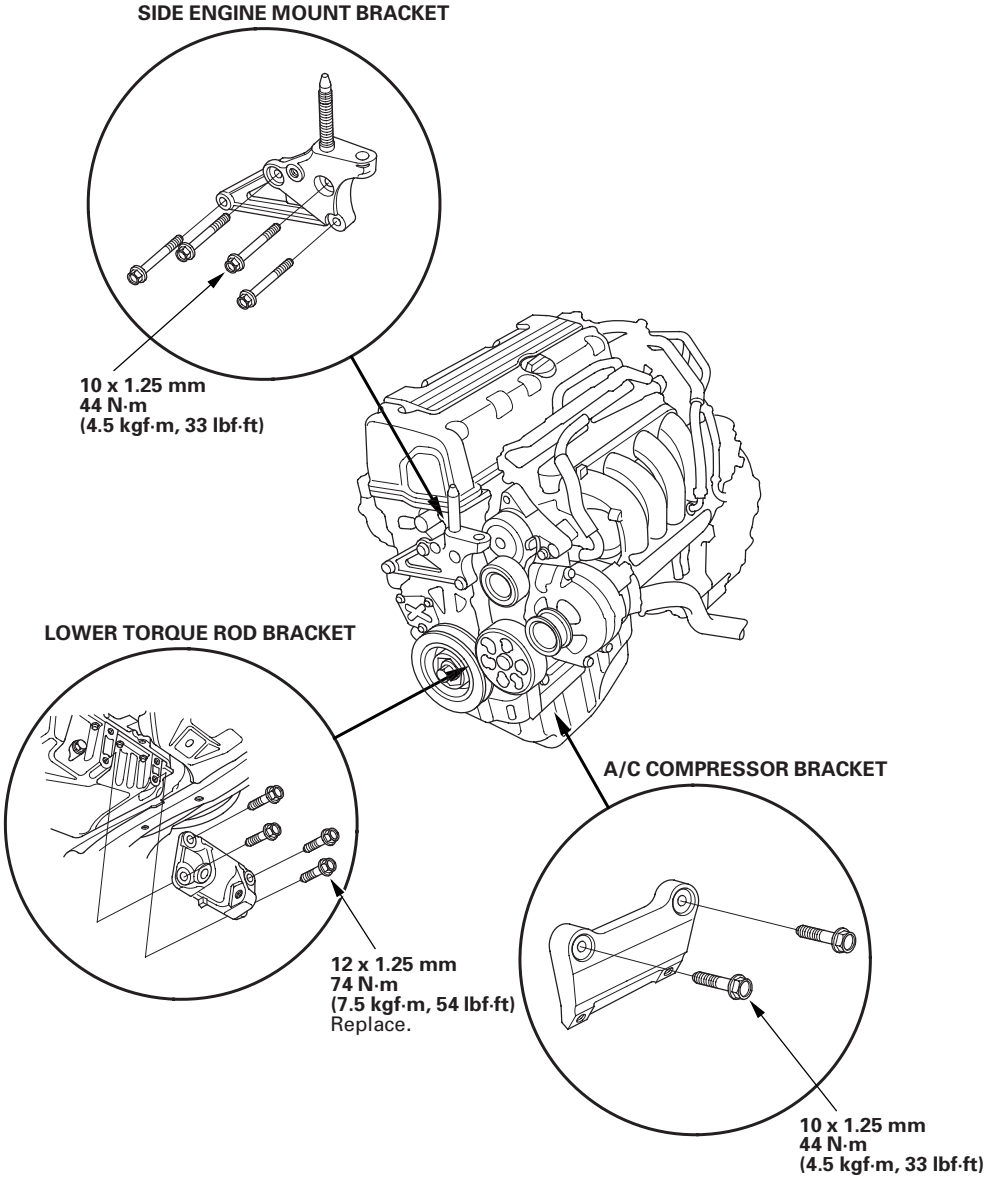
Engine Installation

Special Tools Required
- Universal lifting eyelet 07AAK-SNAA120
- Engine hanger adapter VSB02C000015 *
- Engine support hanger, A and Reds AAR-T1256 *
- 2006 Civic engine hanger VSB02C000025 *
- Front subframe adapter VSB02C000016 *

* : These special tools are available through Honda Canada Inc. Technical Tools Department; FAX # 866-398-8665/ e-mail: ch_technicaltools@ch.honda.com

1. Install the engine mount brackets and the accessory brackets, then tighten their bolts to the specified torque.

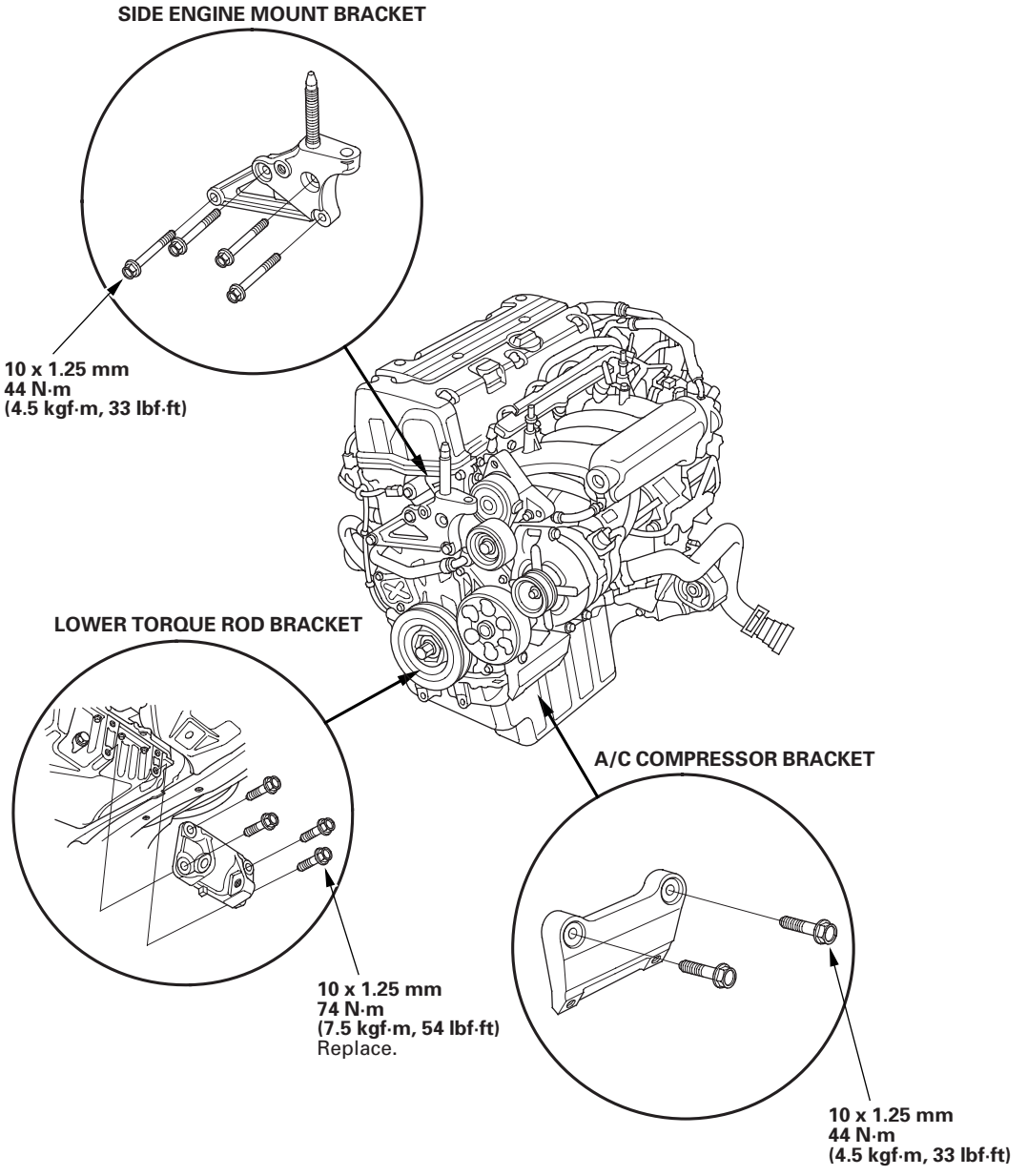
K20Z2 engine



(cont'd)

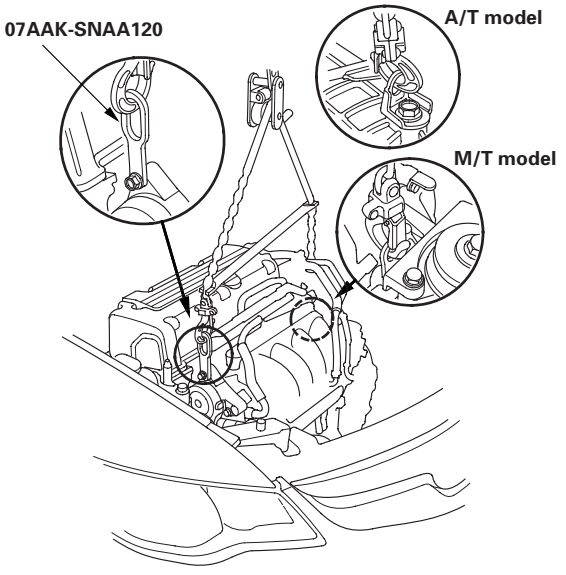
Engine Installation (cont'd)

K20Z3 engine

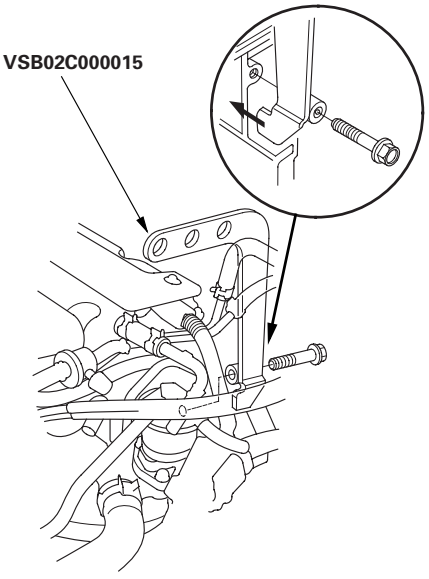


2. Raise the vehicle on the lift, and position the engine/transmission under the vehicle. Lower the vehicle, and install the universal lifting eyelet (07AAK-SNAA120). Attach a chain hoist to the universal eyelet and the transmission hook, then lift the engine into position in the vehicle.

   NOTE: Reinstall the mounting bolts/support nuts in the sequence given in the following steps. Failure to follow this sequence may cause excessive noise and vibration, and reduce engine mount life.

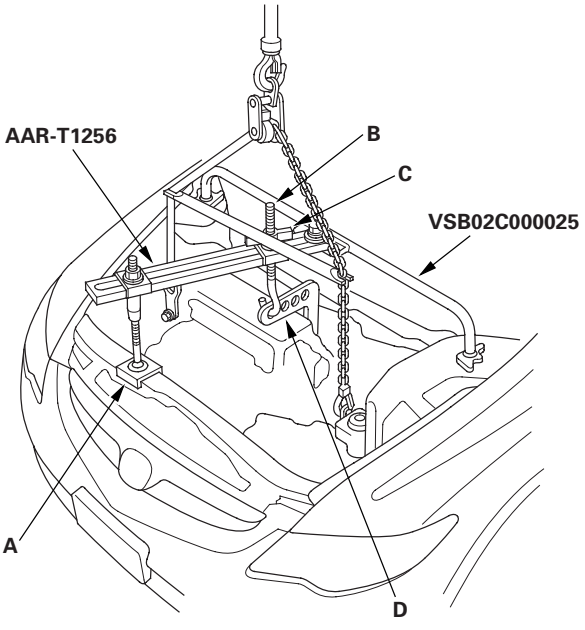


3. Attach the engine hanger adapter (VSB02C000015) to the threaded hole in the cylinder head.

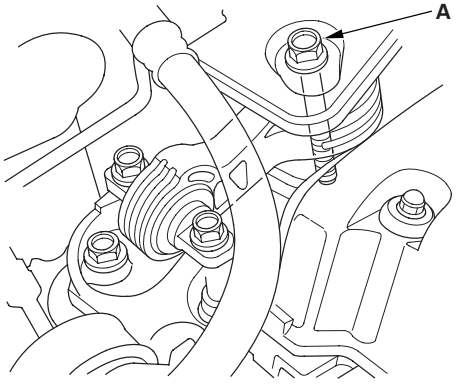


4. Install the front leg assembly (A), the hook (B), and the wing nut (C) to an A and Reds engine support hanger (AAR-T1256) onto the 2006 civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wing nut by hand to lift and support the engine/transmission.

   NOTE: Be careful when working around the windshield.



5. Loosen the upper torque rod mounting bolt (A).

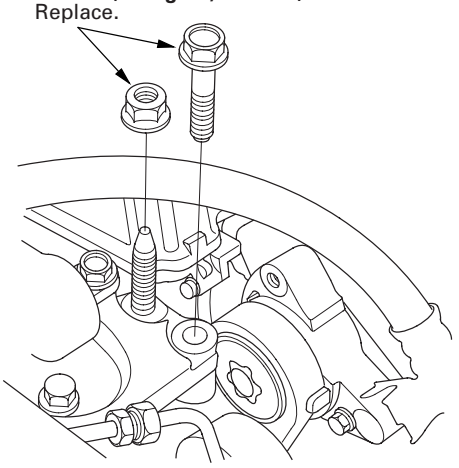


(cont'd)

Engine Installation (cont'd)

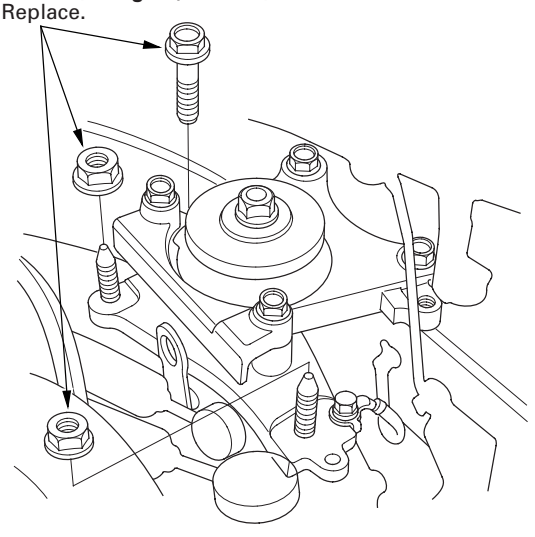
6. Tighten the new side engine mount bracket mounting bolt and nut.

14 x 1.5 mm
74 N·m (7.5 kgf·m, 54 lbf·ft)
Replace.



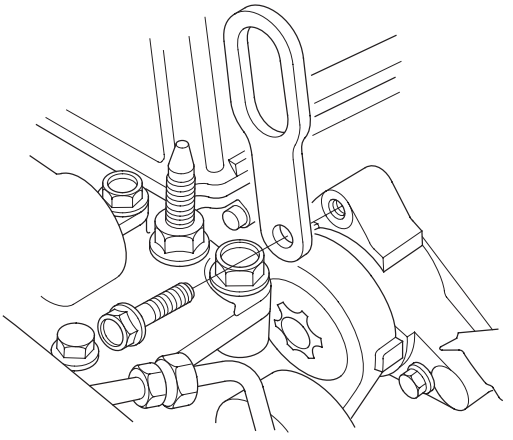
7. M/T model: Tighten the new transmission mounting bolt and nuts.

12 x 1.25 mm
74 N·m (7.5 kgf·m, 54 lbf·ft)
Replace.

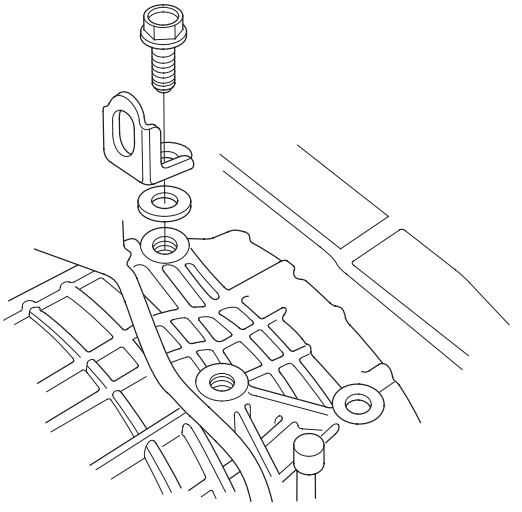


8. Remove the chain hoist.

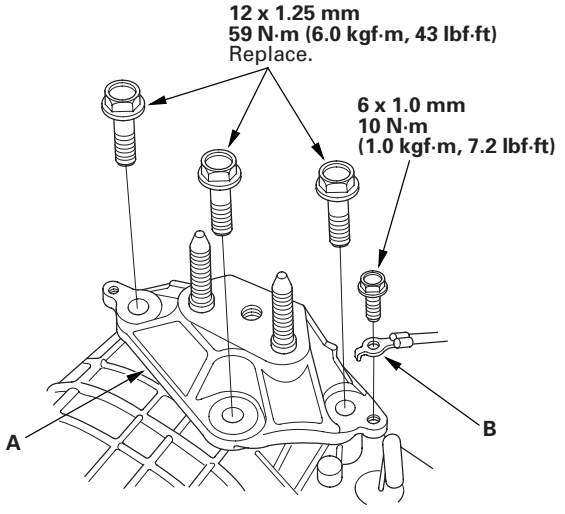
9. Remove the universal lifting eyelet.



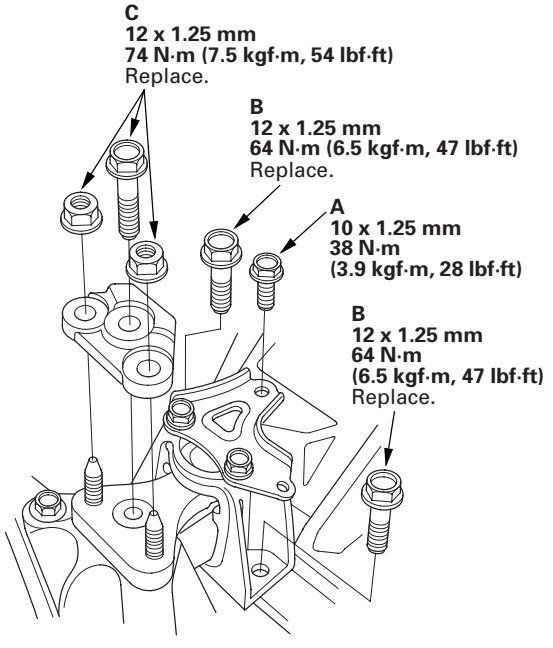
10. A/T model: Remove the transmission hanger bracket (P/N 21232-RCT-A00).



11. A/T model: Install the transmission mount bracket (A), then install the ground cable (B).



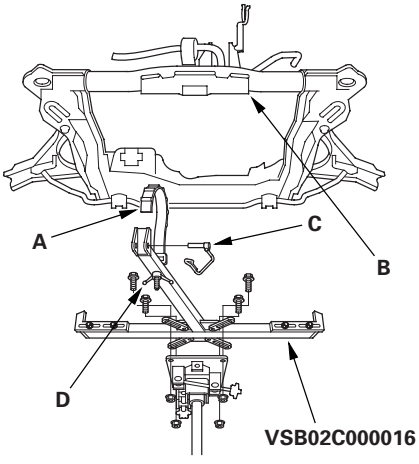
12. A/T model: Install the transmission mount, then tighten the transmission mount stiffener mounting bolt (A) and the new transmission mount mounting bolts (B).



13. A/T model: Tighten the new transmission mounting bolt and nuts (C).

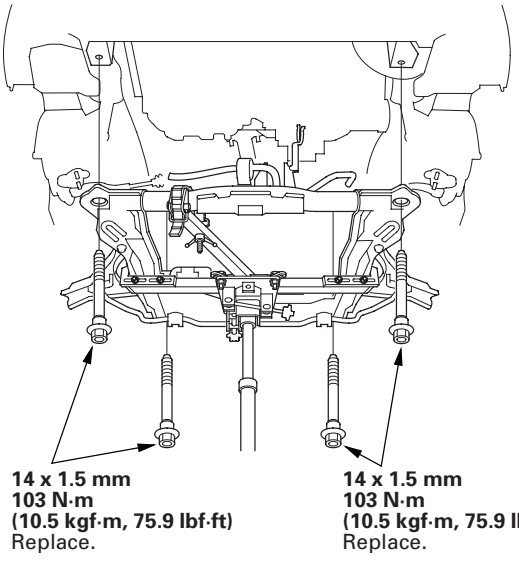
14. Raise the vehicle on the lift.

15. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt (A) of the front subframe adapter over the front of the subframe (B). Secure the belt with its stop (C), then tighten the wing nut (D).



16. Line up the slots in the front subframe adapter arms with the bolt holes on the corner of the jack base, then securely attach them with four bolts. Lift the subframe up to the body.

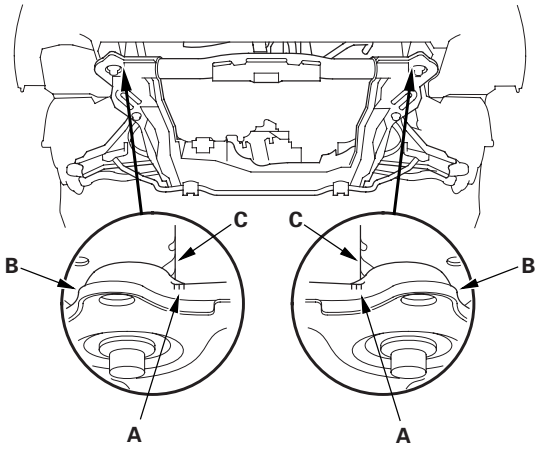
17. Loosely install the new front subframe mounting bolts.



(cont'd)

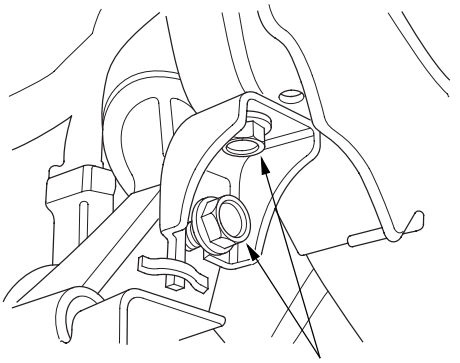
Engine Installation (cont'd)

18. Align all reference marks (A) on the front subframe (B) with the edges of the body (C), then tighten the bolts on the front subframe to the specified torque.



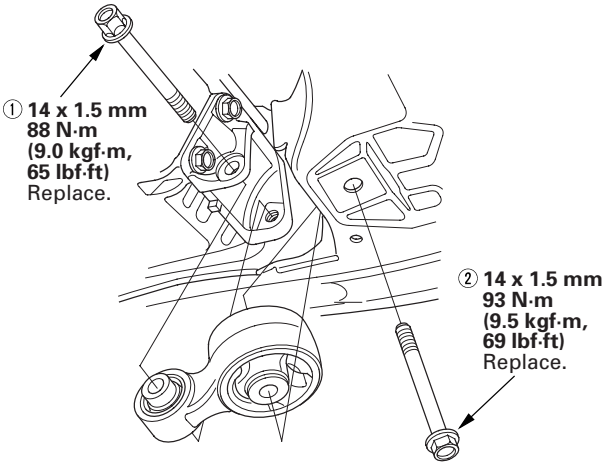
19. Remove the jack and the front subframe adapter.

20. Tighten the new mid-stiffener mounting bolts on both side.

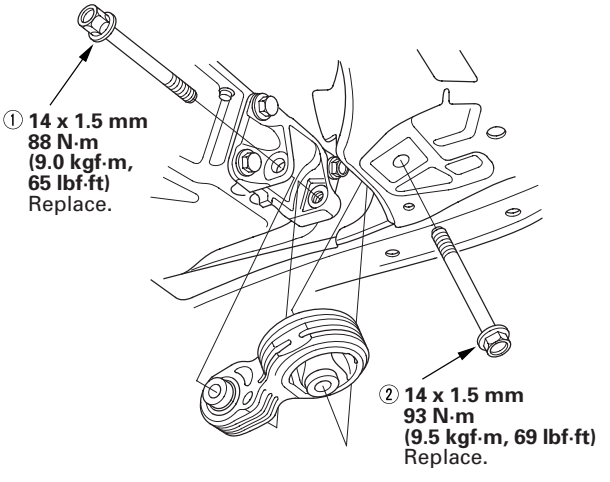


21. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown.

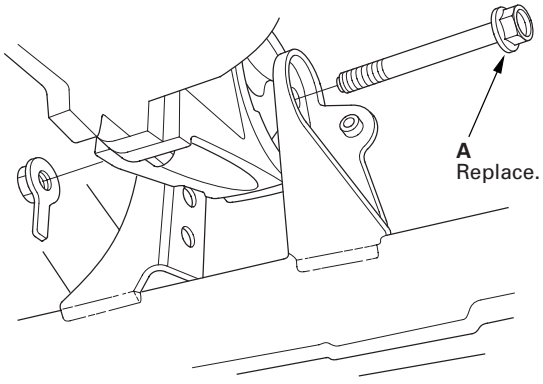
M/T model



A/T model



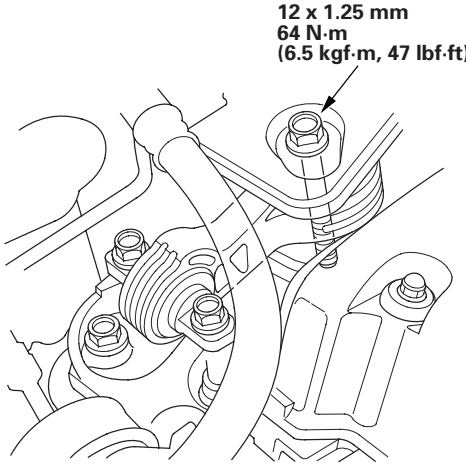
22. M/T model: Loosely tighten the new front mount mounting bolt (A).



23. Lower the vehicle on the lift.

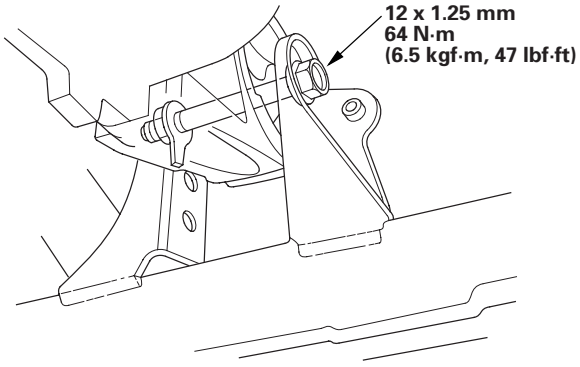
24. Remove the engine support hanger and the engine hanger adapter from the engine and the vehicle.

25. Tighten the upper torque rod mounting bolt.

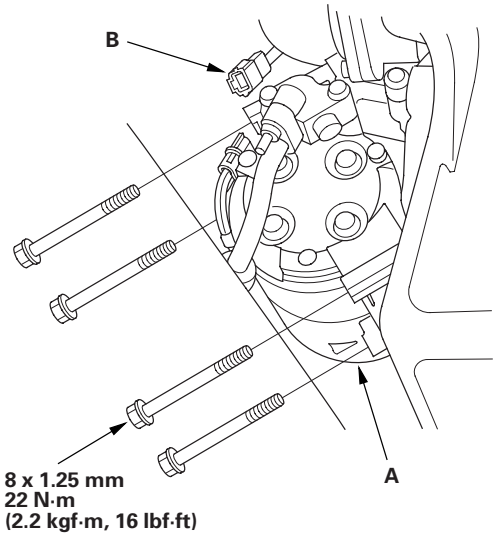


26. Raise the vehicle on the lift.

27. M/T model: Tighten the front mount mounting bolt.



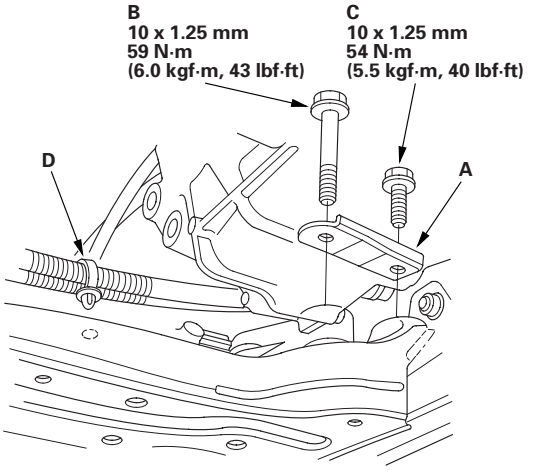
28. Install the A/C compressor (A), then connect the A/C compressor clutch connector (B).



(cont'd)

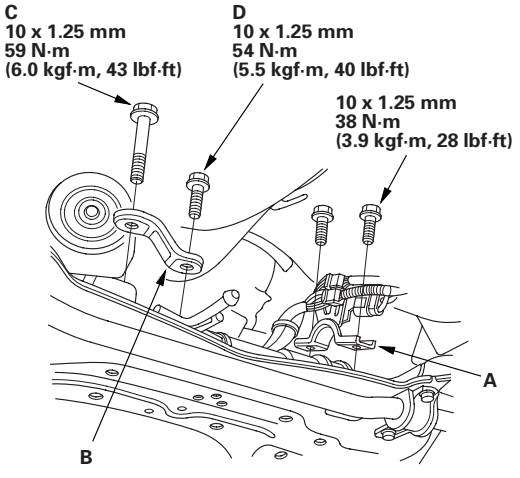
Engine Installation (cont'd)

29. Install the stiffener (A), then tighten the steering gearbox mounting bolt (B) and the stiffener mounting bolt (C).



30. Install the harness clamp (D) to the subframe.

31. Install the steering gearbox bracket (A).



32. Install the stiffener (B), then tighten the steering gearbox mounting bolt (C) and the stiffener mounting bolt (D).

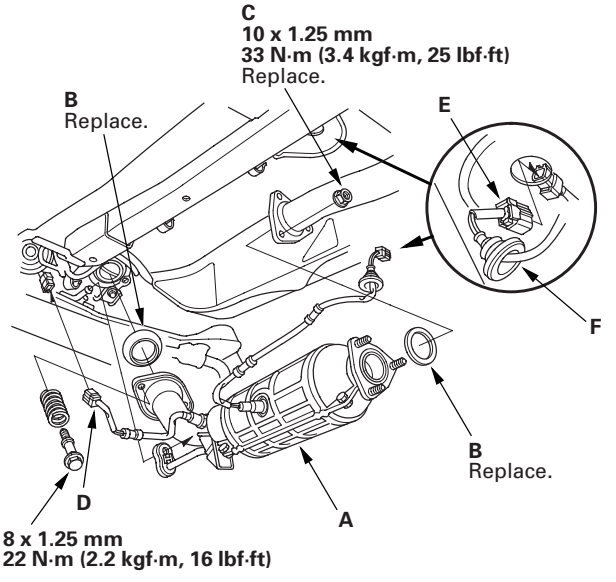
33. A/T model: Install the shift cable (see step 19 on page 14-245).

34. Install a new set ring on the end of each driveshaft, then install the driveshafts (see page 16-20). Make sure each ring ''clicks'' into place in the differential and the intermediate shaft.

35. Connect the lower arms to the knuckles (see step 9 on page 18-16).

36. Connect the stabilizer links (see page 18-25).

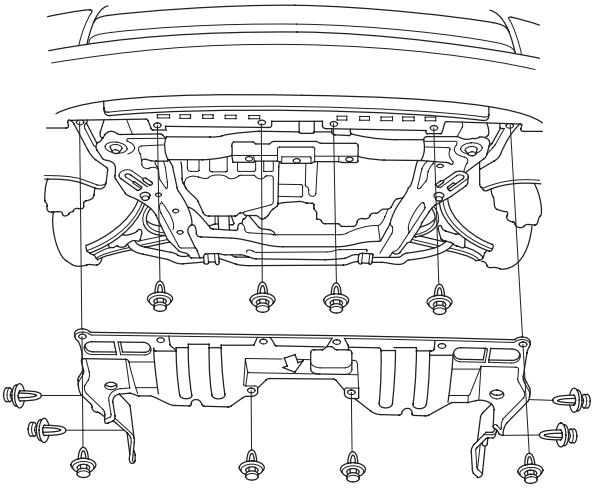
37. Install the three way catalytic converter (TWC) (A). Use the new gaskets (B) and the new self-locking nuts (C).



38. Connect the air fuel ratio (A/F) sensor connector (D).

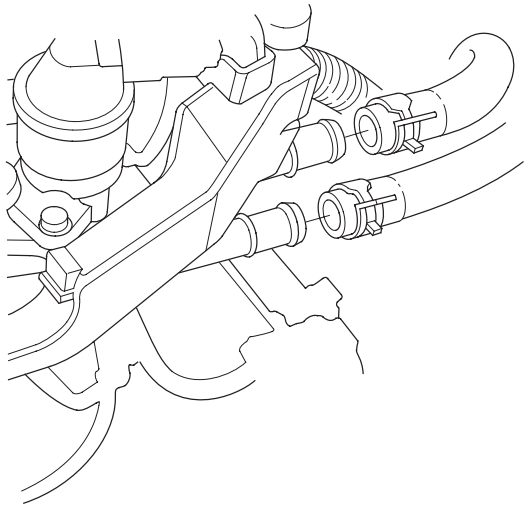
39. Connect the secondary heated oxygen sensor (secondary HO2S) connector (E), then install the grommet (F).

40. Install the splash shield.

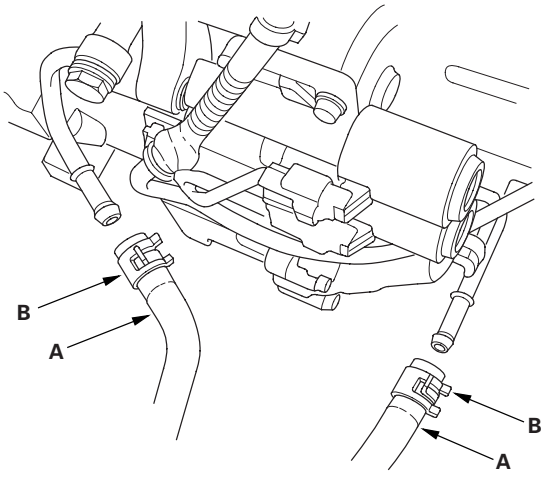


41. Lower the vehicle on the lift.

42. Connect the heater hoses.



43. A/T model: Connect the automatic transmission fluid (ATF) cooler hoses (A) to the transmission, and secure the hoses with the clips (B) (see page 14-253).

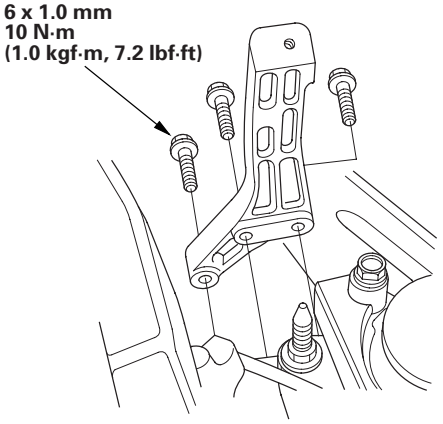


44. Remove the bulkhead, then install the radiator (see page 10-19).

45. Install the idler pulley base (see step 2 on page 4-34).

46. Install the drive belt (see page 4-31).

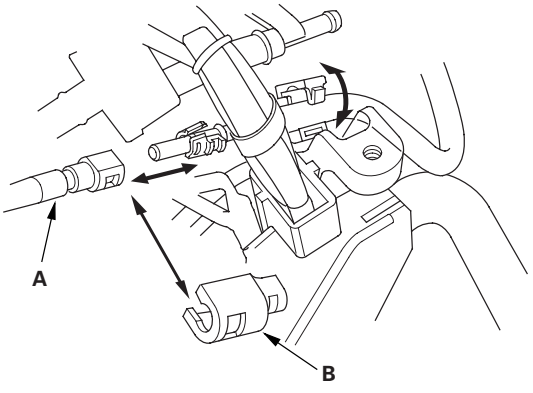
47. M/T model: Install the air cleaner bracket.



48. M/T model: Install the shift cables (see step 37 on page 13-20).

49. M/T model: Install the clutch slave cylinder and the clutch line bracket mounting bolt (see step 40 on page 13-21).

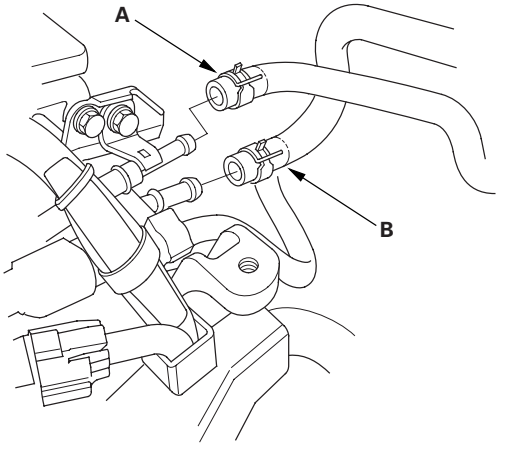
50. Connect the fuel feed hose (A) (see page 11-331), then install the quick-connect fitting cover (B).



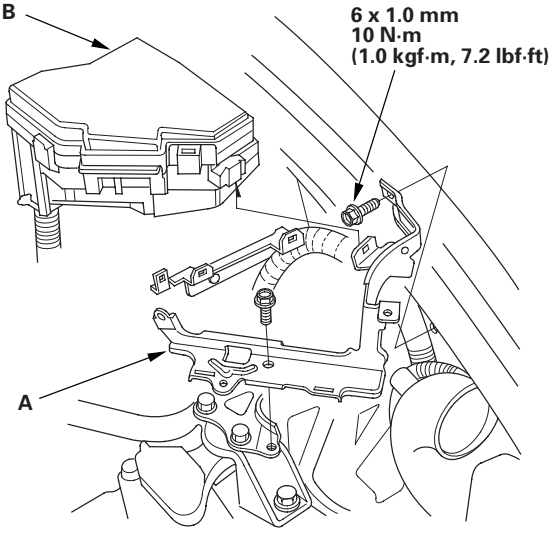
(cont'd)

Engine Installation (cont'd)

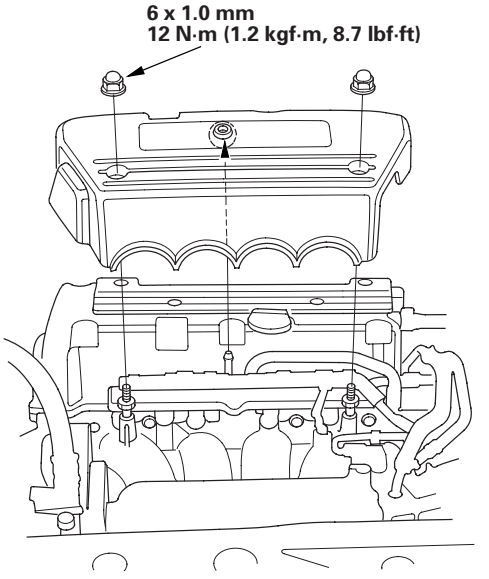
51. Connect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).



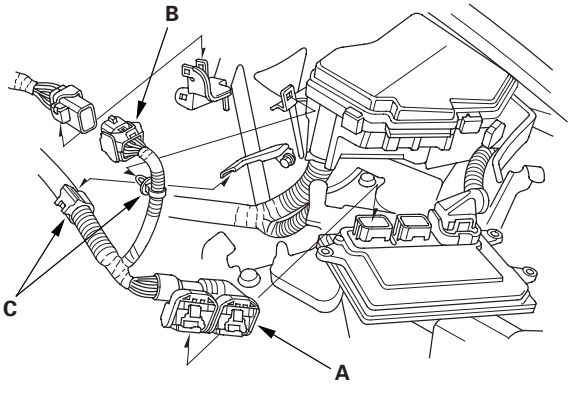
52. Install the engine control module (ECM)/powertrain control module (PCM) bracket (A), then install the under-hood fuse/relay box (B) to the ECM/PCM bracket.



53. K20Z3 engine: Install the engine cover.

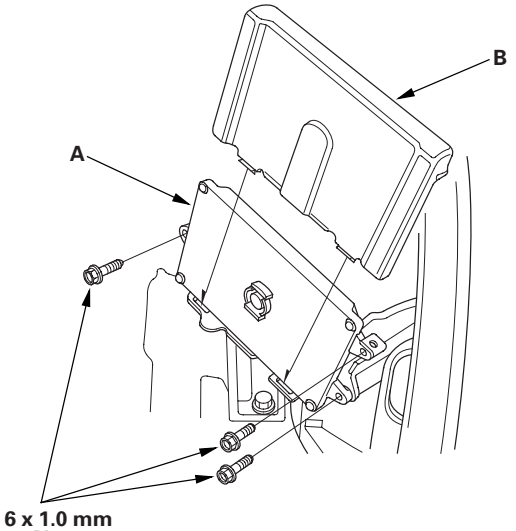


54. Connect the ECM/PCM connectors (A) and the engine wire harness connector (B).

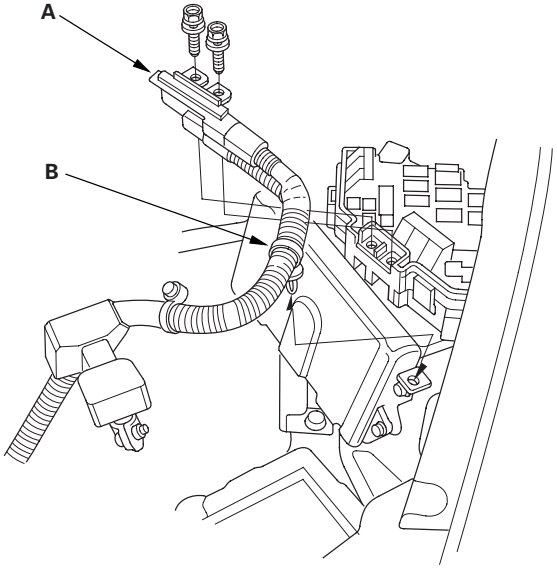


55. Install the harness clamps (C).

56. Install the ECM/PCM (A), then install the ECM/PCM cover (B).

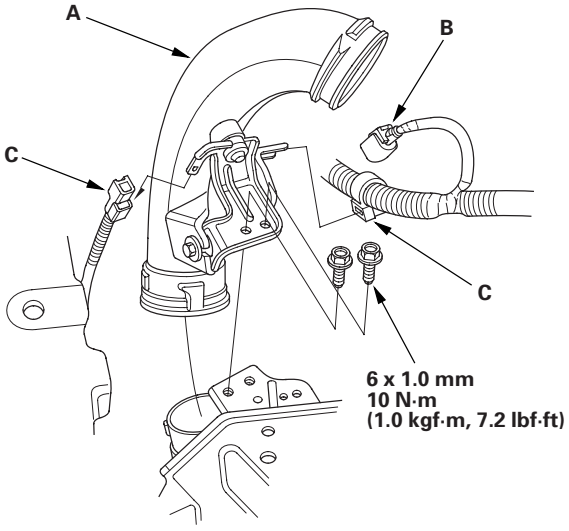


57. Connect the battery cables (A) to the under-hood fuse/relay box.



58. Install the harness clamp (B).

59. Install the pipe (A).



60. Connect the connector (B), and install the harness clamps (C).

61. Install the under cowl-panel (see step 4 on page 20-164).

62. Install the air cleaner assembly (see page 11-345).

63. Install the front wheels.

64. Do the battery installation procedure (see page 22-69).

65. Inspect for fuel leaks. Turn the ignition switch to ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.

66. Refill the engine with engine oil (see step 4 on page 8-10).

(cont'd)

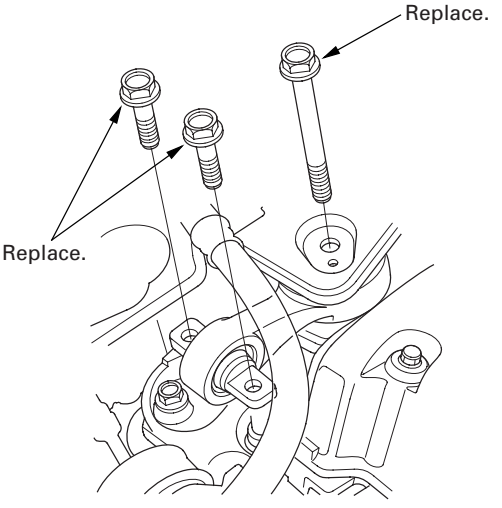
Engine Installation (cont'd)

67. Refill the transmission with fluid:
    - Manual transmission (see step 3 on page 13-5)
    - Automatic transmission (see step 3 on page 14-232)
68. A/T model: Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.
69. M/T model: Check that the transmission shifts into gear smoothly.
70. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).
71. Do the ECM/PCM reset procedure (see page 11-4).
72. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).
73. Inspect the idle speed (see page 11-309).
74. Inspect the ignition timing (see page 4-20).
75. Check the wheel alignment (see page 18-5).

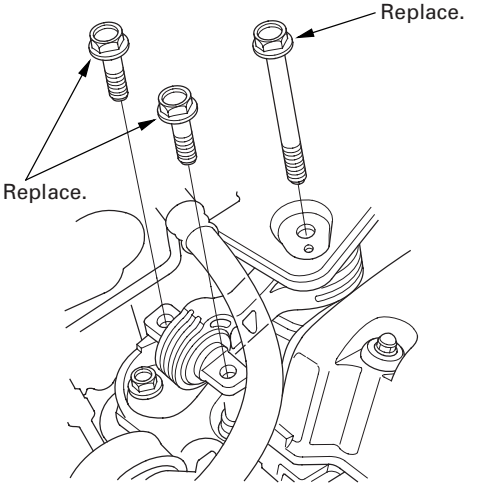
Side Engine Mount Replacement

1. Support the engine with a jack and wood block under the oil pan.
2. Remove the upper torque rod.

M/T model



A/T model



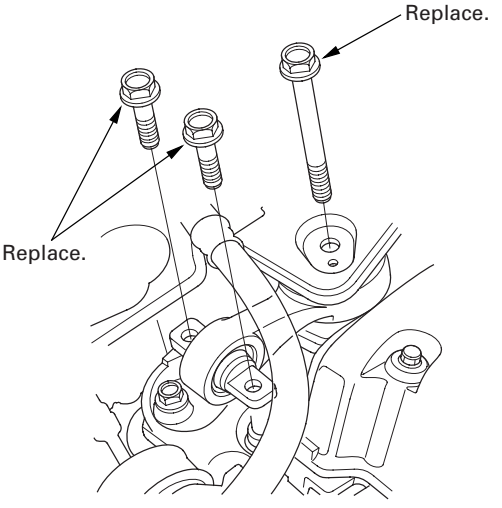
Engine Installation (cont'd)

67. Refill the transmission with fluid:
    - Manual transmission (see step 3 on page 13-5)
    - Automatic transmission (see step 3 on page 14-232)
68. A/T model: Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.
69. M/T model: Check that the transmission shifts into gear smoothly.
70. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).
71. Do the ECM/PCM reset procedure (see page 11-4).
72. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).
73. Inspect the idle speed (see page 11-309).
74. Inspect the ignition timing (see page 4-20).
75. Check the wheel alignment (see page 18-5).

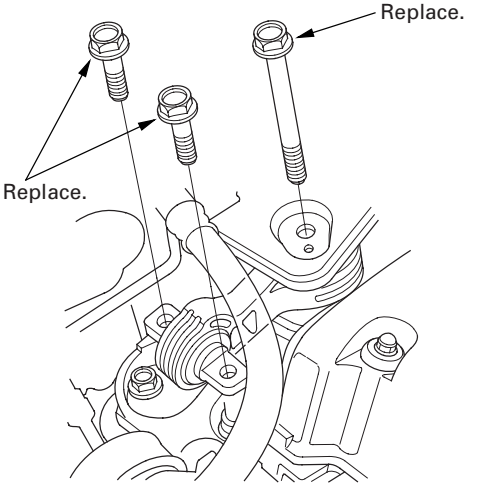
Side Engine Mount Replacement

1. Support the engine with a jack and wood block under the oil pan.
2. Remove the upper torque rod.

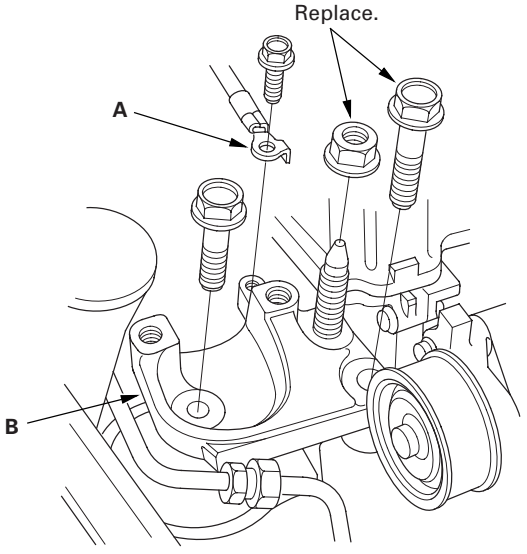
M/T model



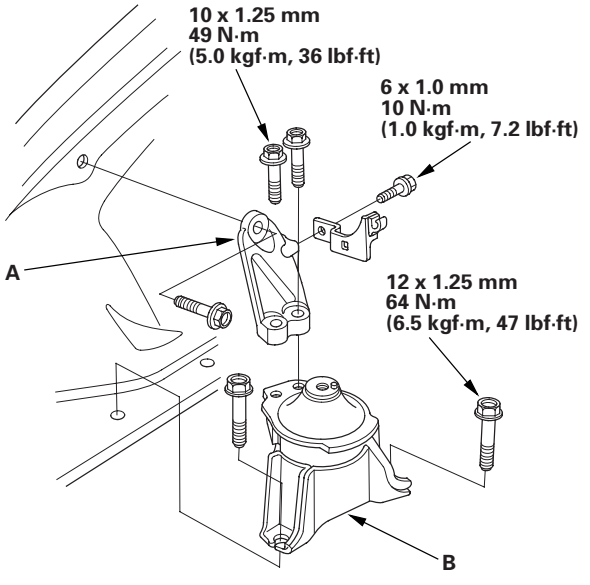
A/T model



3. Remove the ground cable (A), then remove the side engine mount bracket (B).

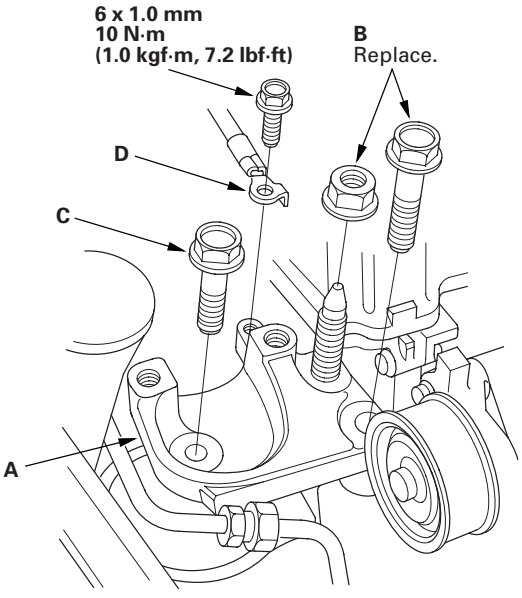


4. Remove the side engine mount stiffener (A), then remove the side engine mount (B).



5. Install the side engine mount, then install the side engine mount stiffener.

6. Install the side engine mount bracket (A), loosely tighten the new bolt and nut (B), then loosely tighten the bolt (C).



7. Install the ground cable (D).

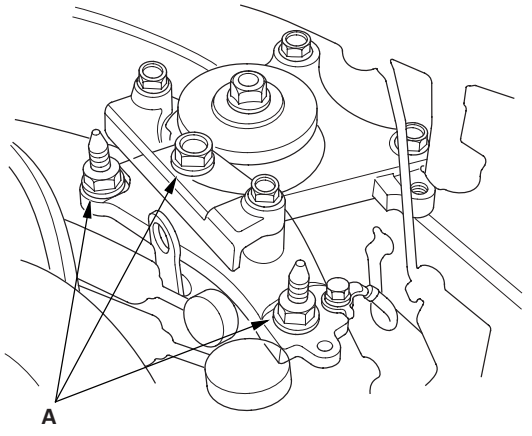
8. Remove the air cleaner assembly (see page 11-345).

(cont'd)

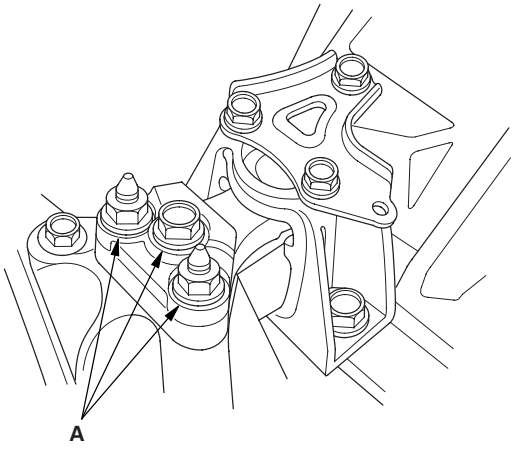
Side Engine Mount Replacement (cont'd)

9. Loosen the transmission mounting bolt and nuts (A).

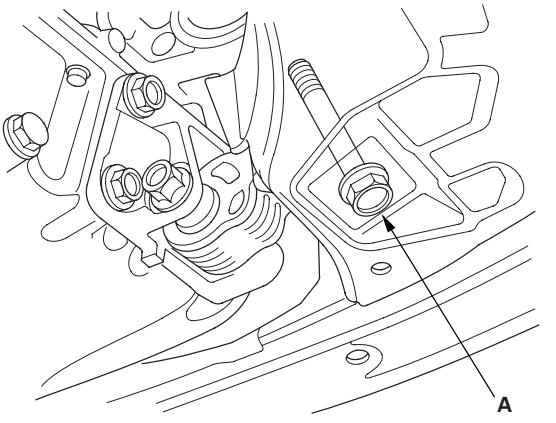
M/T model



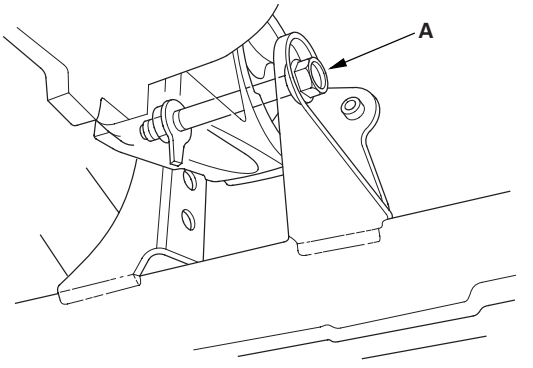
A/T model



10. Raise the vehicle on the lift.
11. Remove the splash shield (see step 25 on page 5-5).
12. Loosen the lower torque rod mounting bolt (A).

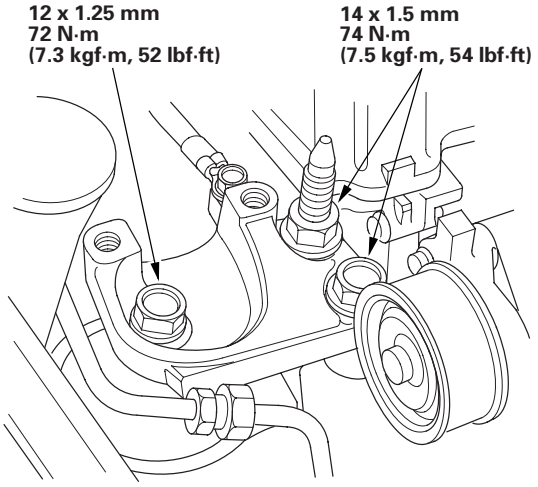


13. M/T model: Loosen the front mount mounting bolt (A).



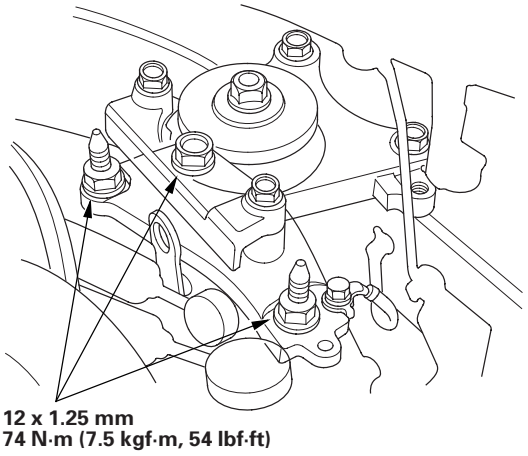
14. Lower the vehicle on the lift.

15. Tighten the side engine mount mounting bolts and nut.

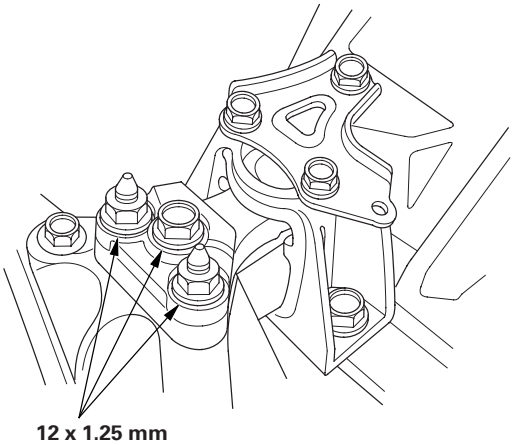


16. Tighten the transmission mounting bolt and nuts.

M/T model



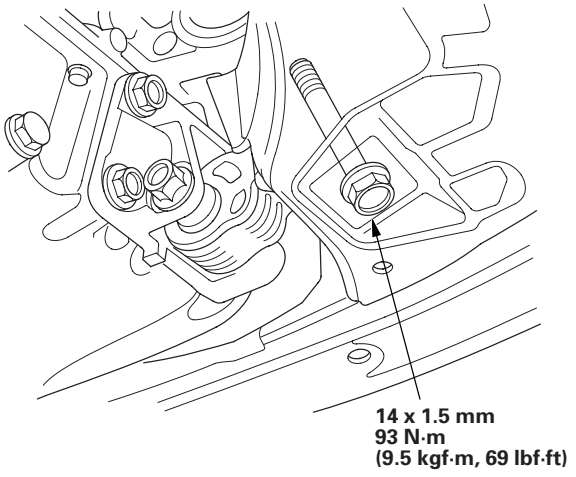
A/T model



(cont'd)

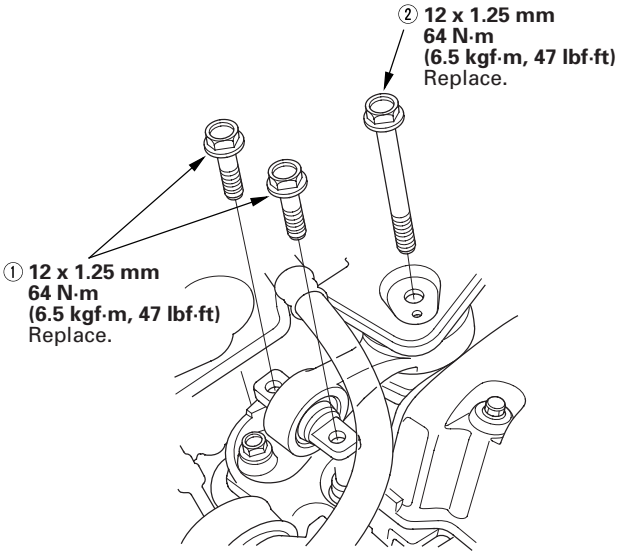
Side Engine Mount Replacement (cont'd)

17. Raise the vehicle on the lift.
18. Tighten the lower torque rod mounting bolt.

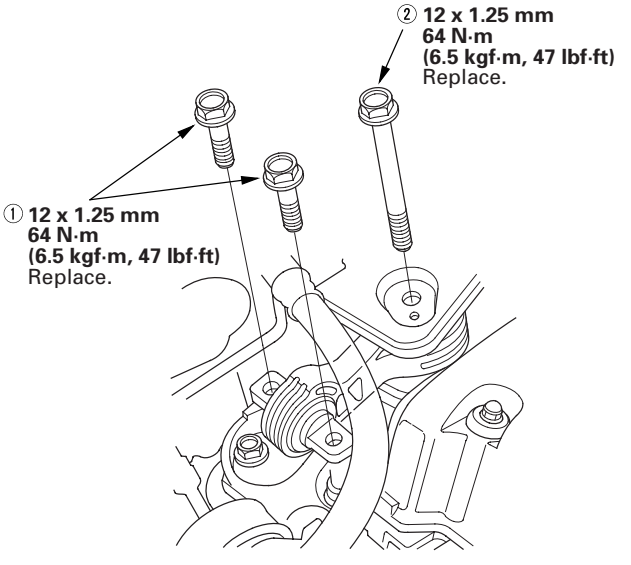


19. Lower the vehicle on the lift.
20. Install the air cleaner assembly (see page 11-345).
21. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

M/T model



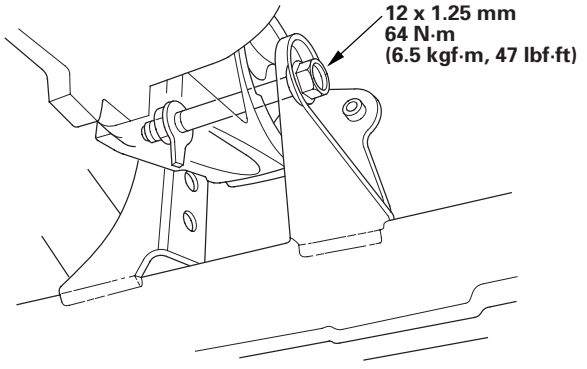
A/T model



Transmission Mount Replacement

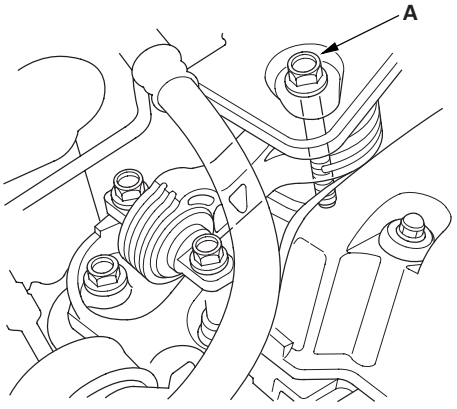
22. Raise the vehicle on the lift.

23. M/T model: Tighten the front mount mounting bolt.



24. Install the splash shield (see step 40 on page 5-20).

1. Loosen the upper torque rod mounting bolt (A).



2. Remove the air cleaner assembly (see page 11-345).

3. Remove the engine control module (ECM)/ powertrain control module (PCM) cover, then remove the three bolts securing the ECM/PCM (see step 10 on page 5-4).

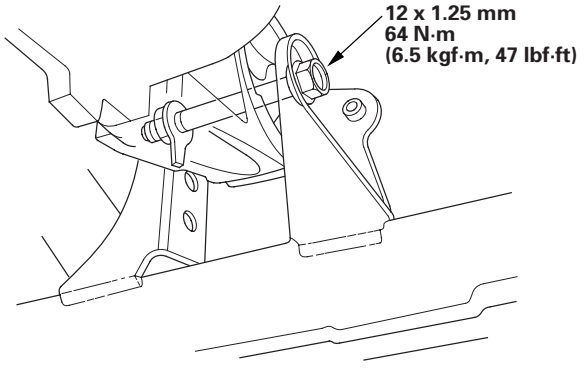
4. Remove the under hood fuse/relay box from the ECM/PCM bracket, then remove the ECM/PCM bracket (see step 13 on page 5-4).

(cont'd)

Transmission Mount Replacement

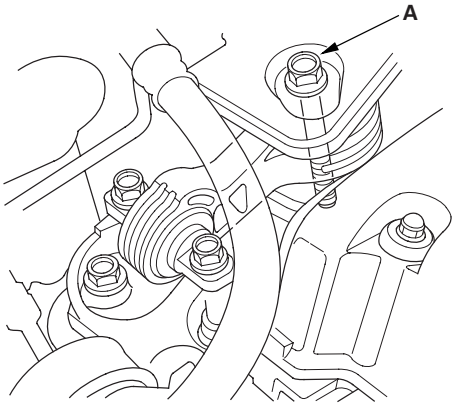
22. Raise the vehicle on the lift.

23. M/T model: Tighten the front mount mounting bolt.



24. Install the splash shield (see step 40 on page 5-20).

1. Loosen the upper torque rod mounting bolt (A).



2. Remove the air cleaner assembly (see page 11-345).

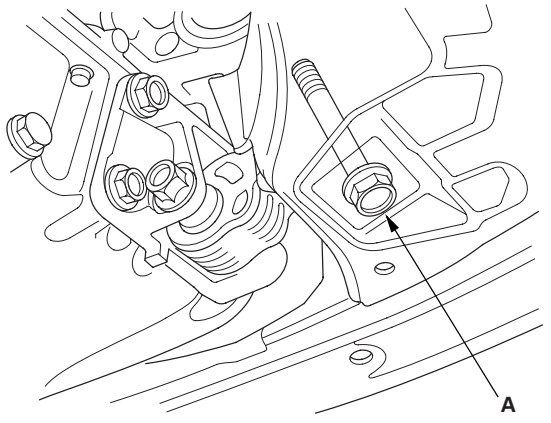
3. Remove the engine control module (ECM)/ powertrain control module (PCM) cover, then remove the three bolts securing the ECM/PCM (see step 10 on page 5-4).

4. Remove the under hood fuse/relay box from the ECM/PCM bracket, then remove the ECM/PCM bracket (see step 13 on page 5-4).

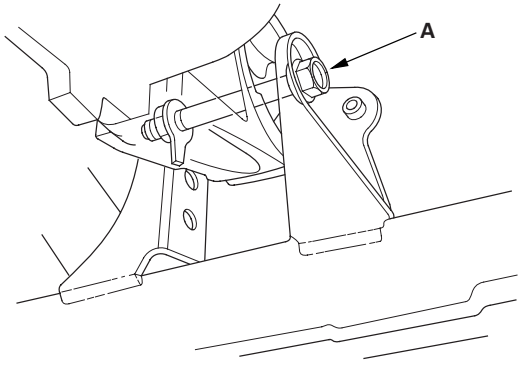
(cont'd)

Transmission Mount Replacement (cont'd)

5. Raise the vehicle on the lift.
6. Remove the splash shield (see step 25 on page 5-5).
7. Loosen the lower torque rod mounting bolt (A).

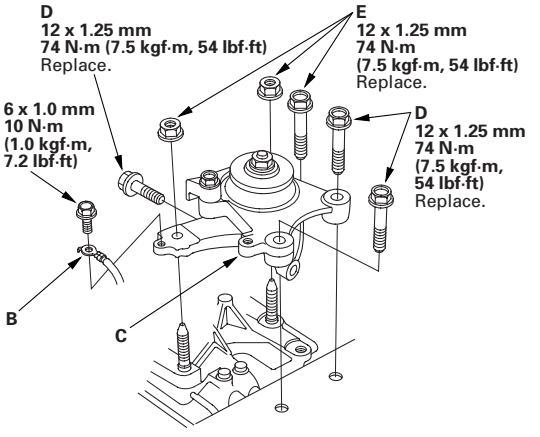


8. M/T model: Loosen the front mount mounting bolt (A).

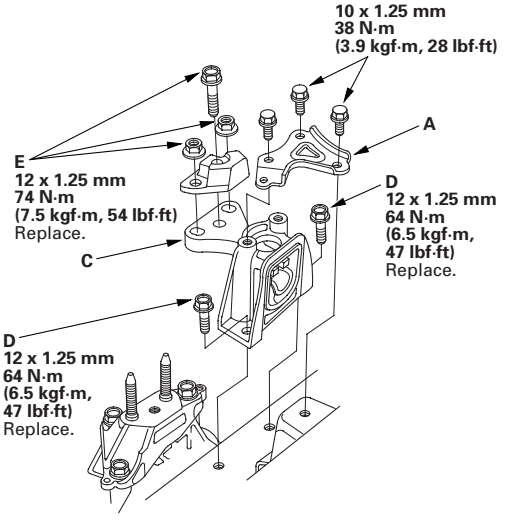


9. Lower the vehicle on the lift.
10. A/T model: Remove the transmission mount stiffener (A).

M/T model



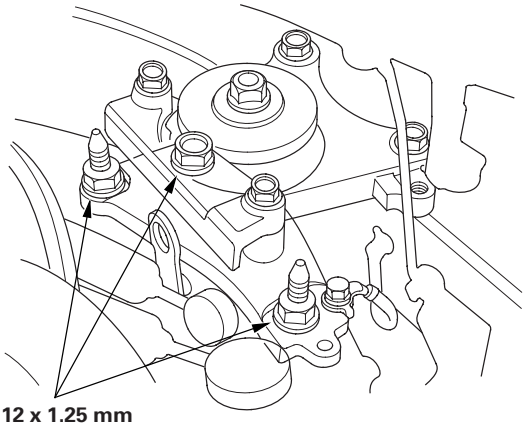
A/T model



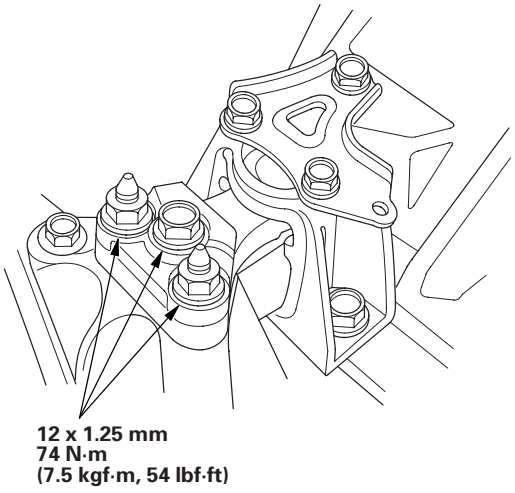
11. M/T model: Remove the ground cable (B).
12. Remove the transmission mount (C).
13. Install the transmission mount, and tighten the transmission mount mounting bolts (D).
14. A/T model: Install the transmission mount stiffener.
15. Loosely tighten the new transmission mounting bolt and nuts (E).
16. M/T model: Install the ground cables.

17. Tighten the transmission mounting bolt and nuts.

M/T model

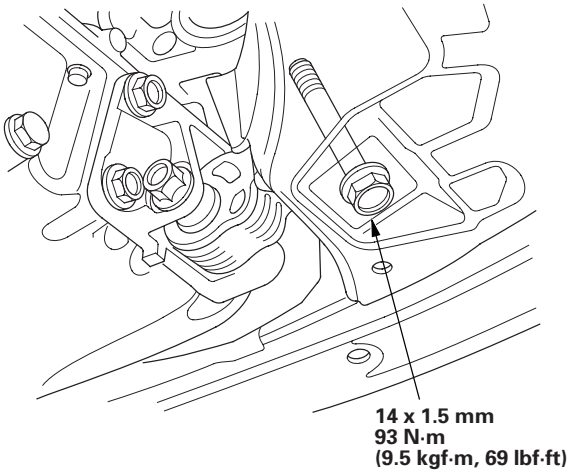


A/T model



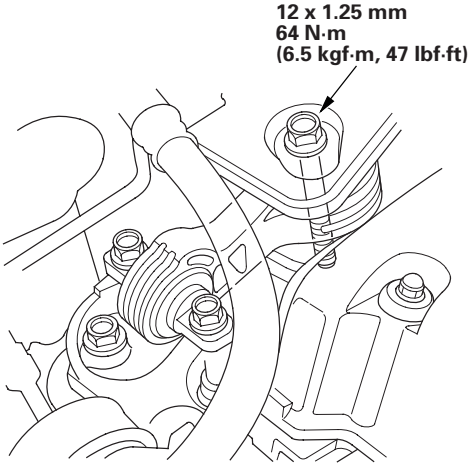
18. Raise the vehicle on the lift.

19. Tighten the lower torque rod mounting bolt.



20. Lower the vehicle on the lift.

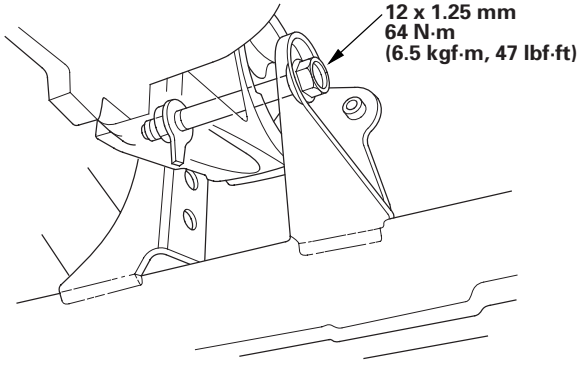
21. Tighten the upper torque rod mounting bolt.



(cont'd)

Transmission Mount Replacement (cont'd)

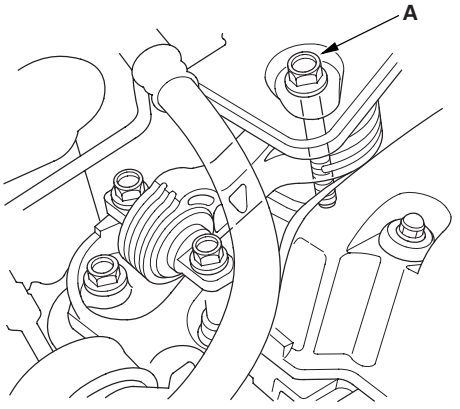
22. Install the ECM/PCM bracket, then install the under-hood fuse/relay box to the ECM/PCM bracket (see step 52 on page 5-22).
23. Install the ECM/PCM, then install the ECM/PCM cover (see step 56 on page 5-23)
24. Install the air cleaner assembly (see page 11-345).
25. Raise the vehicle on the lift.
26. M/T model: Tighten the front mount mounting bolt.



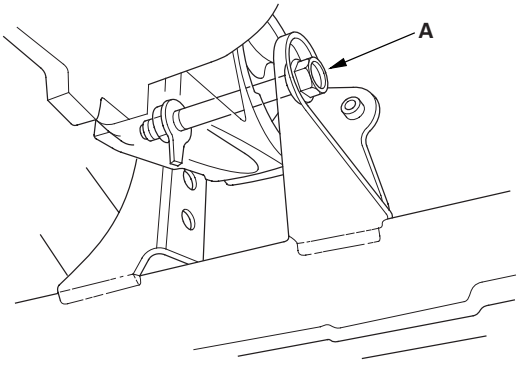
27. Install the splash shield (see step 40 on page 5-20).

Lower Torque Rod Replacement

1. Loosen the upper torque rod mounting bolt (A).

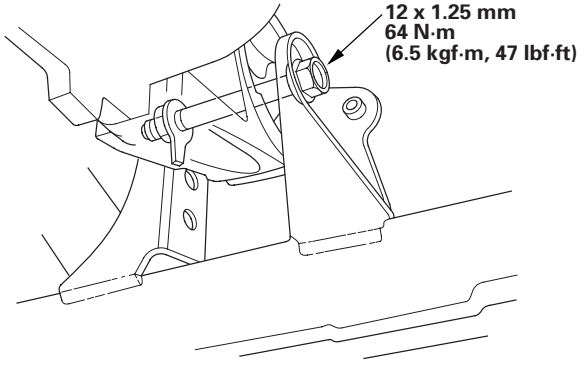


2. Raise the vehicle on the lift.
3. Remove the splash shield (see step 25 on page 5-5).
4. M/T model: Loosen the front mount mounting bolt (A).



Transmission Mount Replacement (cont'd)

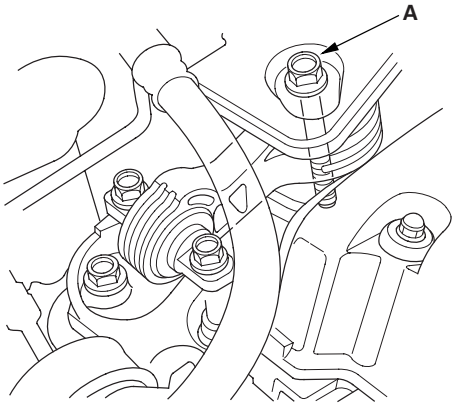
22. Install the ECM/PCM bracket, then install the under-hood fuse/relay box to the ECM/PCM bracket (see step 52 on page 5-22).
23. Install the ECM/PCM, then install the ECM/PCM cover (see step 56 on page 5-23)
24. Install the air cleaner assembly (see page 11-345).
25. Raise the vehicle on the lift.
26. M/T model: Tighten the front mount mounting bolt.



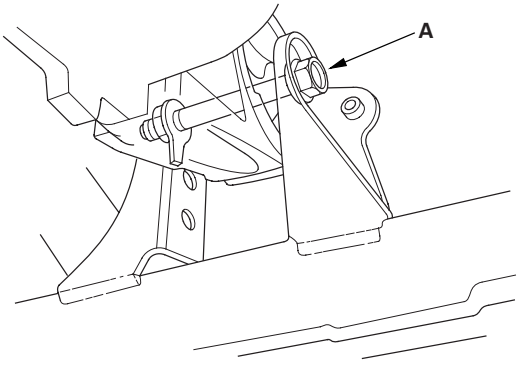
27. Install the splash shield (see step 40 on page 5-20).

Lower Torque Rod Replacement

1. Loosen the upper torque rod mounting bolt (A).

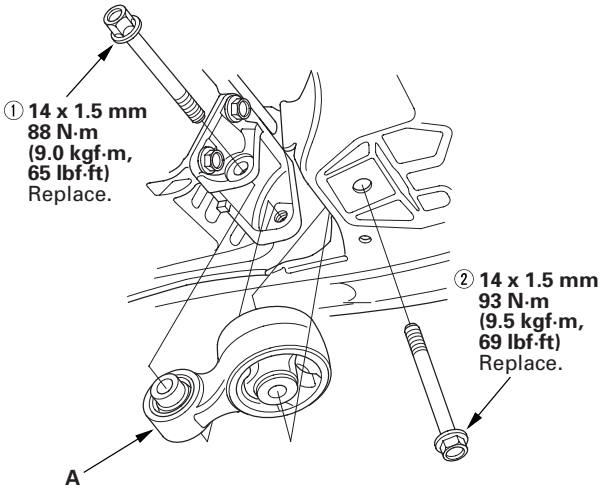


2. Raise the vehicle on the lift.
3. Remove the splash shield (see step 25 on page 5-5).
4. M/T model: Loosen the front mount mounting bolt (A).

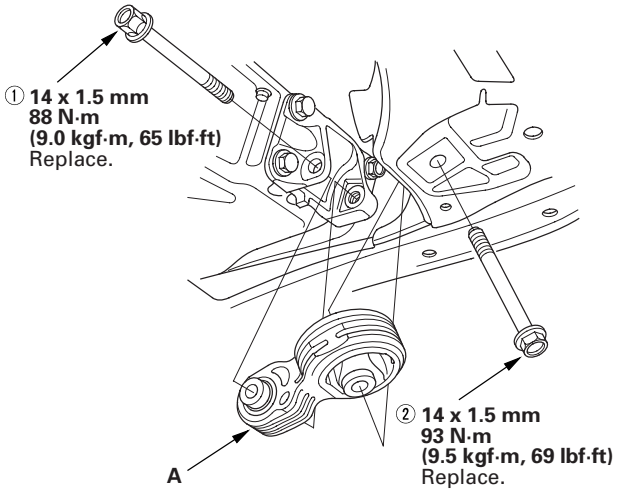


5. Remove the lower torque rod (A).

M/T model



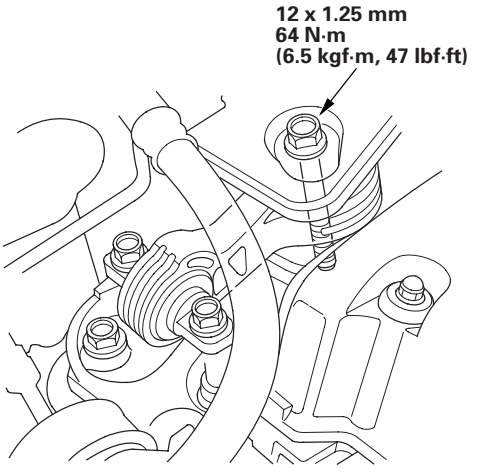
A/T model



6. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown.

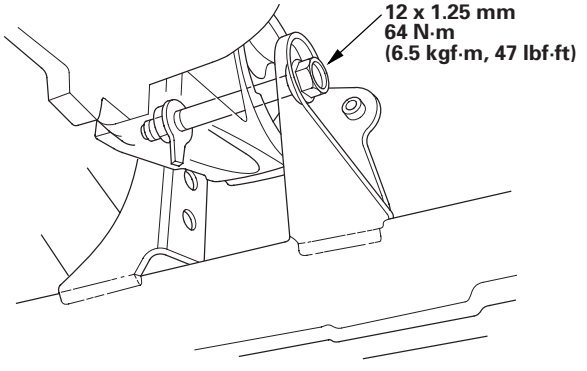
7. Lower the vehicle on the lift.

8. Tighten the upper torque rod mounting bolt.



9. Raise the vehicle on the lift.

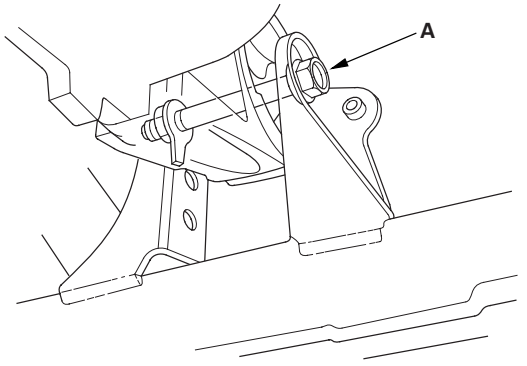
10. M/T model: Tighten the front mount mounting bolt.



11. Install the splash shield (see step 40 on page 5-20).

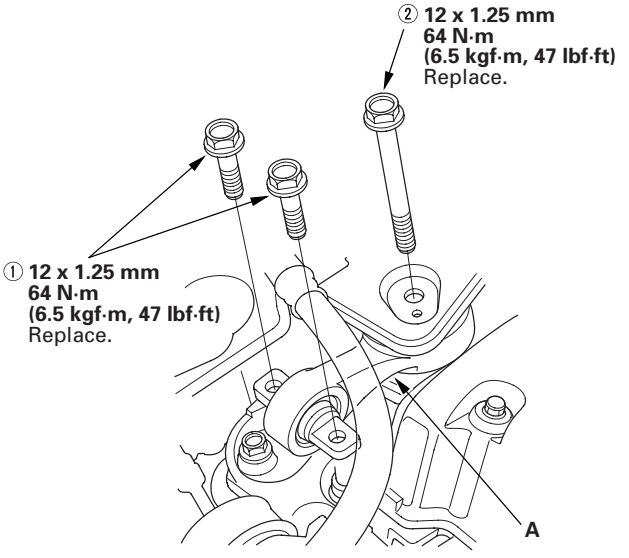
Upper Torque Rod Replacement

1. Raise the vehicle on the lift.
2. Remove the splash shield (see step 25 on page 5-5).
3. M/T model: Loosen the front mount mounting bolt (A).

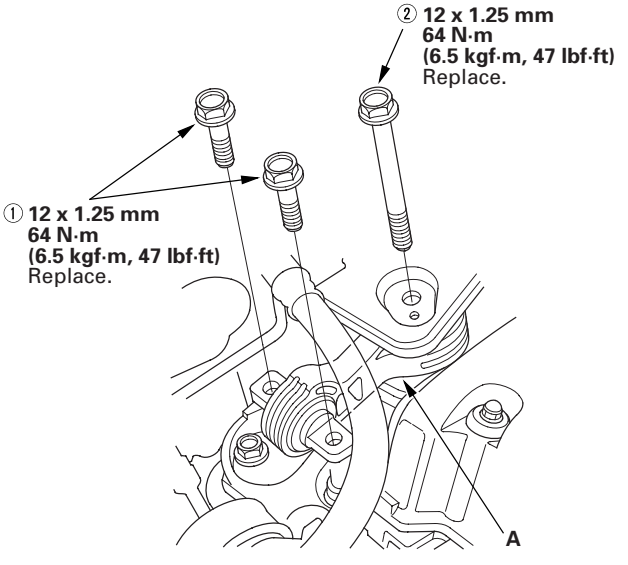


4. Lower the vehicle on the lift.
5. Remove the upper torque rod (A).

M/T model



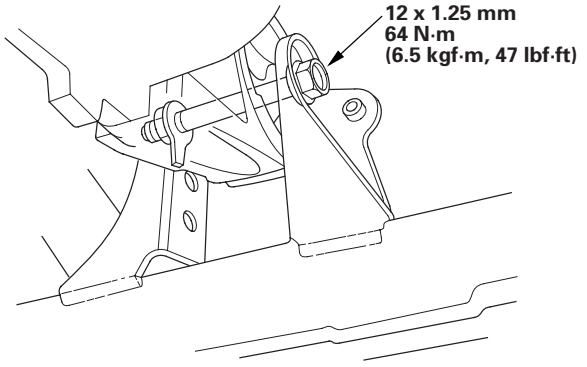
A/T model



6. Install the upper torque rod, then tighten the new bolts in the numbered sequence shown.

7. Raise the vehicle on the lift.

8. M/T model: Tighten the front mount mounting bolt.



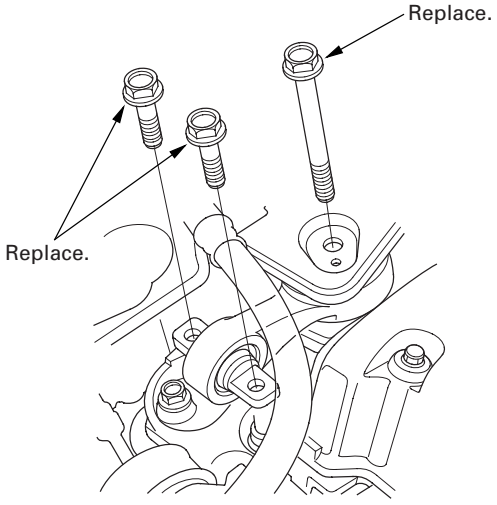
9. Install the splash shield (see step 40 on page 5-20).

Side Engine Mount Bracket Replacement

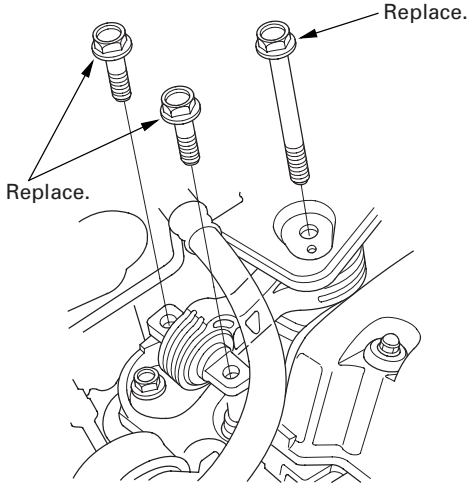
1. Support the engine with a jack and wood block under the oil pan.

2. Remove the upper torque rod.

M/T model



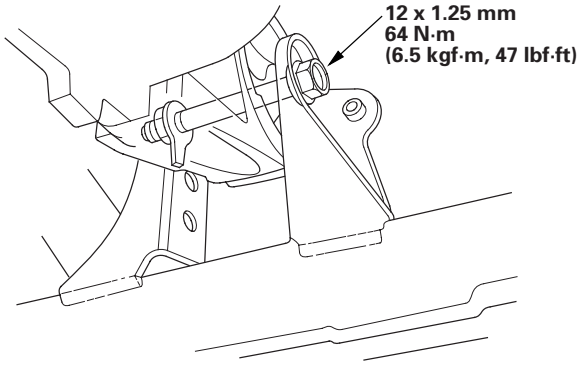
A/T model



(cont'd)

7. Raise the vehicle on the lift.

8. M/T model: Tighten the front mount mounting bolt.



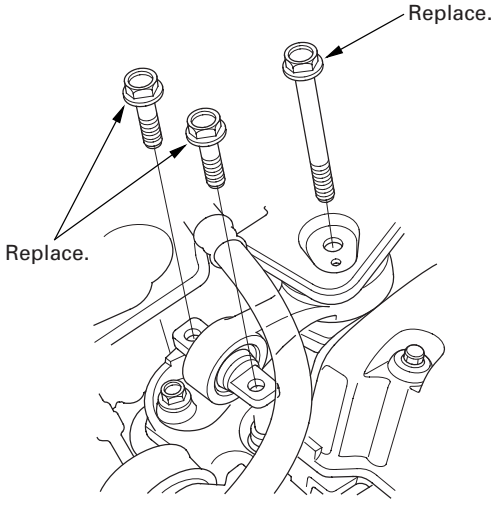
9. Install the splash shield (see step 40 on page 5-20).

Side Engine Mount Bracket Replacement

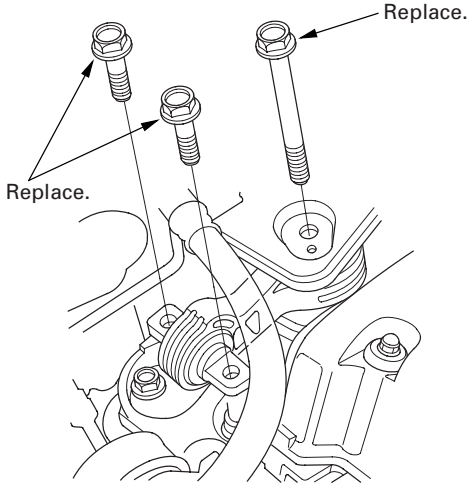
1. Support the engine with a jack and wood block under the oil pan.

2. Remove the upper torque rod.

M/T model



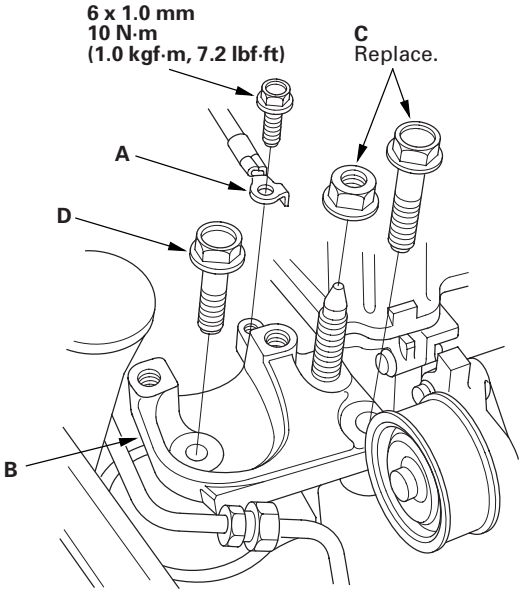
A/T model



(cont'd)

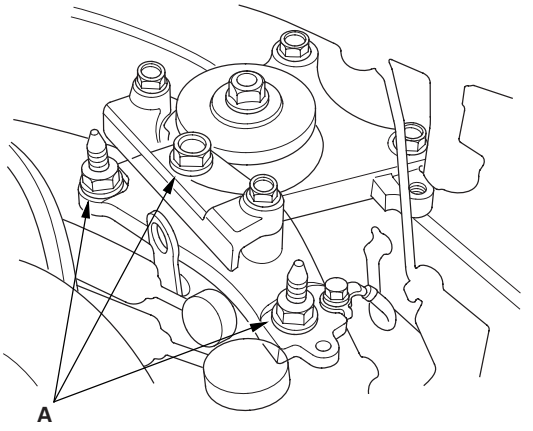
Side Engine Mount Bracket Replacement (cont'd)

3. Remove the ground cable (A), then remove the side engine mount bracket (B).

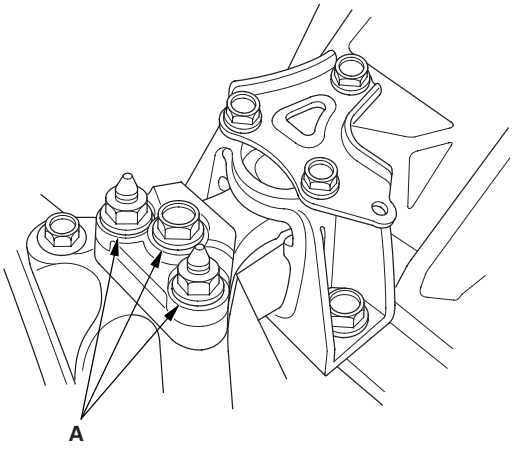


4. Install the side engine mount bracket, then loosely tighten the new bolt and nut (C), then loosely tighten the bolt (D).
5. Install the ground cable.
6. Remove the air cleaner assembly (see page 11-345).
7. Loosen the transmission mounting bolt and nuts (A).

M/T model



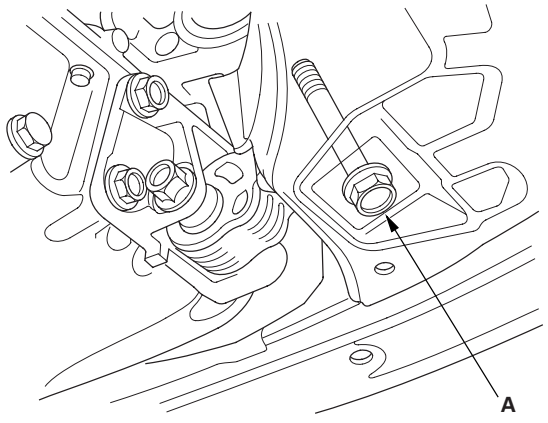
A/T model



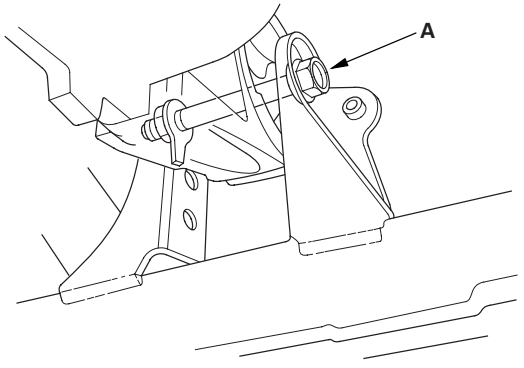
8. Raise the vehicle on the lift.

9. Remove the splash shield (see step 25 on page 5-5).

10. Loosen the lower torque rod mounting bolt (A).

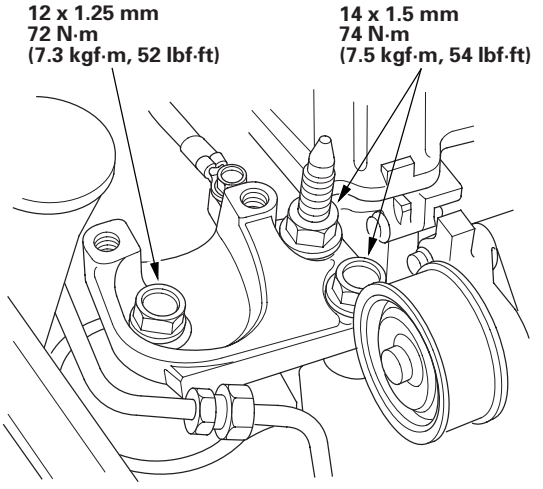


11. M/T model: Loosen the front mount mounting bolt (A).



12. Lower the vehicle on the lift.

13. Tighten the side engine mount mounting bolts and nut.

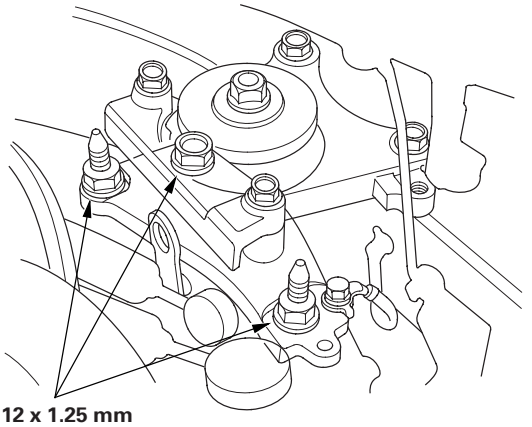


(cont'd)

Side Engine Mount Bracket Replacement (cont'd)

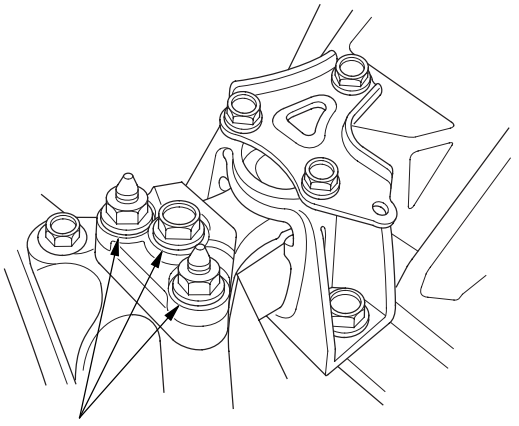
14. Tighten the transmission mounting bolt and nuts.

M/T model



12 x 1.25 mm
74 N·m
(7.5 kgf·m, 54 lbf·ft)

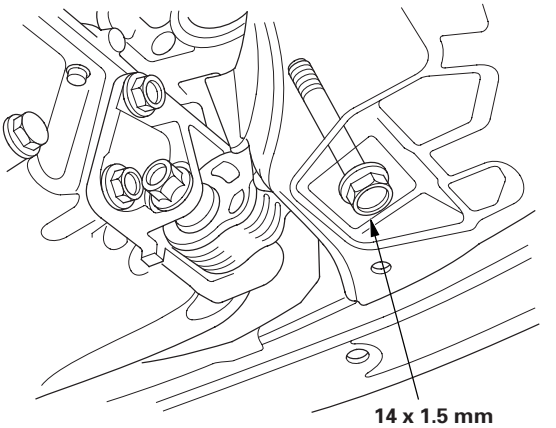
A/T model



12 x 1.25 mm
74 N·m
(7.5 kgf·m, 54 lbf·ft)

15. Raise the vehicle on the lift.

16. Tighten the lower torque rod mounting bolt.



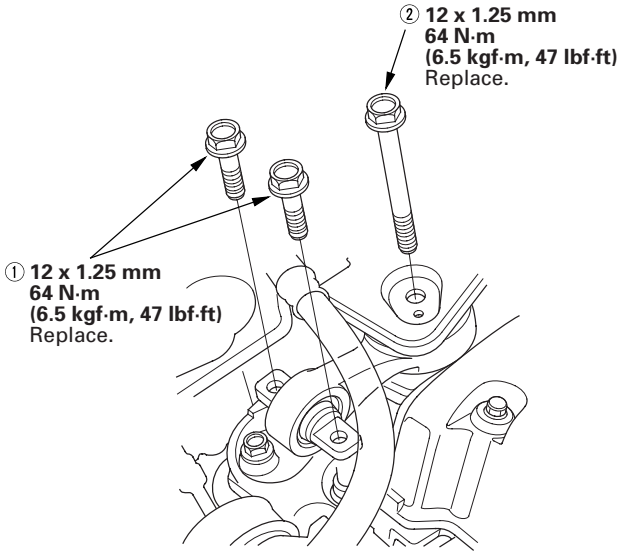
14 x 1.5 mm
93 N·m
(9.5 kgf·m, 69 lbf·ft)

17. Lower the vehicle on the lift.

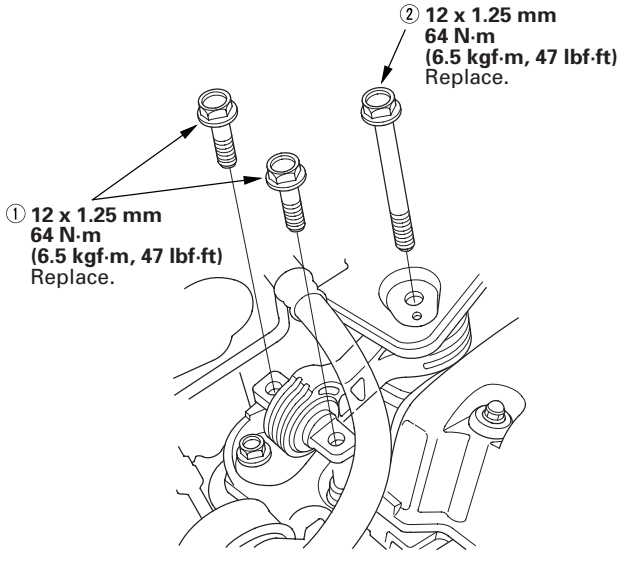
18. Install the air cleaner assembly (see page 11-345).

19. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

M/T model

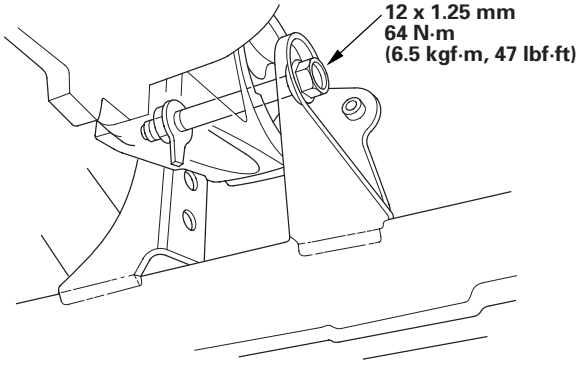


A/T model



20. Raise the vehicle on the lift.

21. M/T model: Tighten the front mount mounting bolt.

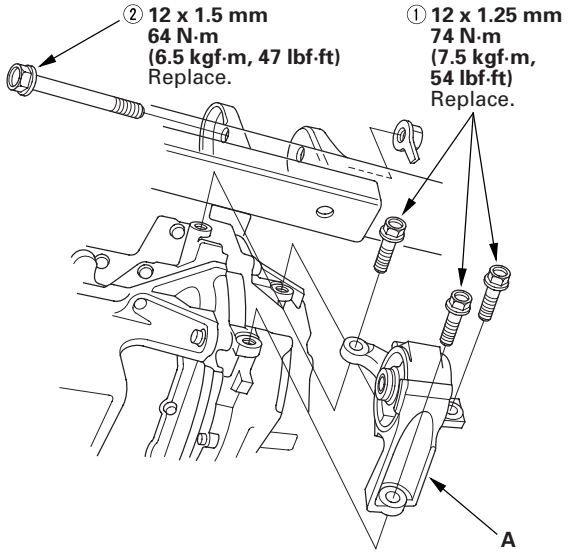


22. Install the splash shield (see step 40 on page 5-20).

Front Engine Mount Replacement

M/T model

1. Raise the vehicle on the lift.
2. Remove the splash shield (see step 25 on page 5-5).
3. Remove the front mount (A).



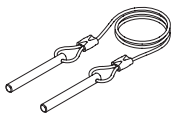
4. Install the front mount, then tighten the new front mount mounting bolts in the numbered sequence shown.
5. Install the splash shield (see step 40 on page 5-20).

Engine Mechanical

Cylinder Head

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAB-RWCA120	Camshaft Lock Pin Set	1
②	07AAJ-PNAA101	Air Pressure Regulator	1
③	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
④	07JAA-001020A	Socket, 19 mm	1
⑤	07JAB-001020A	Holder Handle	1
⑥	07MAA-PR70110	Adjuster	1
⑦	07MAA-PR70120	Locknut Wrench	1
⑧	07NAB-001040A	Holder Attachment, 50 mm	1
⑨	07PAD-0010000	Stem Seal Driver	1
⑩	07ZAJ-PNAA101	VTEC Air Adapter	2
⑪	07ZAJ-PNAA200	VTEC Air Stopper	1
⑫	07ZAJ-PNAA300	Air Joint Adapter	1
⑬	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑭	07746-0010400	Attachment, 52 x 55 mm	1
⑮	07749-0010000	Driver	1
⑯	07757-PJ1010A	Valve Spring Compressor Attachment	1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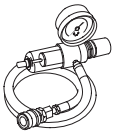
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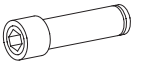
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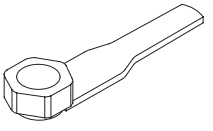
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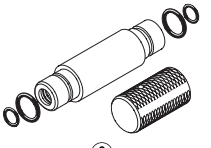
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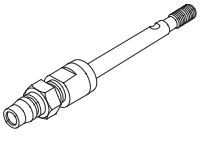
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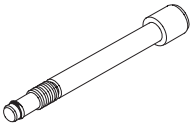
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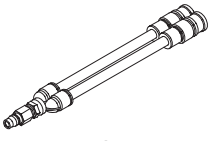
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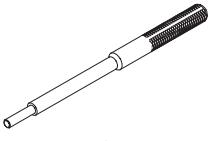
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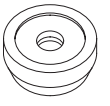
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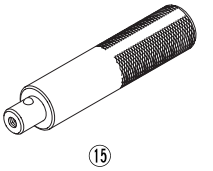
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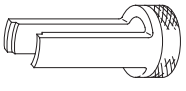
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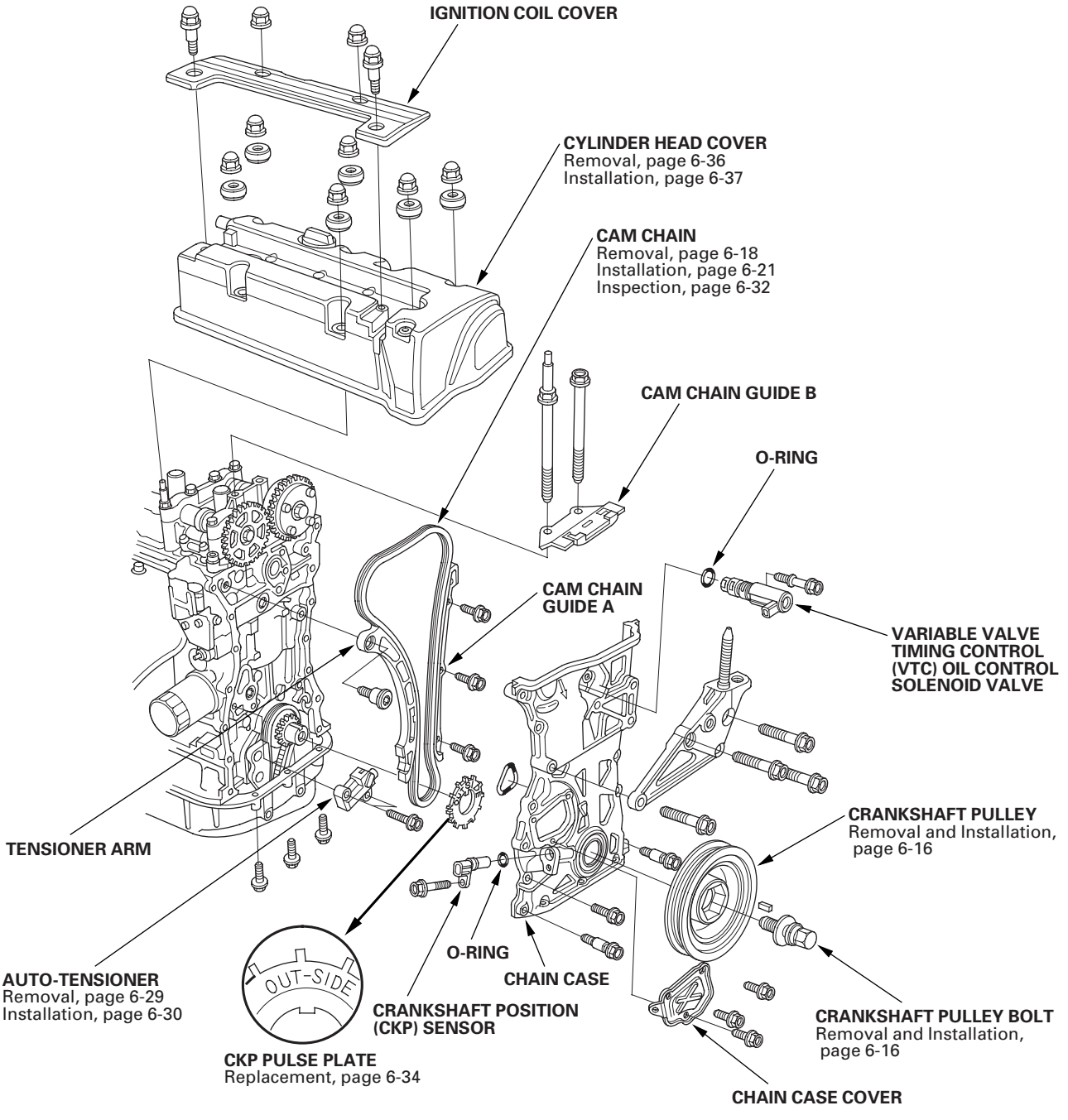
Component Location Index



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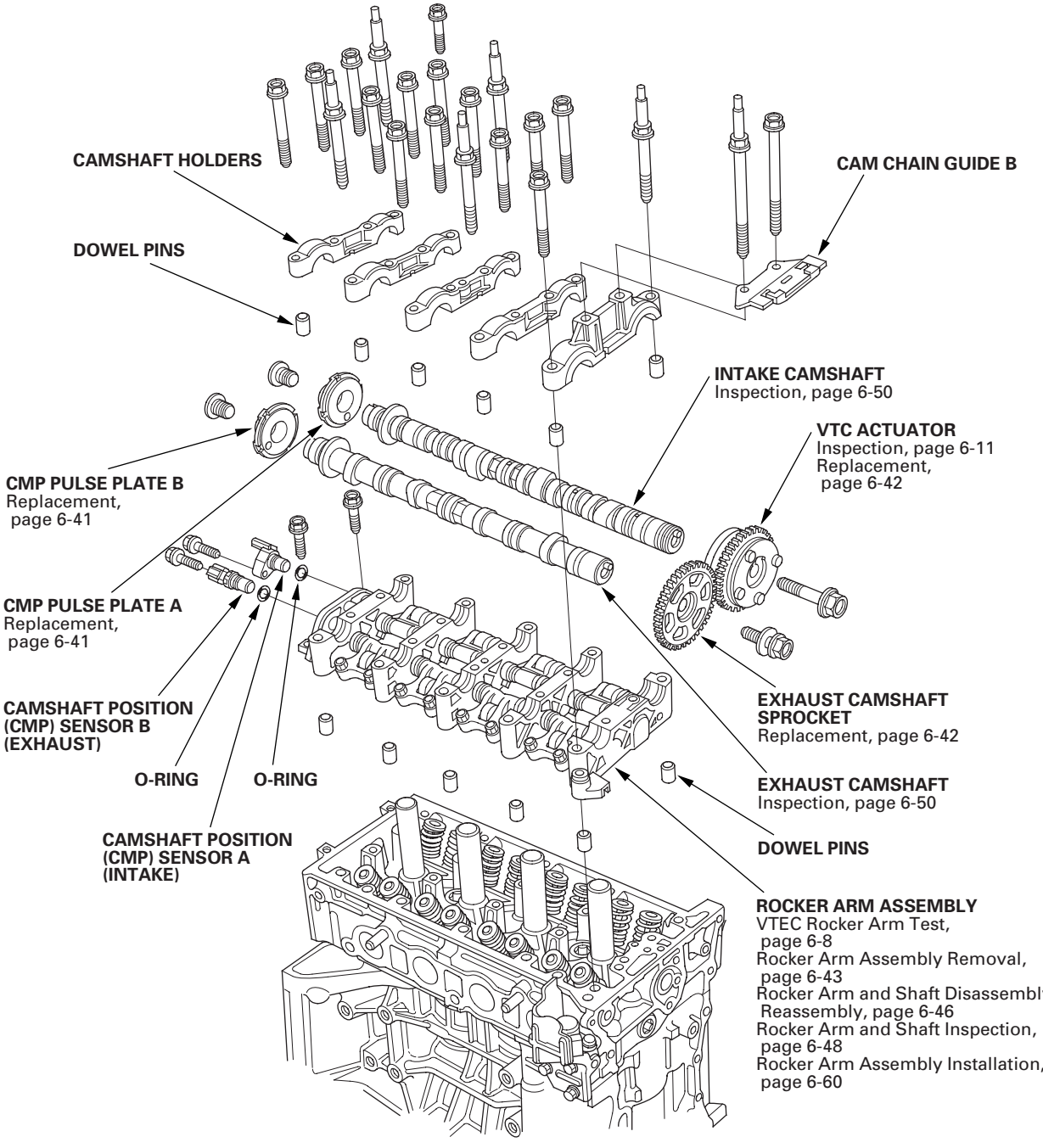
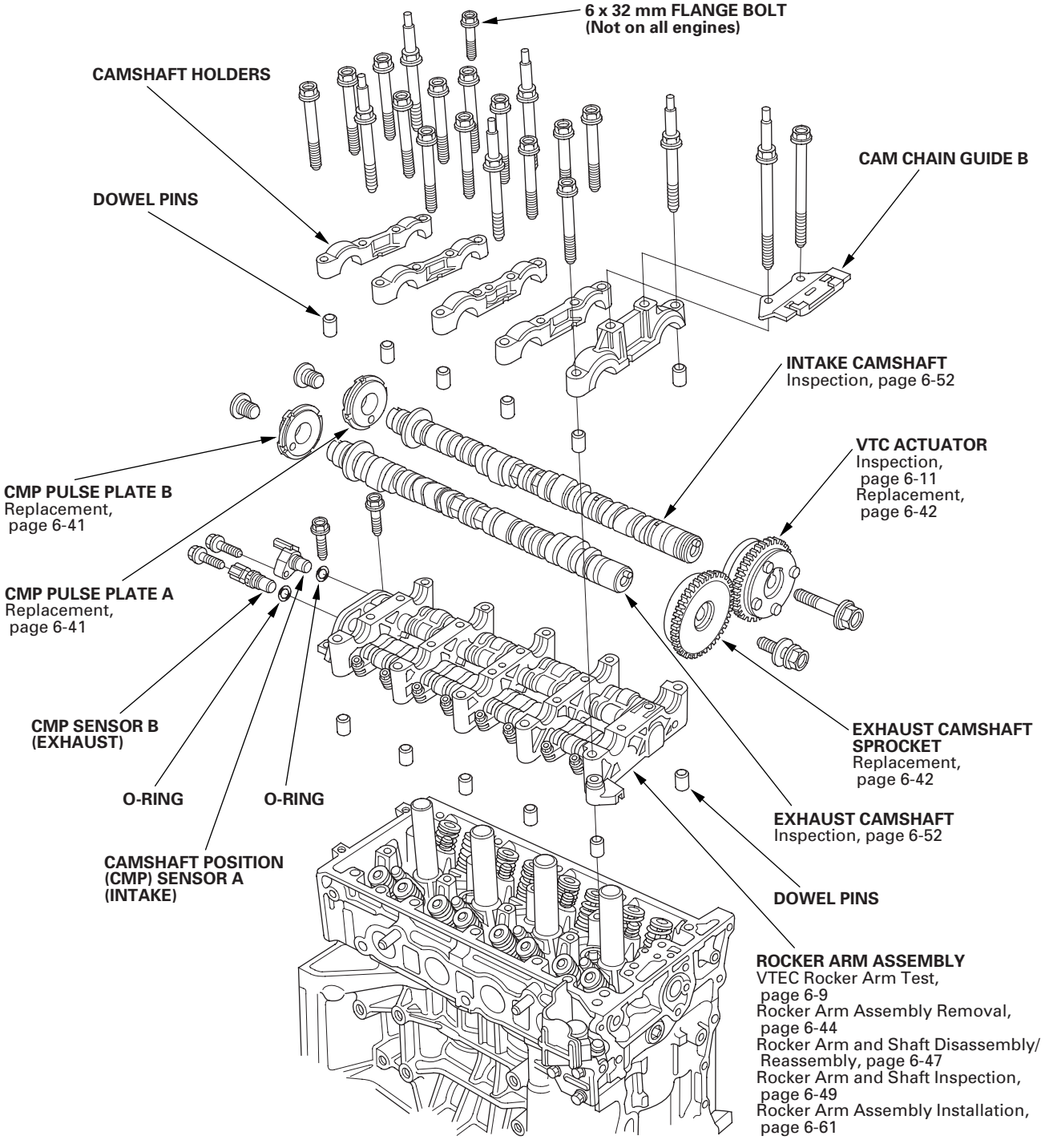
Component Location Index (cont'd)

K20Z2 engine



K20Z3 engine



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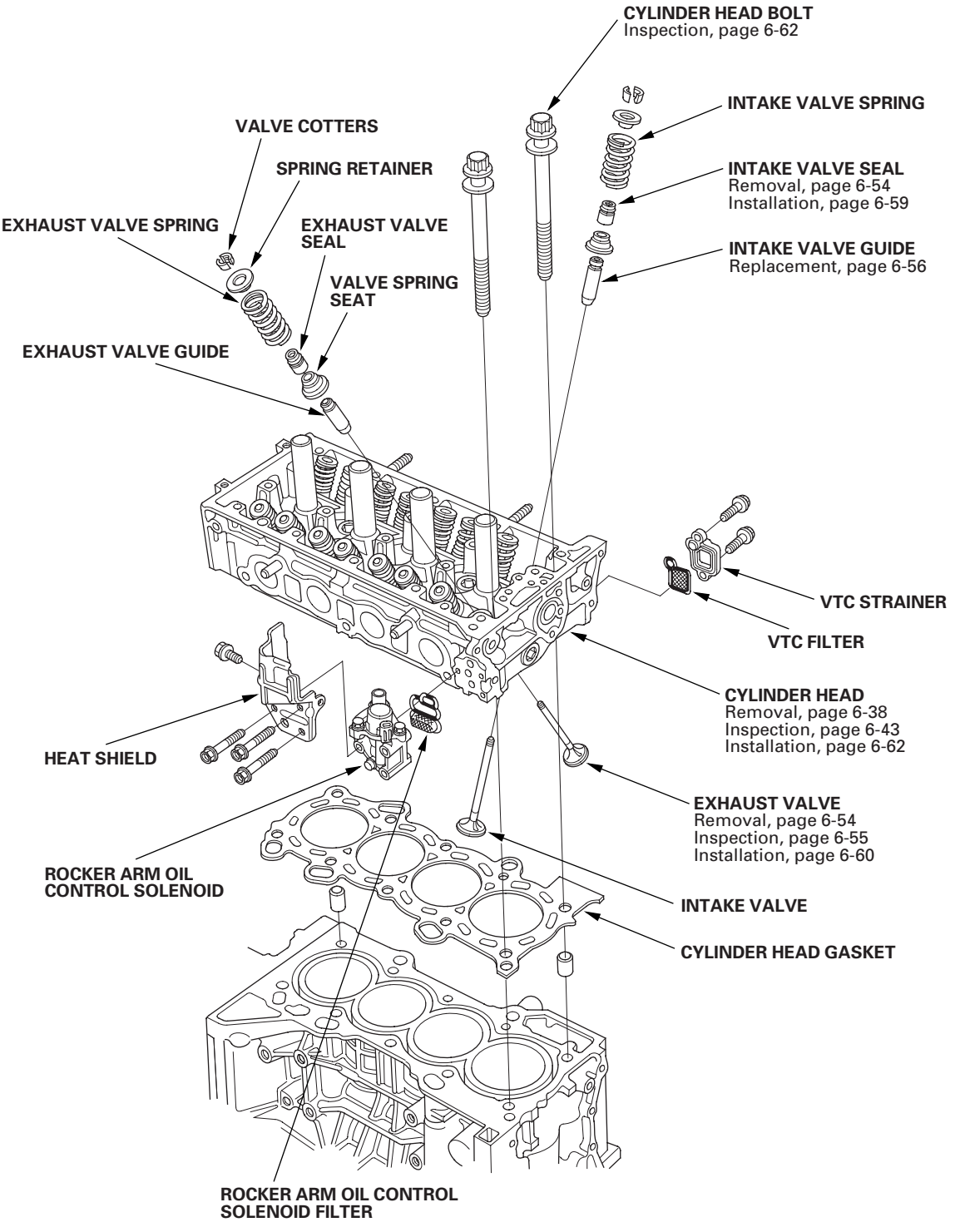
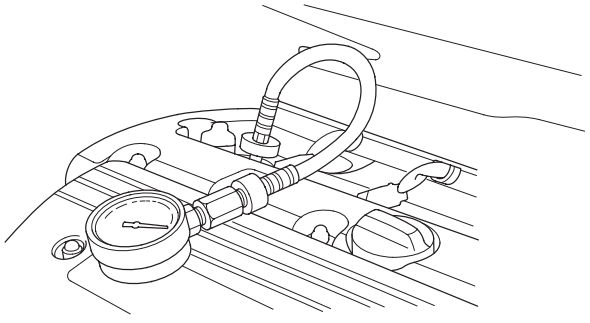


Engine Compression Inspection

NOTE: After this inspection, you must reset the engine control module (ECM)/powertrain control module (PCM), otherwise the ECM/PCM will continue to stop the fuel injectors from operating.

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch to LOCK (0).
3. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
4. Turn the ignition switch to ON (II).
5. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
6. Select ALL INJECTORS STOP in the PGM-FI, INSPECTION menu with the HDS.
7. Turn the ignition switch to LOCK (0).
8. Remove the four ignition coils (see page 4-21).
9. Remove the four spark plugs.
10. Attach the compression gauge to a spark plug hole.



11. Step on the accelerator pedal to open the throttle fully, then crank the engine with the starter motor, and measure the compression.

    Compression Pressure:
    Above 930 kPa (9.5 kgf/cm^2, 135 psi)

12. Measure the compression on the remaining cylinders.

    Maximum Variation:
    Within 200 kPa (2.0 kgf/cm^2, 28 psi)

13. If the compression is not within specifications, check the following items, then remeasure the compression.

    - Incorrect valve clearance
    - Confirmation of cam timing
    - Damaged or worn cam lobes
    - Damaged or worn valves and seats
    - Damaged cylinder head gasket
    - Damaged or worn piston rings
    - Damaged or worn piston and cylinder bore

14. Remove the compression gauge from the spark plug hole.
15. Install the four spark plugs.
16. Install the four ignition coils (see page 4-21).
17. Select the ECM/PCM reset (see page 11-4) in the PGM-FI INSPECTION menu to cancel ALL INJECTORS STOP with the HDS.

VTEC Rocker Arm Test

Special Tools Required
- VTEC air stopper 07ZAJ-PNAA200
- VTEC air adapter 07ZAJ-PNAA101
- Air joint adapter 07ZAJ-PNAA300
- Air pressure regulator 07AAJ-PNAA101

K20Z2 engine

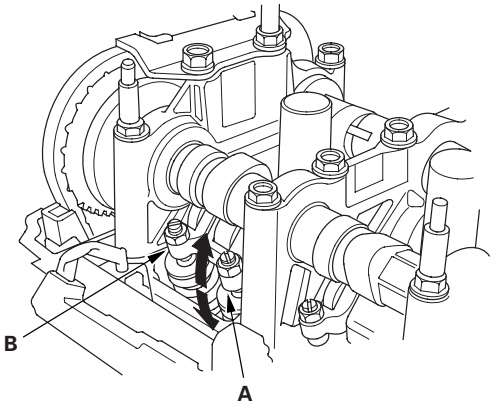
1. Start the engine, and let it run for 5 minutes, then turn the ignition switch to LOCK (0).

2. Remove the cylinder head cover (see page 6-36).

3. Set the No. 1 piston at top dead center (TDC) (see step 5 on page 6-18).

4. Move the intake primary rocker arm (A) for the No. 1 cylinder. The primary rocker arm should move independently of the intake secondary rocker arm (B).

   - If the intake primary rocker arm moves freely, go to step 5.
   - If the intake primary rocker arm do not move independently, remove the primary and secondary rocker arms as an assembly and check that the pistons in the secondary and primary rocker arms move smoothly. If any rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly, then retest.

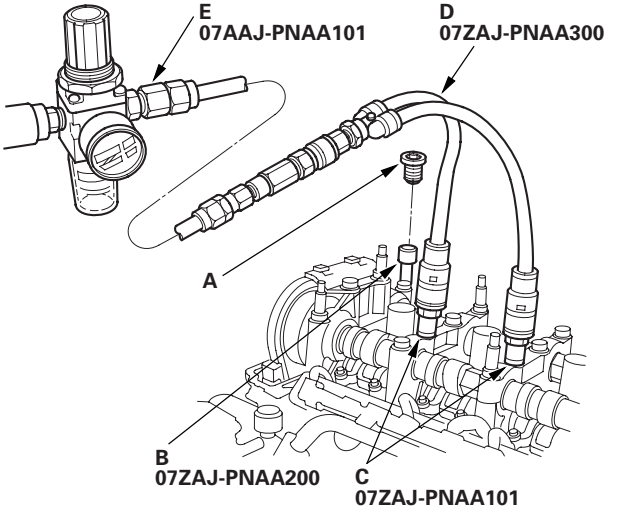


5. Repeat step 4 on the remaining intake primary rocker arms with each piston at TDC. When all the primary rocker arms pass the test, go to step 6.

6. Check that the air pressure on the shop air compressor gauge indicates over 400 kPa (4 kgf/cm^2, 57 psi).

7. Inspect the valve clearance (see page 6-12).

8. Remove the sealing bolt (A) from the relief hole, and install the VTEC air stopper (B).



9. Remove the No. 2 and No. 3 camshaft holder bolts, and install the VTEC air adapters (C) finger-tight.

10. Connect the air joint adapter (D) and the air pressure regulator (E).

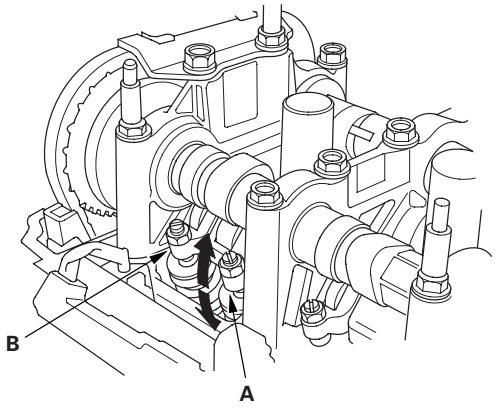
11. Loosen the valve on the air pressure regulator, and apply the specified air pressure.

    Specified Air Pressure:
    290 kPa (3.0 kgf/cm^2, 42 psi)

    NOTE: If the rocker arm piston does not move after applying air pressure, move the primary or secondary rocker arm up and down manually by rotating the crankshaft clockwise.

12. With the specified air pressure applied, move the intake primary rocker arm (A) for the No. 1 cylinder. The primary rocker arm and secondary rocker arm (B) should move together.

    - If the primary and the secondary rocker arm move together, go to step 13.
    - If the intake secondary rocker arm do not move together, remove the primary and secondary rocker arms as an assembly, and check that the pistons in the primary and secondary rocker arms move smoothly. If any rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly, then retest.



13. Repeat step 12 on the remaining primary rocker arms with each piston at TDC. When all the primary rocker arms pass the test, go to step 14.

14. Remove the air pressure regulator, the air joint adapter, the VTEC air stopper and VTEC air adapters.

15. Tighten the camshaft holder mounting bolts to 22 N·m (2.2 kgf·m, 16 lbf·ft).

16. Tighten the sealing bolt to 20 N·m (2.0 kgf·m, 14 lbf·ft).

17. Install the cylinder head cover (see page 6-37).

Special Tools Required
- VTEC air stopper 07ZAJ-PNAA200
- VTEC air adapter 07ZAJ-PNAA101
- Air joint adapter 07ZAJ-PNAA300
- Air pressure regulator 07AAJ-PNAA101

K20Z3 engine

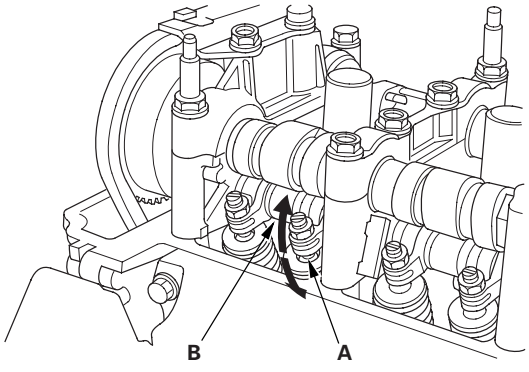
1. Start the engine and let it run for 5 minutes, then turn the ignition switch to LOCK (0).

2. Remove the cylinder head cover (see page 6-36).

3. Set the No. 1 piston at TDC (see step 5 on page 6-18).

4. Move the secondary rocker arm (A) for No. 1 cylinder. The secondary rocker arm should move independently of the mid rocker arm (B).

    - If the secondary rocker arm moves freely, go to step 5.
    - If the secondary rocker arm do not move independently, remove the mid, primary, and secondary rocker arms as an assembly, and check that the pistons in the rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary, and secondary rocker arms as an assembly, then retest.



5. Repeat step 4 on the remaining secondary rocker arms with each piston at TDC. When all the secondary rocker arms pass the test, go to step 6.

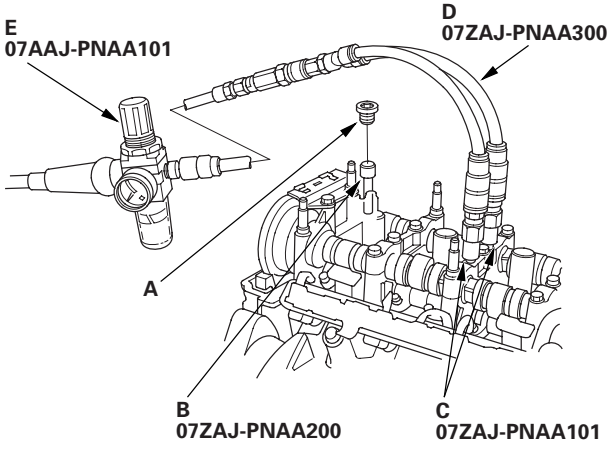
6. Check that the air pressure on the shop air compressor gauge indicates over 400 kPa (4.0 kgf/cm^2, 57 psi).

7. Inspect the valve clearance (see page 6-14).

(cont'd)

VTEC Rocker Arm Test (cont'd)

8. Remove the sealing bolt (A) from the relief hole, and install the VTEC air stopper (B).



9. Remove the No. 3 camshaft holder bolts, and install the VTEC air adapters (C) finger-tight.

10. Connect the air joint adapter (D) and the air pressure regulator (E).

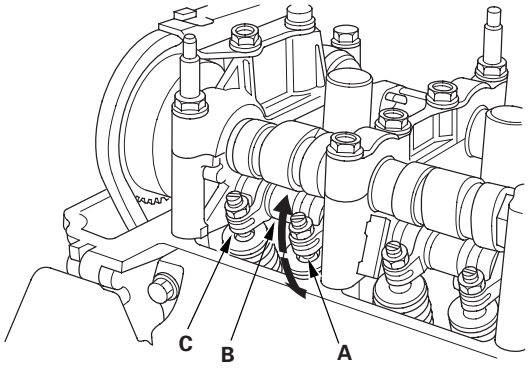
11. Loosen the valve on the air pressure regulator, and apply the specified air pressure.

    Specified Air Pressure:
    290 kPa (3.0 kgf/cm^2, 42 psi)

    NOTE: If the rocker arm piston does not move after applying air pressure, move the rocker arm up and down manually by rotating the crankshaft clockwise.

12. With the specified air pressure applied, move the secondary rocker arm (A) for the No. 1 cylinder. The mid rocker arm (B), primary rocker arm (C), and secondary rocker arm should move together.

    - If the mid, primary, and secondary rocker arms move together, go to step 13.
    - If the mid and primary rocker arms do not move together with the secondary rocker arm, remove the mid, primary, and secondary rocker arms as an assembly, and check that the pistons in the rocker arms move smoothly. If any rocker arm needs replacing, replace the mid, primary, and secondary rocker arms as an assembly, then retest.



13. Repeat step 12 on the remaining secondary rocker arms with each piston at TDC. When all the secondary rocker arms pass the test, go to step 14.

14. Remove the air pressure regulator, air joint adapter, and the VTEC air stopper and VTEC air adapters.

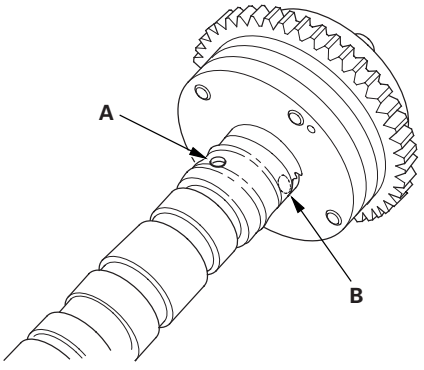
15. Tighten the camshaft holder mounting bolts to 22 N·m (2.2 kgf·m, 16 lbf·ft).

16. Tighten the sealing bolt to 20 N·m (2.0 kgf·m, 14 lbf·ft).

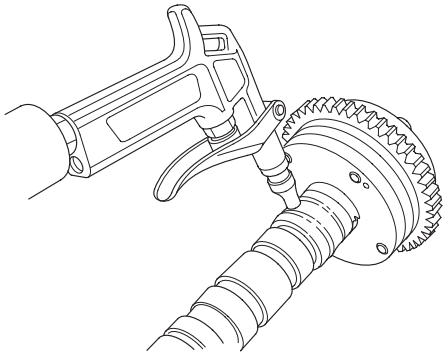
17. Install the cylinder head cover (see page 6-37).

VTC Actuator Inspection

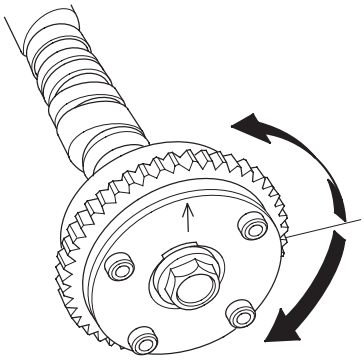
1. Remove the cam chain (see page 6-18).
2. Loosen the rocker arm adjusting screws:
   - K20Z2 engine (see step 2 on page 6-43)
   - K20Z3 engine (see step 2 on page 6-44)
3. Remove the camshaft holder:
   - K20Z2 engine (see step 3 on page 6-43)
   - K20Z3 engine (see step 3 on page 6-44)
4. Remove the intake camshaft.
5. Check that the variable valve timing control (VTC) actuator is locked by turning the VTC actuator counterclockwise. If not locked, turn the VTC actuator clockwise until it stops, then recheck it. If it is still not locked, replace the VTC actuator.
6. Seal the advance holes (A) and the retard holes (B) in the No. 1 camshaft journal with tape.



7. Punch a hole in the tape over one of the advance holes.
8. Apply air to the advance hole to release the lock.



9. Check that the VTC actuator moves smoothly. If the VTC actuator does not move smoothly, replace the VTC actuator.



10. Remove the tape and adhesive residue from the No. 1 camshaft journal.
11. Make sure the punch marks on the VTC actuator and the exhaust camshaft sprocket are facing up, then set the camshafts in the rocker shaft holder:
    - K20Z2 engine (see step 6 on page 6-61)
    - K20Z3 engine (see step 6 on page 6-62)
12. Set the camshaft holders and cam chain guide B in place:
    - K20Z2 engine (see step 7 on page 6-61)
    - K20Z3 engine (see step 7 on page 6-62)
13. Tighten the camshaft holder bolts to the specified torque:
    - K20Z2 engine (see step 8 on page 6-61)
    - K20Z3 engine (see step 8 on page 6-62)
14. Hold the camshaft, and turn the VTC actuator clockwise until you hear it click. Make sure to lock the VTC actuator by turning it.
15. Install the cam chain (see page 6-21).
16. Adjust the valve clearance:
    - K20Z2 engine (see page 6-12)
    - K20Z3 engine (see page 6-14)

Valve Clearance Adjustment

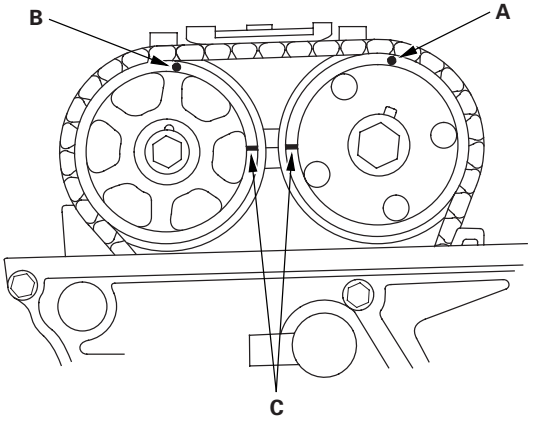
Special Tools Required
- Locknut wrench 07MAA-PR70120
- Adjuster 07MAA-PR70110

K20Z2 engine

NOTE: Connector the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3), and monitor the engine coolant temperature (ECT) sensor 1 with the HDS. Adjust the valve clearance only when the engine coolant temperature is less than 38 ℃ (100 ℉).

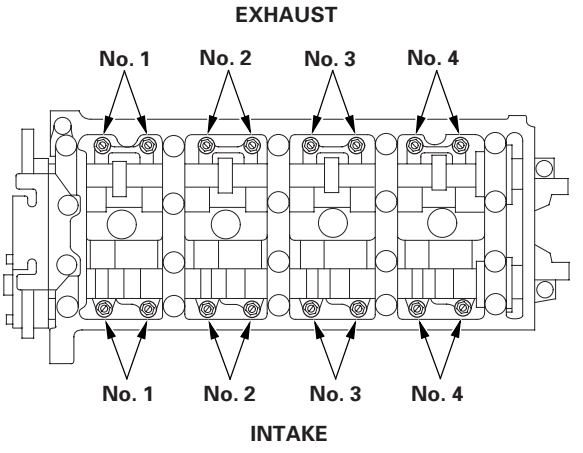
1. Remove the cylinder head cover (see page 6-36).

2. Set the No. 1 piston at top dead center (TDC). The punch mark (A) on the variable valve timing control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and the exhaust camshaft sprocket.

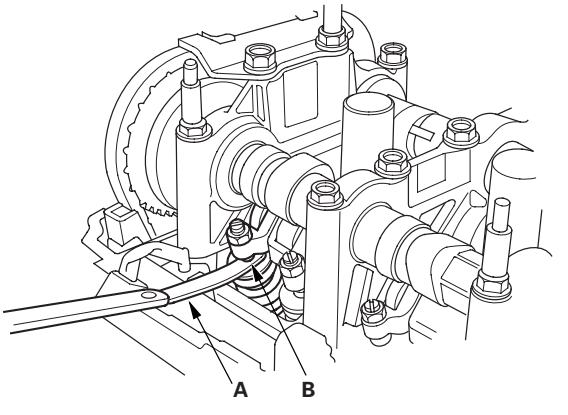


3. Select the correct feeler gauge for the valve clearance you are going to check.

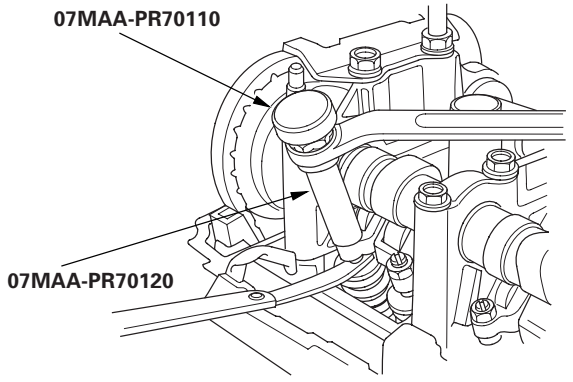
Valve Clearance
Intake: 0.21—0.25 mm (0.008—0.010 in.)
Exhaust: 0.28—0.32 mm (0.011—0.013 in.)



4. Insert the feeler gauge (A) between the adjusting screw (B) and the end of the valve stem, then slide it back and forth, you should feel a slight amount of drag.



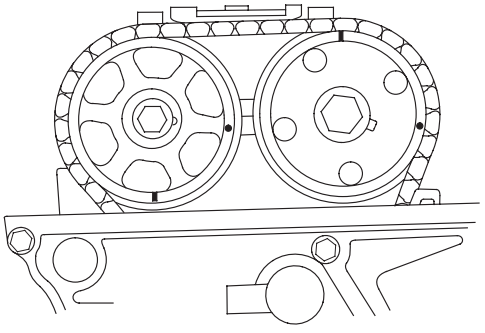
5. If you feel too much or too little drag, loosen the locknut with the locknut wrench and the adjuster, and turn the adjusting screw until the drag on the feeler gauge is correct.



6. Tighten the locknut to the specified torque, and recheck the clearance. Repeat the adjustment if necessary.

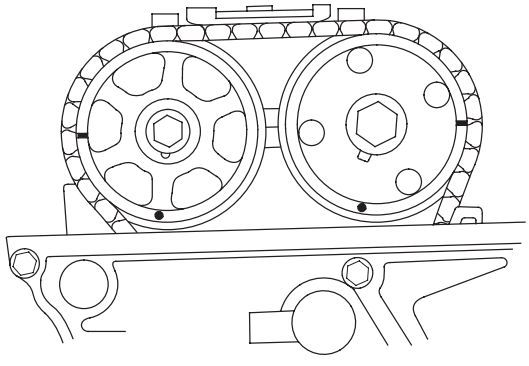
Specified Torque
Intake:
7 x 0.75 mm
20 N·m (2.0 kgf·m, 14 lbf·ft)
Apply new engine oil to the nut threads.
Exhaust:
7 x 0.75 mm
14 N·m (1.4 kgf·m, 10 lbf·ft)
Apply new engine oil to the nut threads.

7. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).



8. Check and, if necessary, adjust the valve clearance on the No. 3 cylinder.

9. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).

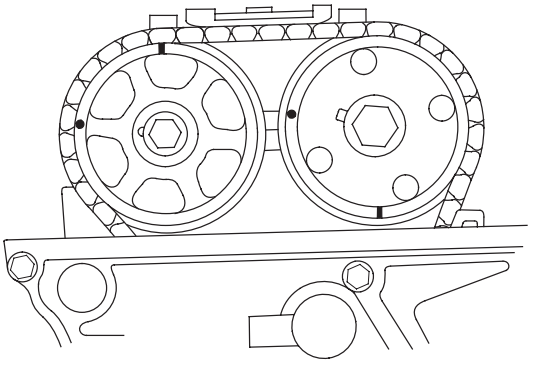


10. Check and, if necessary, adjust the valve clearance on the No. 4 cylinder.

(cont'd)

Valve Clearance Adjustment (cont'd)

11. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).



12. Check and, if necessary, adjust the valve clearance on the No. 2 cylinder.

13. Install the cylinder head cover (see page 6-37).

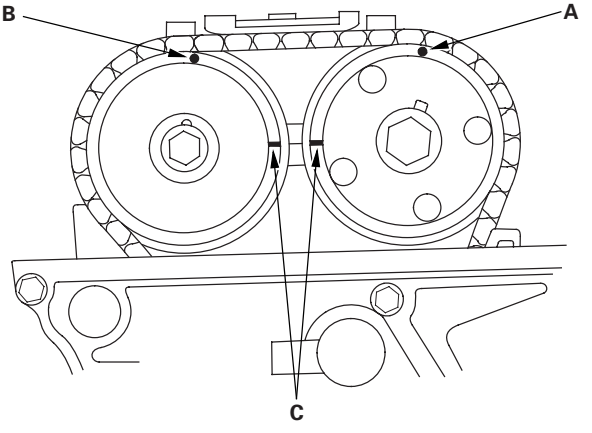
Special Tools Required
- Locknut wrench 07MAA-PR70120
- Adjuster 07MAA-PR70110

K20Z3 engine

NOTE: Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3), and monitor the engine coolant temperature (ECT) sensor 1 with the HDS. Adjust the valve clearance only when the engine coolant temperature is less than 38 ℃ (100 ℉).

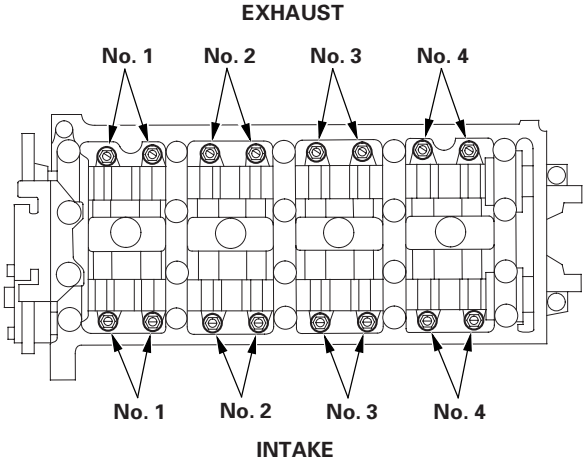
1. Remove the cylinder head cover (see page 6-36).

2. Set the No. 1 piston at top dead center (TDC). The punch mark (A) on the variable valve timing control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and the exhaust camshaft sprocket.

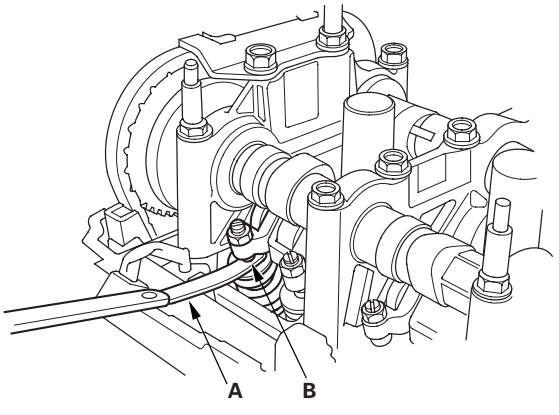


3. Select the correct feeler gauge for the valve clearance you are going to check.

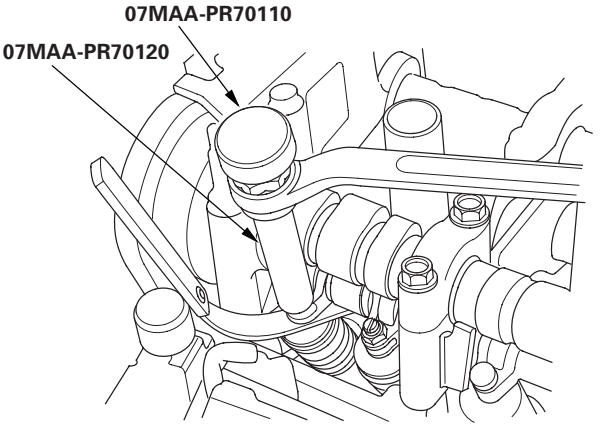
Valve Clearance
Intake: 0.21—0.25 mm (0.008—0.010 in.)
Exhaust: 0.25—0.29 mm (0.010—0.011 in.)



4. Insert the feeler gauge (A) between the adjusting screw (B) and the end of the valve stem, then slide it back and forth, you should feel a slight amount of drag.



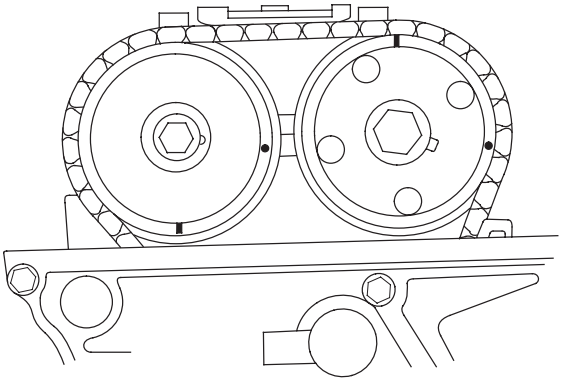
5. If you feel too much or too little drag, loosen the locknut with the locknut wrench and the adjuster, and turn the adjusting screw until the drag on the feeler gauge is correct.



6. Tighten the locknut to specified torque, and recheck the clearance. Repeat the adjustment if necessary.

Specified Torque
7 x 0.75 mm
20 N·m (2.0 kgf·m, 14 lbf·ft)
Apply new engine oil to the nut threads.

7. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).

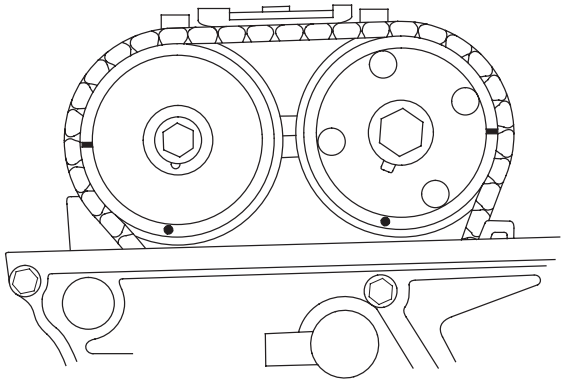


8. Check and, if necessary, adjust the valve clearance on the No. 3 cylinder.

(cont'd)

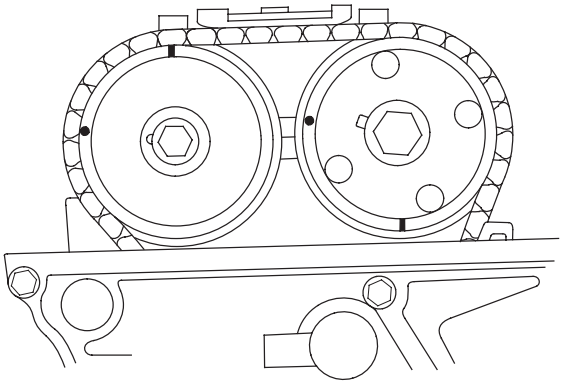
Valve Clearance Adjustment (cont'd)

9. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).



10. Check and, if necessary, adjust the valve clearance on the No. 4 cylinder.

11. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).



12. Check and, if necessary, adjust the valve clearance on the No. 2 cylinder.

13. Install the cylinder head cover (see page 6-37).

Crankshaft Pulley Removal and Installation

Special Tools Required
- Holder handle 07JAB-001020A
- Holder Attachment, 50 mm 07NAB-001040A
- Socket, 19 mm 07JAA-001020A or a commercially available 19 mm socket

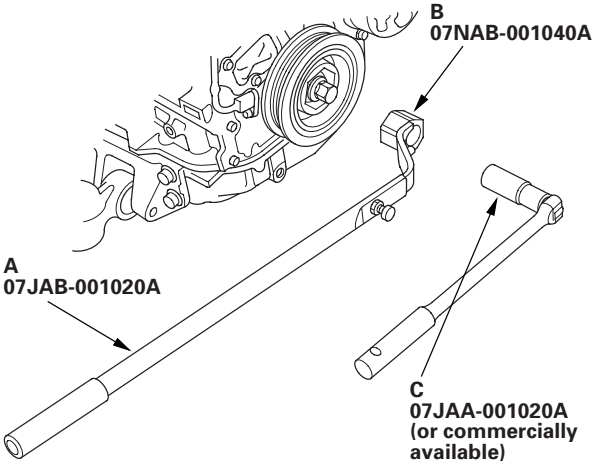
Removal

1. Remove the right front wheels.

2. Remove the splash shield (see step 25 on page 5-5).

3. Remove the drive belt (see page 4-31).

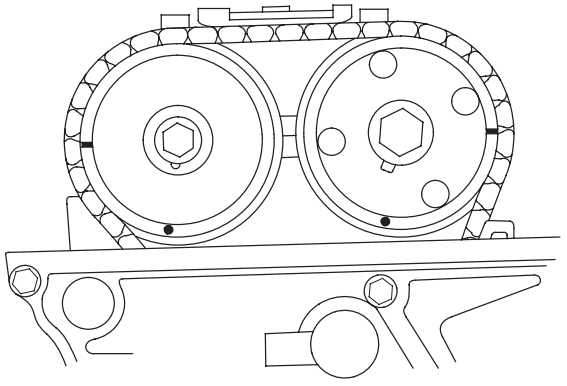
4. Hold the crankshaft pulley with holder handle (A) and holder attachment (B).



5. Remove the bolt with a socket, 19 mm (C) and a breaker bar, then remove the crankshaft pulley.

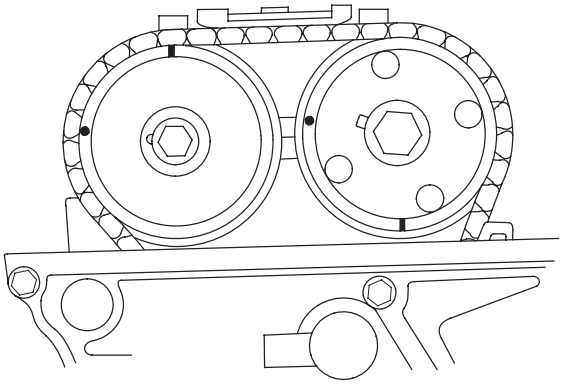
Valve Clearance Adjustment (cont'd)

9. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).



10. Check and, if necessary, adjust the valve clearance on the No. 4 cylinder.

11. Rotate the crankshaft 180 ° clockwise (camshaft pulley turns 90 °).



12. Check and, if necessary, adjust the valve clearance on the No. 2 cylinder.

13. Install the cylinder head cover (see page 6-37).

Crankshaft Pulley Removal and Installation

Special Tools Required
- Holder handle 07JAB-001020A
- Holder Attachment, 50 mm 07NAB-001040A
- Socket, 19 mm 07JAA-001020A or a commercially available 19 mm socket

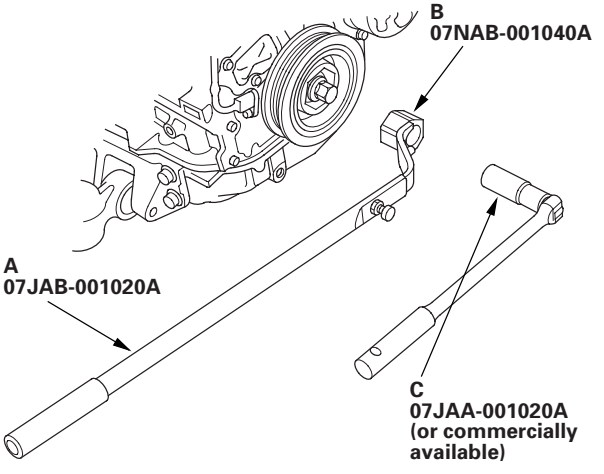
Removal

1. Remove the right front wheels.

2. Remove the splash shield (see step 25 on page 5-5).

3. Remove the drive belt (see page 4-31).

4. Hold the crankshaft pulley with holder handle (A) and holder attachment (B).

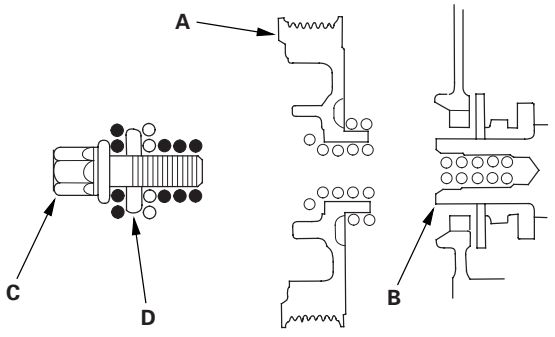


5. Remove the bolt with a socket, 19 mm (C) and a breaker bar, then remove the crankshaft pulley.

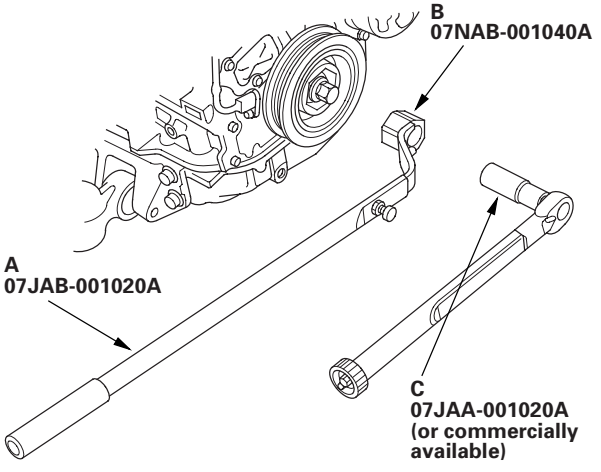
Installation

1. Clean the crankshaft pulley (A), crankshaft (B), bolt (C), and washer (D). Lubricate with new engine oil as shown.

○: **Clean**
●: **Lubricate with the new engine oil**

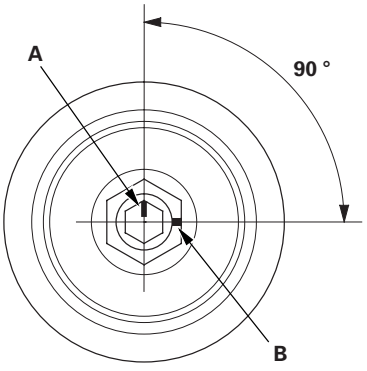


2. Install the crankshaft pulley, and hold the pulley with the holder handle (A) and holder attachment (B).



3. Tighten the bolt to 49 N·m (5.0 kgf·m, 36 lbf·ft) with a torque wrench and the socket, 19 mm (C). Do not use an impact wrench. If the pulley bolt or crankshaft are new, tighten the bolt to 177 N·m (18.0 kgf·m, 130 lbf·ft), then remove the bolt and tighten it to 49 N·m (5.0 kgf·m, 36 lbf·ft).

4. Mark the bolt head (A) and the crankshaft pulley (B) as shown, then tighten the bolt an additional 90 ° (The mark on the bolt head line up with the mark on the crankshaft pulley).



5. Install the drive belt (see page 4-31).

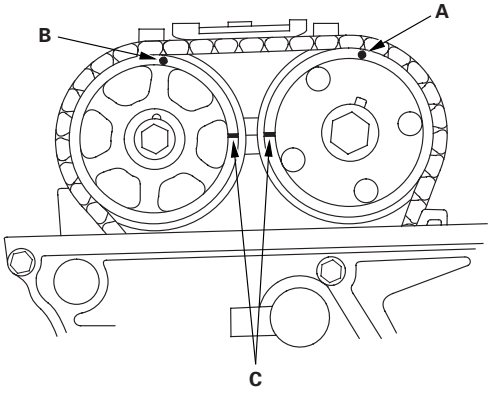
6. Install the splash shield (see step 40 on page 5-20).

7. Install the right front wheels.

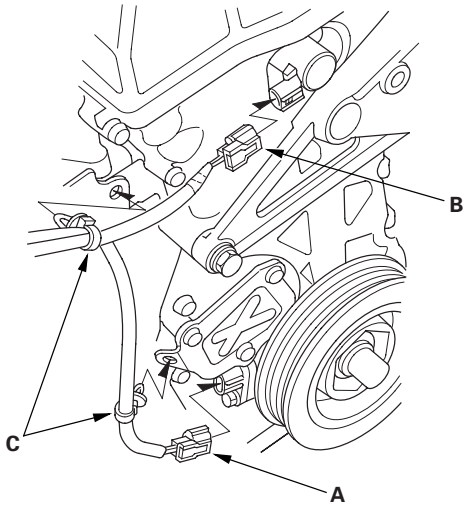
Cam Chain Removal

NOTE: Keep the cam chain away from magnetic fields.

1. Remove the front wheels.
2. Remove the splash shield (see step 25 on page 5-5).
3. Remove the drive belt (see page 4-31).
4. Remove the cylinder head cover (see page 6-36).
5. Set the No. 1 piston at top dead center (TDC). The punch mark (A) on the variable valve timing control (VTC) actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and the exhaust camshaft sprocket.

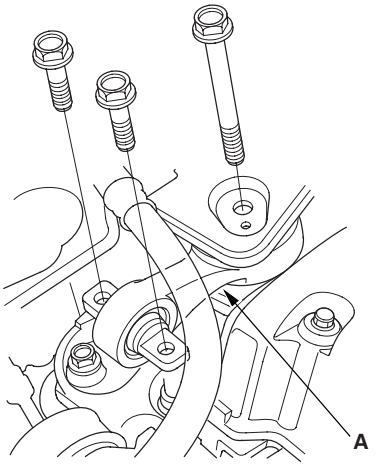


6. Disconnect the crankshaft position (CKP) sensor connector (A) and the VTC oil control solenoid valve connector (B), and remove the harness clamps (C).

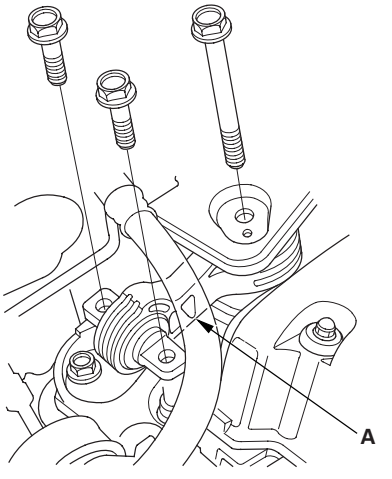


7. Remove the VTC oil control solenoid valve (see page 11-294).
8. Remove the crankshaft pulley (see page 6-16).
9. Support the engine with a jack and a wood block under the oil pan.
10. Remove the upper torque rod (A).

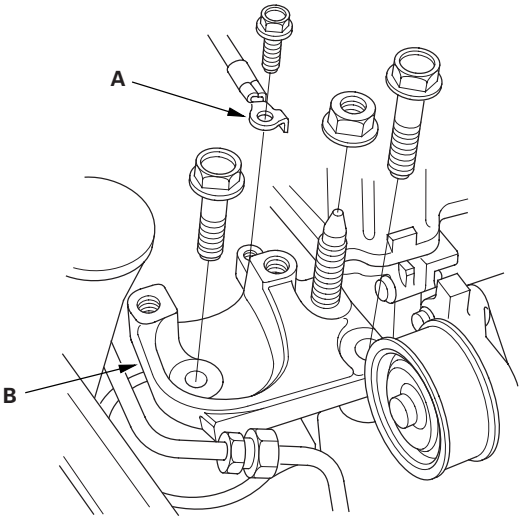
M/T model



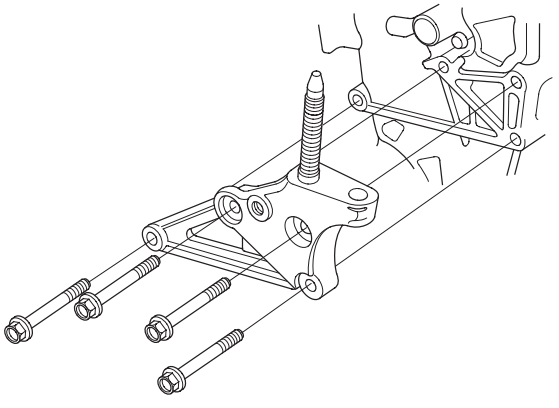
A/T model



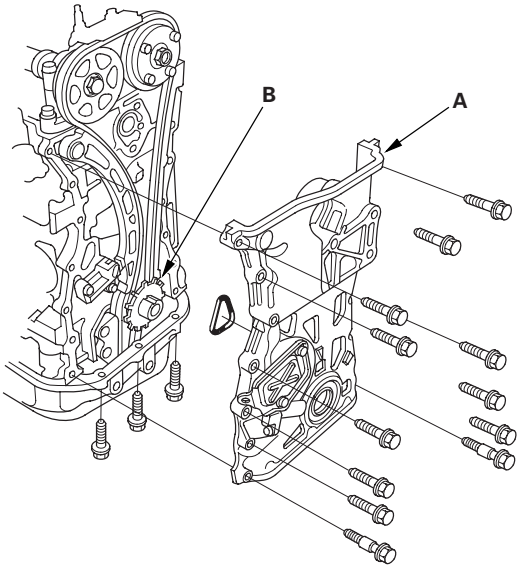
11. Remove the ground cable (A), then remove the side engine mount bracket (B).



12. Remove the side engine mount bracket.

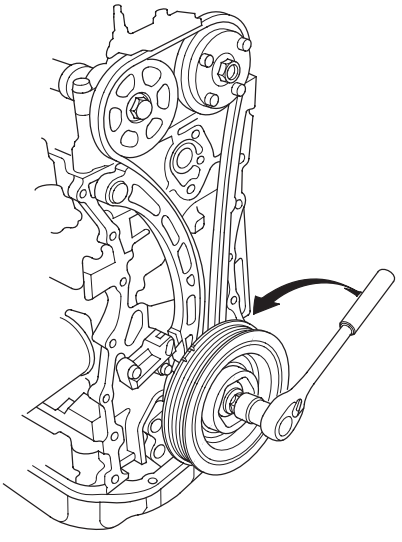


13. Remove the cam chain case (A), then remove the CKP pulse plate (B).



14. Loosely install the crankshaft pulley.

15. Turn the crankshaft counterclockwise to compress the auto-tensioner.

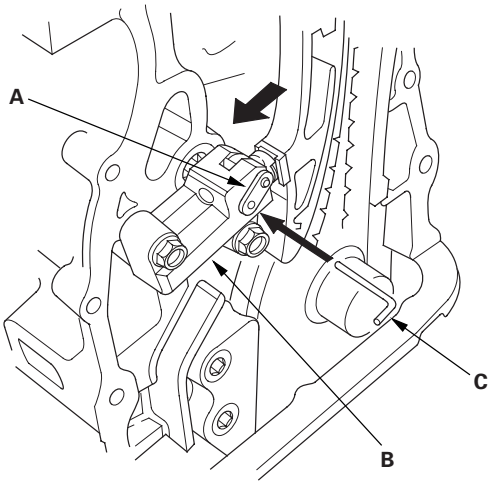


(cont'd)

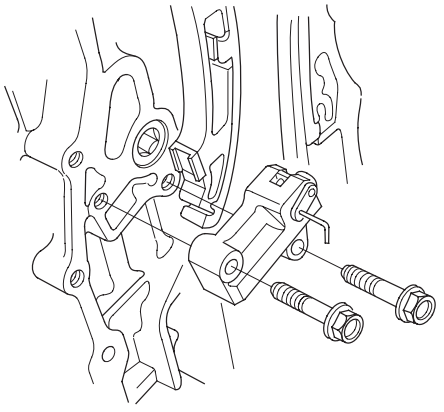
Cam Chain Removal (cont'd)

16. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.2 mm (0.05 in.) diameter pin or lock pin (P/N 14511-PNA-003) (C) into the holes. Turn the crankshaft clockwise to secure the pin.

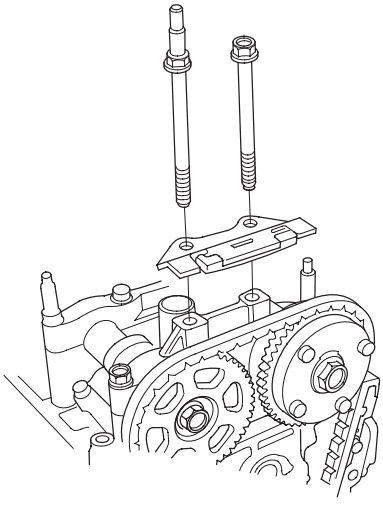
    NOTE: Check the auto-tensioner cam position. If the position is not aligned, set the first cam to the first edge of the rack (see step 8 on page 6-22).



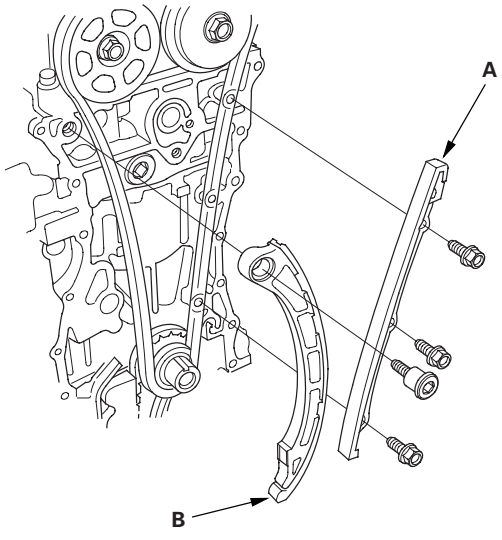
17. Remove the auto-tensioner, then remove the crankshaft pulley.



18. Remove cam chain guide B.



19. Remove cam chain guide A and the tensioner arm (B).



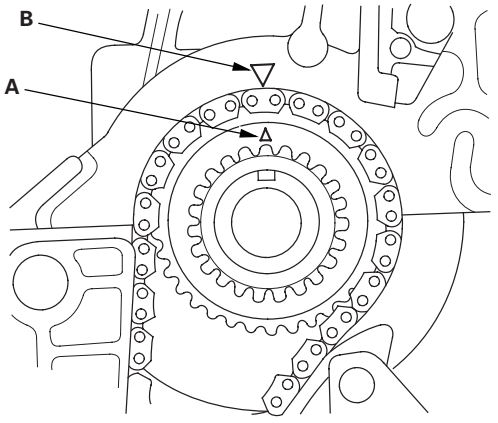
20. Remove the cam chain.

Cam Chain Installation

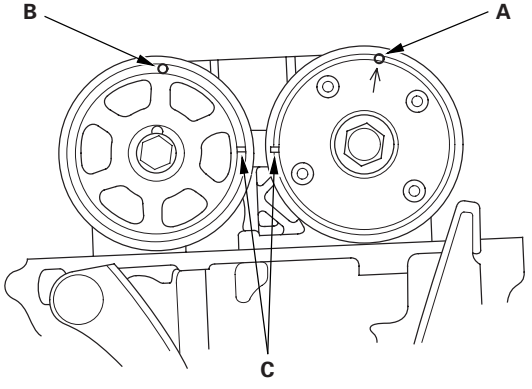
Special Tools Required
Camshaft lock pin set 07AAB-RWCA120

NOTE:
- Keep the cam chain away from magnetic fields.
- Before doing this procedure, check that the variable valve timing control (VTC) actuator is locked by turning the VTC actuator counterclockwise. If not locked, turn the VTC actuator clockwise until it stops, then recheck it. If it is still not locked, replace the VTC actuator.

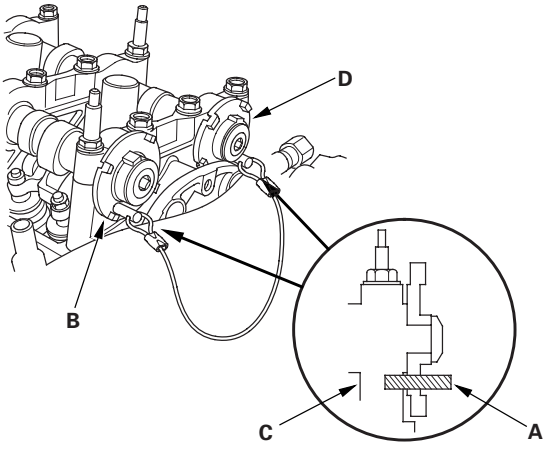
1. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the engine block.



2. Set the camshafts to TDC. The punch mark (A) on the VTC actuator and the punch mark (B) on the exhaust camshaft sprocket should be at the top. Align the TDC marks (C) on the VTC actuator and the exhaust camshaft sprocket.

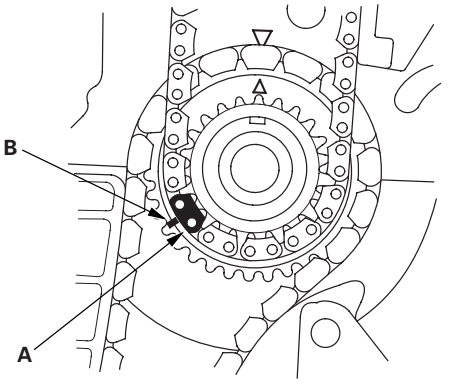


3. To hold the intake camshaft, insert a camshaft lock pin (07AAB-RWCA120) (A) into the maintenance hole in camshaft position (CMP) pulse plate A (B) and through No. 5 rocker shaft holder (C).



4. To hold the exhaust camshaft, insert a camshaft lock pin (A) into the maintenance hole in CMP pulse plate B (D) and through No. 5 rocker shaft holder (C).

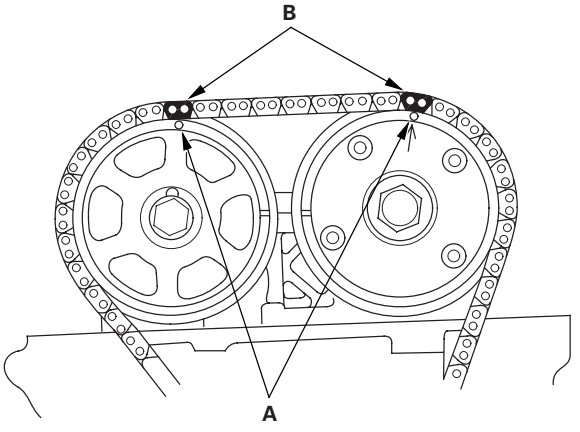
5. Install the cam chain on the crankshaft sprocket with the colored link plate (A) aligned with the mark (B) on the crankshaft sprocket.



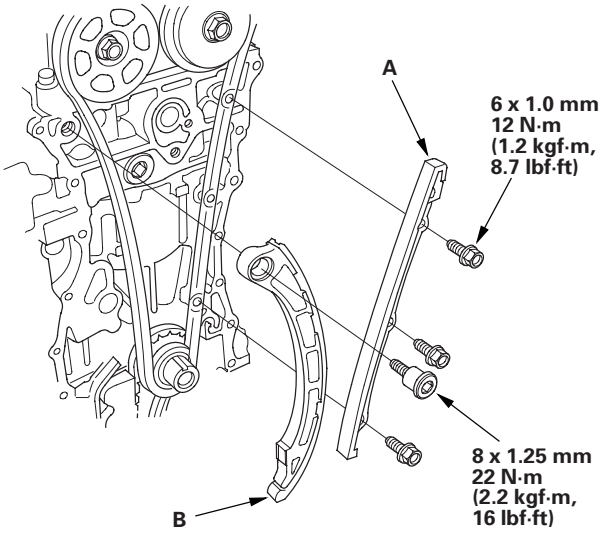
(cont'd)

Cam Chain Installation (cont'd)

6. Install the cam chain on the VTC actuator and the exhaust camshaft sprocket with the punch marks (A) aligned with the two colored link plates (B).

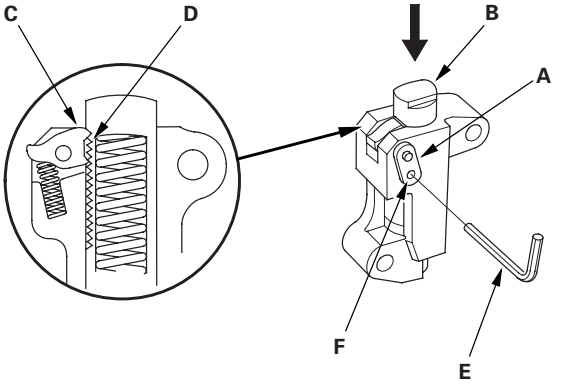


7. Install cam chain guide A and the tensioner arm (B).

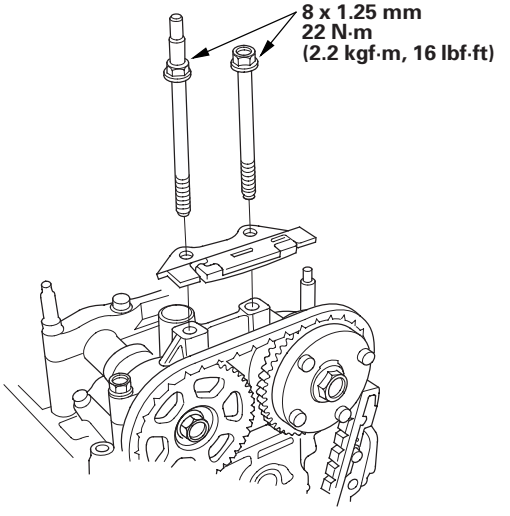


8. Compress the auto-tensioner when replacing the cam chain. Remove the pin from the auto-tensioner. Turn the plate (A) counterclockwise, to release the lock, then press the rod (B), and set the first cam (C) to the first edge of the rack (D). Insert the 1.2 mm (0.05 in.) diameter pin (E) into the holes (F).

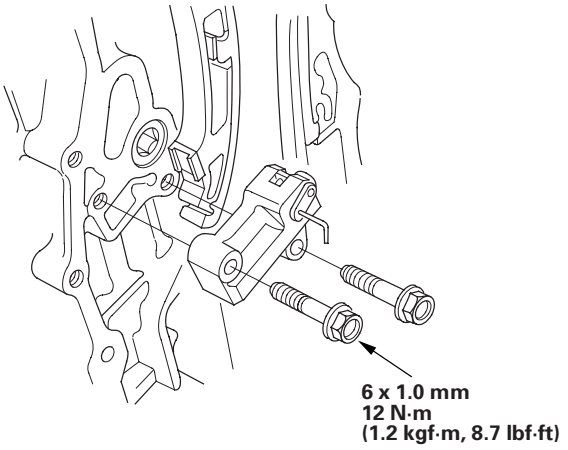
   NOTE: If the chain tensioner is not set up as described, the tensioner will be damaged.



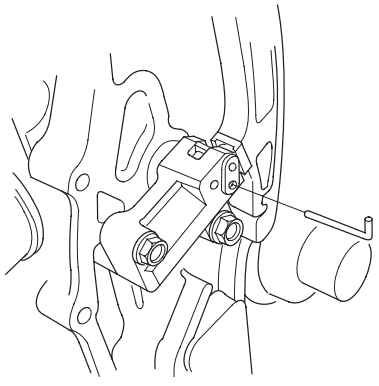
9. Install cam chain guide B.



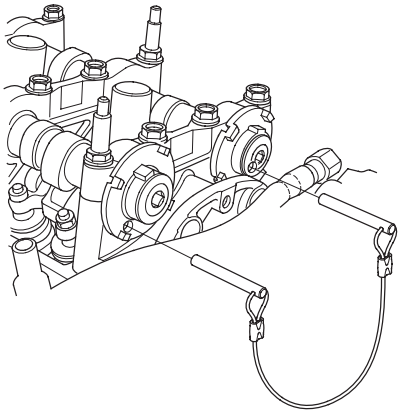
10. Install the auto-tensioner.



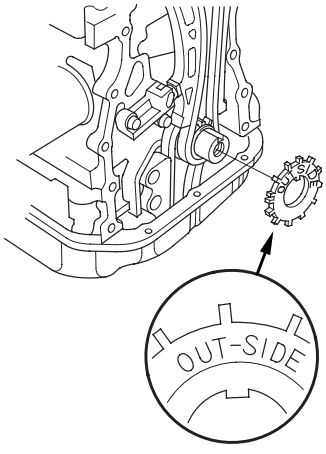
11. Remove the pin or lock pin (P/N 14511-PNA-003) from the auto-tensioner.



12. Remove the camshaft lock pin set (07AAB-RWCA120).



13. Install the crankshaft position (CKP) pulse plate.



14. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see page 6-31).

15. Remove all of the old liquid gasket from the chain case mating surfaces, bolts, and bolt holes.

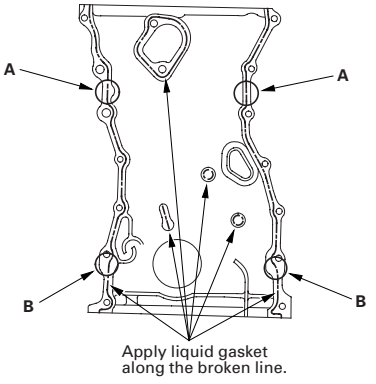
(cont'd)

Cam Chain Installation (cont'd)

16. Clean, and dry the chain case mating surfaces.

17. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the chain case, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

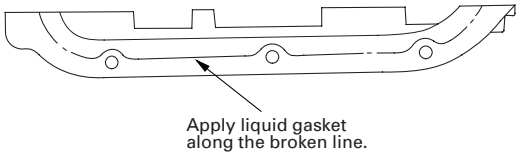
    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



18. Apply liquid gasket to the engine block upper surface contact areas (A) on the chain case and lower block upper surface contact areas (B) on the chain case.

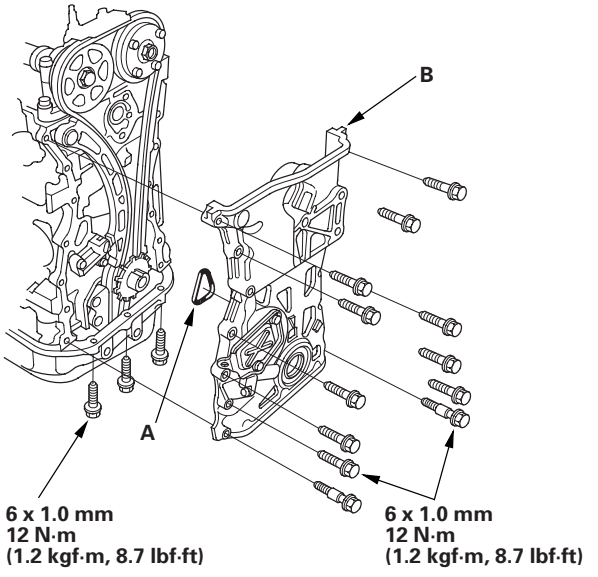
19. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the chain case, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

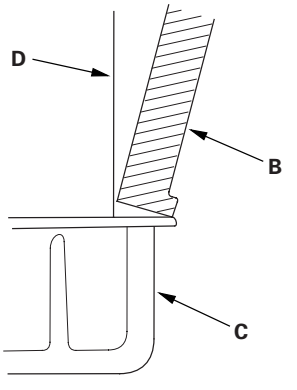
    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



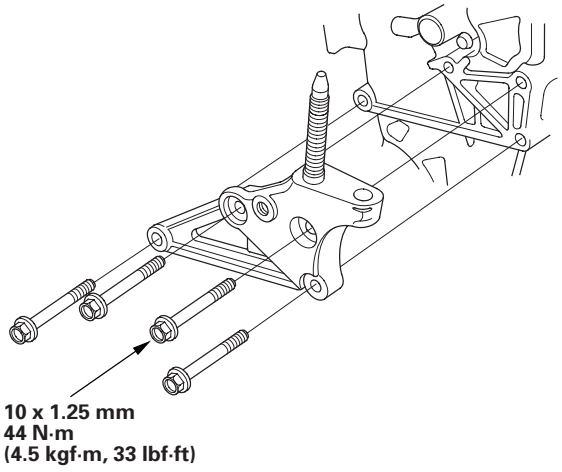
20. Install the new O-ring (A) on the chain case. Set the edge of the chain case (B) to the edge of the oil pan (C), then install the chain case on the engine block (D). Wipe off the excess liquid gasket on the oil pan and chain case mating surface.

    NOTE:
    - When installing the chain case, do not slide the bottom surface onto the oil pan mounting surface.
    - Wait at least 30 minutes before filling the engine with oil.
    - Do not run the engine for at least 3 hours after installing the chain case.

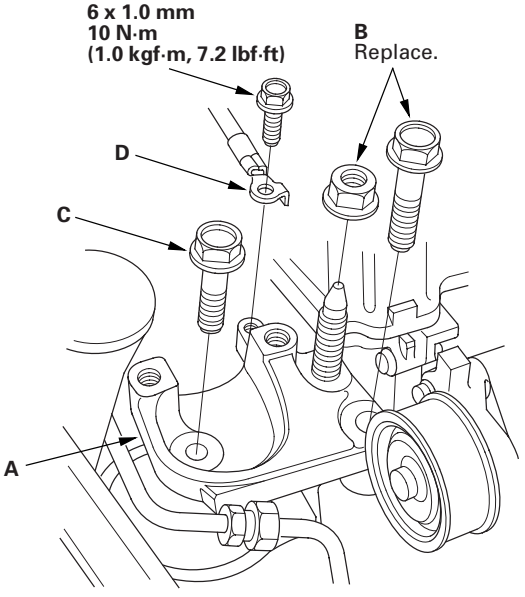




21. Install the side engine mount bracket.



22. Install the side engine mount bracket (A), then loosely tighten the new bolt and nut (B), and loosely tighten the bolt (C).

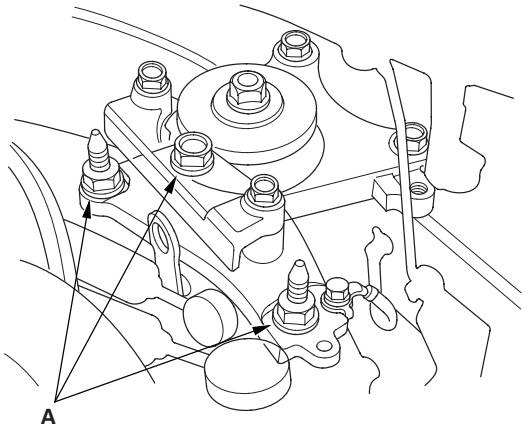


23. Install the ground cable (D).

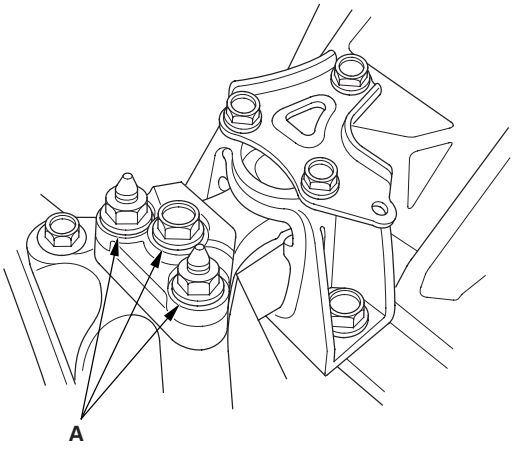
24. Remove the air cleaner assembly (see page 11-345).

25. Loosen the transmission mounting bolt and nuts (A).

M/T model



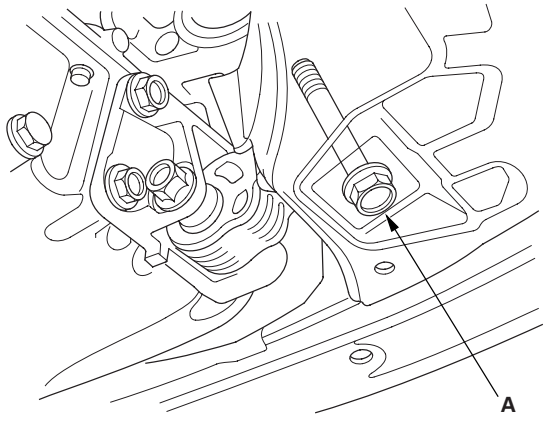
A/T model



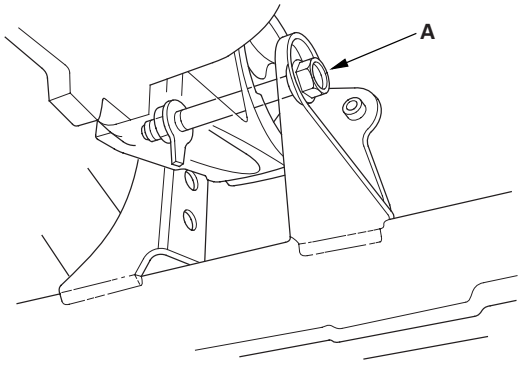
(cont'd)

Cam Chain Installation (cont'd)

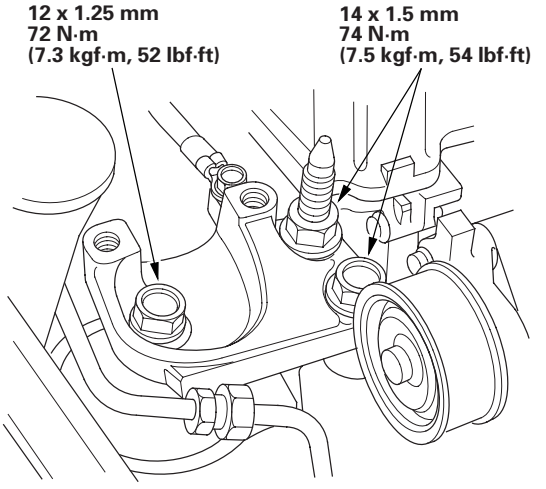
26. Raise the vehicle on the lift.
27. Loosen the lower torque rod mounting bolt (A).



28. M/T model: Loosen the front mount mounting bolt (A).

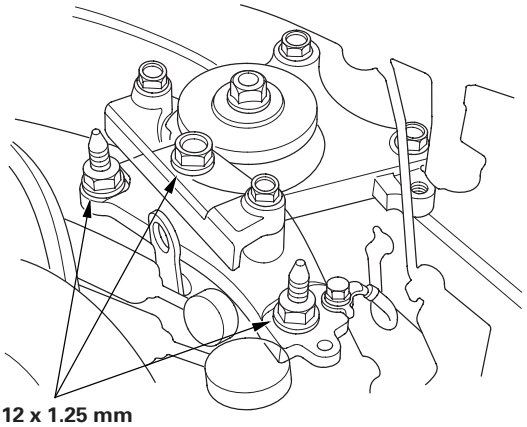


29. Lower the vehicle on the lift.
30. Tighten the side engine mount mounting bolts and nut.



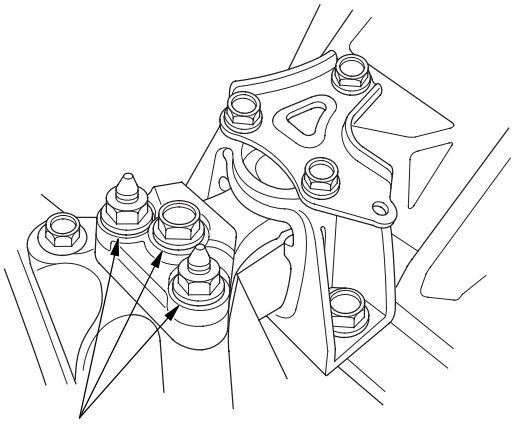
31. Tighten the transmission mounting bolt and nuts.

M/T model



12 x 1.25 mm
74 N·m
(7.5 kgf·m, 54 lbf·ft)

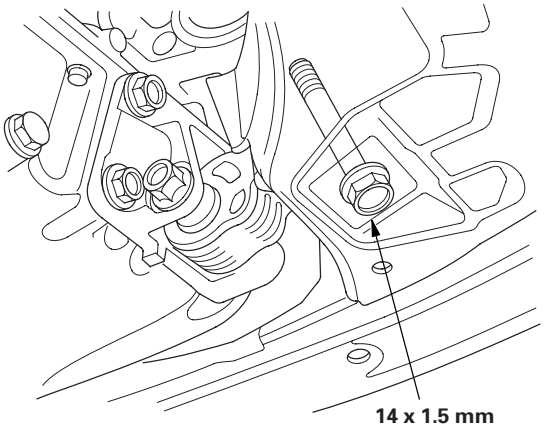
A/T model



12 x 1.25 mm
74 N·m
(7.5 kgf·m, 54 lbf·ft)

32. Raise the vehicle on the lift.

33. Tighten the lower torque rod mounting bolt.



14 x 1.5 mm
93 N·m
(9.5 kgf·m, 69 lbf·ft)

34. Lower the vehicle on the lift.

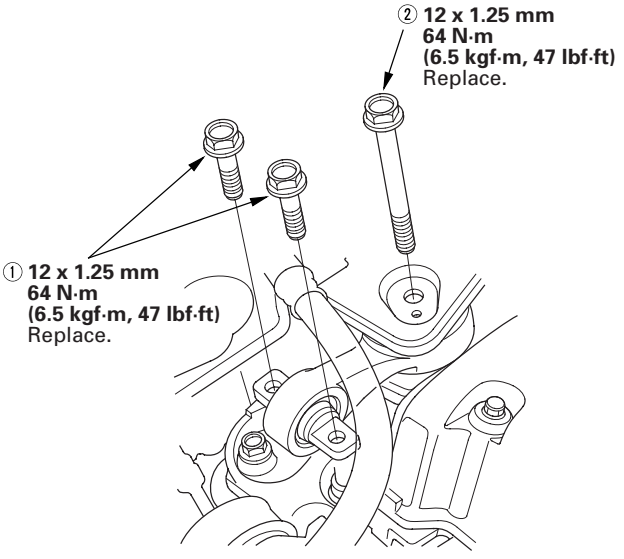
35. Install the air cleaner assembly (see page 11-345).

(cont'd)

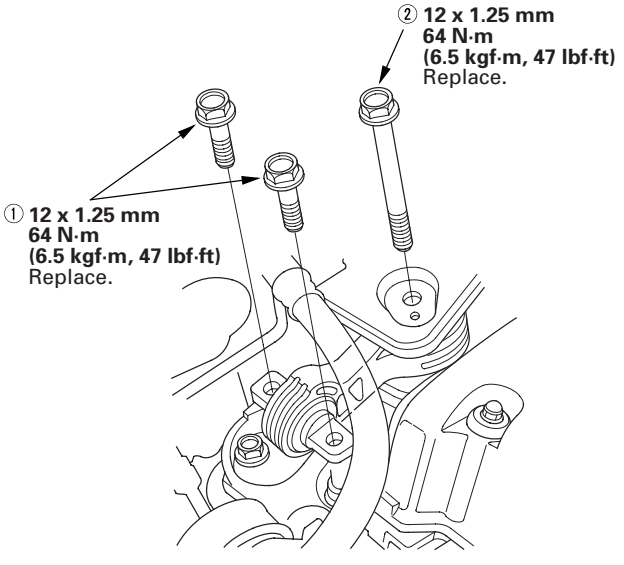
Cam Chain Installation (cont'd)

36. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown.

M/T model

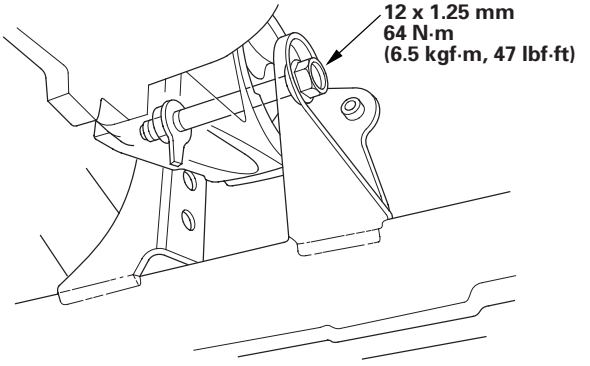


A/T model



37. Raise the vehicle on the lift.

38. M/T model: Tighten the front mount mounting bolt.

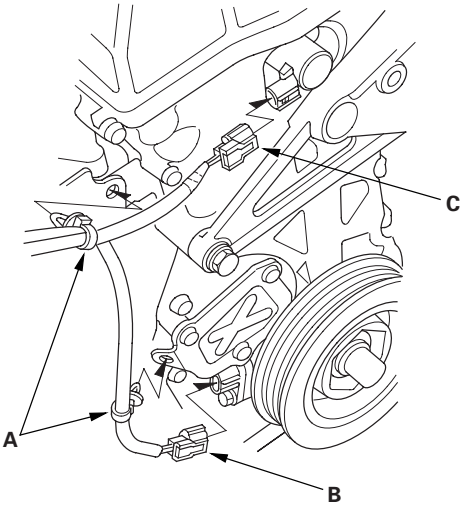


39. Install the splash shield (see step 40 on page 5-20).

40. Lower the vehicle on the lift.

41. Install the variable valve timing control (VTC) oil control solenoid valve (see page 11-294).

42. Install the harness clamps (A), and connect the CKP sensor connector (B) and the VTC oil control solenoid valve connector (C).



43. Install the crankshaft pulley (see page 6-17).

44. Install the cylinder head cover (see page 6-37).

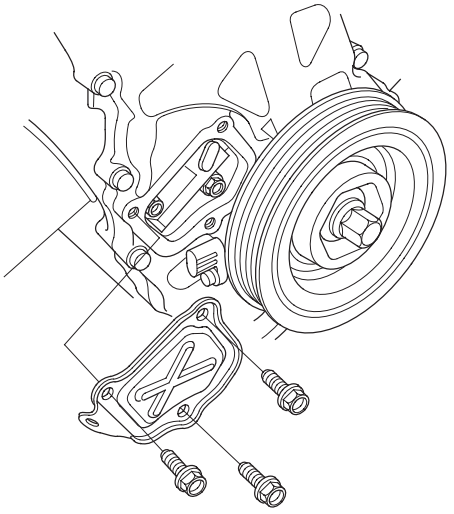
45. Install the drive belt (see page 4-31).

46. Do the CKP pattern clear/CKP learn procedure (see page 11-4).

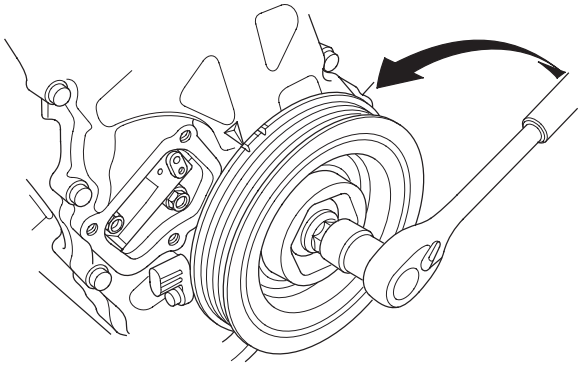
Auto-tensioner Removal and Installation

Removal

1. Remove the chain case cover.

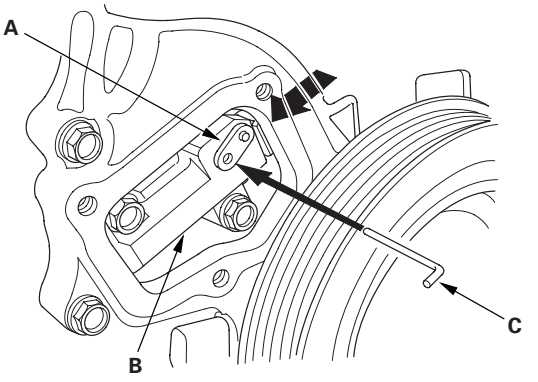


2. Turn the crankshaft counterclockwise to compress the auto-tensioner.

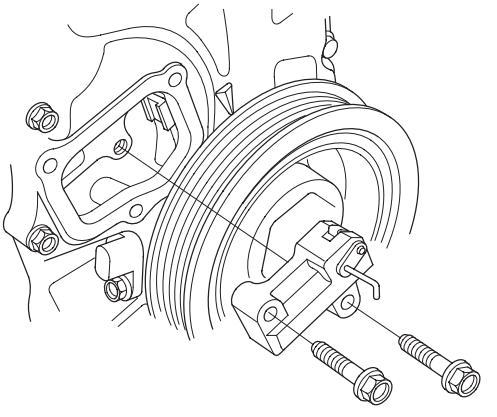


3. Align the holes on the lock (A) and the auto-tensioner (B), then insert a 1.2 mm (0.05 in.) diameter pin or lock pin (P/N 14511-PNA-003) (C) into the holes. Turn the crankshaft clockwise to secure the pin.

   NOTE: Check the auto-tensioner cam position. If the position is not aligned, set the first cam to the first edge of the rack (see step 8 on page 6-22).



4. Remove the auto-tensioner.

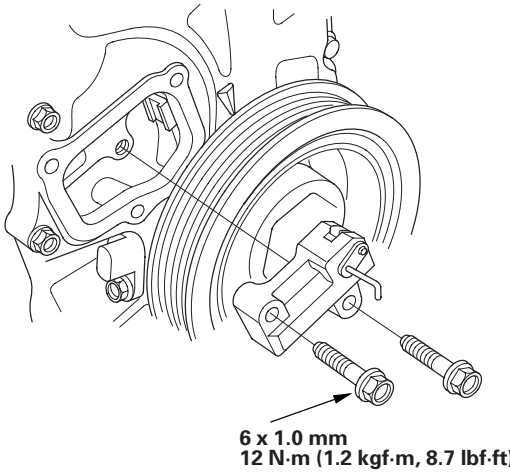


(cont'd)

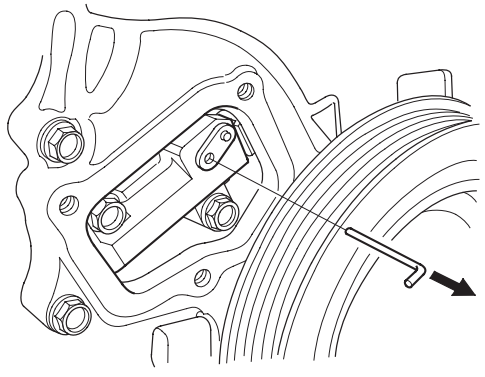
Auto-tensioner Removal and Installation (cont'd)

Installation

1. Install the auto-tensioner.



2. Remove the 1.2 mm (0.05 in.) diameter pin or lock pin (P/N 14511-PNA-003) from the auto-tensioner.

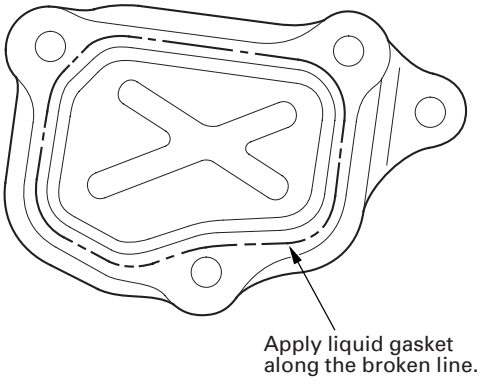


3. Remove all of the old liquid gasket from the chain case cover mating surfaces, the bolts, and the bolt holes.

4. Clean, and dry the chain case cover mating surfaces.

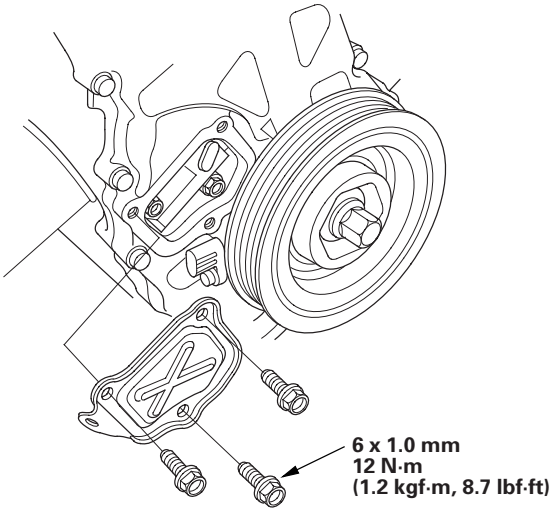
5. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the chain case mating surface of the chain case cover, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

   NOTE:
   - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
   - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



6. Install the chain case cover.

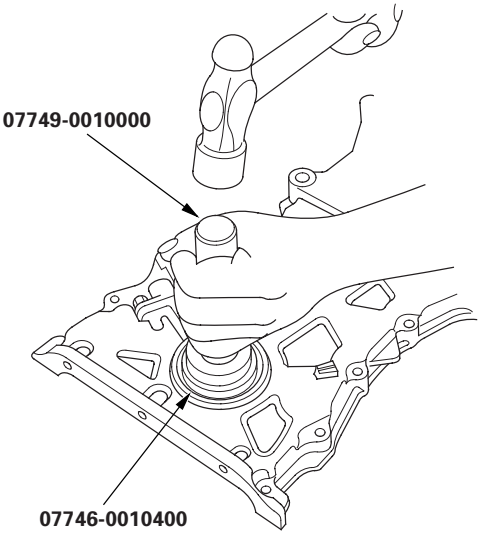
   NOTE:
   - Wait at least 30 minutes before filling the engine with oil.
   - Do not run the engine for at least 3 hours after installing the chain case cover.



Chain Case Oil Seal Installation

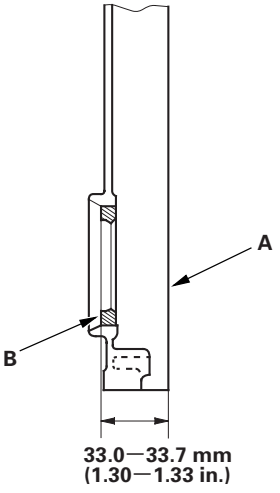
Special Tools Required
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Apply light coat of new engine oil around the chain case oil seal.
2. Apply light coat of new engine oil to the lip of the chain case oil seal.
3. Use the driver and the attachment, 52 x 55 mm to drive a new oil seal squarely into the chain case to the specified installed height.



4. Measure the distance between the chain case surface (A) and the oil seal (B).

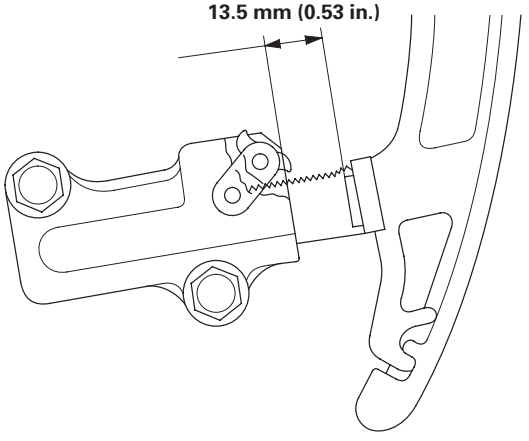
Oil Seal Installed Height:
33.0—33.7 mm (1.30—1.33 in.)



Cam Chain Inspection

1. Remove the right front wheels.
2. Remove the splash shield (see step 25 on page 5-5).
3. Remove the drive belt (see page 4-31).
4. Remove the cylinder head cover (see page 6-36).
5. Set the No. 1 piston at top dead center (TDC). The punch mark on the variable valve timing control (VTC) actuator and the punch mark on the exhaust camshaft sprocket should be at the top. Align the TDC marks on the VTC actuator and the exhaust camshaft sprocket (see step 5 on page 6-18).
6. Disconnect the crankshaft position (CKP) sensor connector and the VTC oil control solenoid valve connector, and remove the harness clamps (see step 6 on page 6-18).
7. Remove the VTC oil control solenoid valve (see page 11-294).
8. Remove the crankshaft pulley (see page 6-16).
9. Support the engine with a jack and a wood block under the oil pan.
10. Remove the upper torque rod (see step 10 on page 6-18).
11. Remove the ground cable, then remove the side engine mount bracket (see step 11 on page 6-19).
12. Remove the side engine mount bracket (see step 12 on page 6-19).
13. Remove the cam chain case (see step 13 on page 6-19).
14. Measure the tensioner rod length between the tensioner body and bottom of the flat surface section on the tensioner rod. If the length is more than the service limit, replace the cam chain and the oil pump chain.

    Tensioner Rod Length
    Service Limit: 13.5 mm (0.53 in.)



15. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see page 6-31).
16. Remove all of the old liquid gasket from the chain case mating surfaces, bolt and bolt holes.
17. Clean, and dry the chain case mating surfaces.
18. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the chain case, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket (see step 17 on page 6-24).

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

19. Apply liquid gasket to the engine block upper surface contact areas on the chain case and lower block upper surface contact areas on the chain case (see step 18 on page 6-24).

20. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the chain case, and to the inside edge of the thread bolt holes. Install the component within 5 minutes of applying the liquid gasket (see step 19 on page 6-24).

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

21. Install the new O-ring on the chain case. Set the edge of the chain case to the edge of the oil pan, then install the chain case on the engine block (see step 20 on page 6-24). Wipe off the excess liquid gasket on the oil pan and chain case mating surface.

    NOTE:
    - When installing the chain case, do not slide the bottom surface onto the oil pan mounting surface.
    - Wait at least 30 minutes before filling the engine with oil.
    - Do not run the engine for at least 3 hours after installing the chain case.

22. Install the side engine mount bracket (see step 21 on page 6-25).

23. Install the side engine mount bracket, then loosely tighten the new bolt and nut, and loosely tighten the bolt. Install the ground cable (see step 22 on page 6-25).

24. Remove the air cleaner assembly (see page 11-345).

25. Loosen the transmission mounting bolt and nuts (see step 25 on page 6-25).

26. Raise the vehicle on the lift.

27. Loosen the lower torque rod mounting bolt (see step 27 on page 6-26).

28. M/T model: Loosen the front mount mounting bolt (see step 28 on page 6-26).

29. Lower the vehicle on the lift.

30. Tighten the side engine mount mounting bolts and nut (see step 30 on page 6-26).

31. Tighten the transmission mounting bolt and nuts (see step 31 on page 6-27).

32. Raise the vehicle on the lift.

33. Tighten the lower torque rod mounting bolt (see step 33 on page 6-27).

34. Lower the vehicle on the lift.

35. Install the air cleaner assembly (see page 11-345).

36. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown (see step 36 on page 6-28).

37. Raise the vehicle on the lift.

38. M/T model: Tighten the front mount mounting bolt (see step 38 on page 6-28).

39. Install the splash shield (see step 40 on page 5-20).

40. Lower the vehicle on the lift.

41. Install the VTC oil control solenoid valve (see page 11-294).

42. Install the harness clamps, and connect the CKP sensor connector and the VTC oil control solenoid valve connector (see step 42 on page 6-28).

43. Install the crankshaft pulley (see page 6-17).

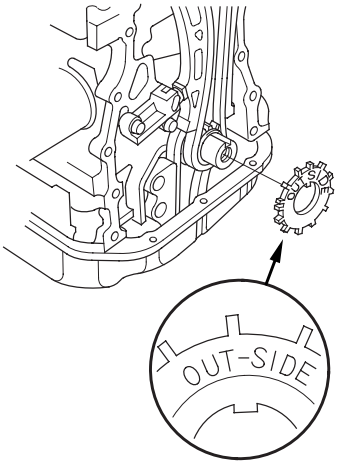
44. Install the cylinder head cover (see page 6-37).

45. Install the drive belt (see page 4-31).

46. Do the CKP pattern clear/CKP learn procedure (see page 11-4).

CKP Pulse Plate Replacement

1. Remove the right front wheels.
2. Remove the splash shield (see step 25 on page 5-5).
3. Remove the drive belt (see page 4-31).
4. Remove the cylinder head cover (see page 6-36).
5. Set the No. 1 piston at top dead center (TDC). The punch mark on the variable valve timing control (VTC) actuator and the punch mark on the exhaust camshaft sprocket should be at the top. Align the TDC marks on the VTC actuator and the exhaust camshaft sprocket (see step 5 on page 6-18).
6. Disconnect the crankshaft position (CKP) sensor connector and the variable valve timing control (VTC) oil control solenoid valve connector, and remove the harness clamps (see step 6 on page 6-18).
7. Remove the VTC oil control solenoid valve (see page 11-294).
8. Remove the crankshaft pulley (see page 6-16).
9. Support the engine with a jack and a wood block under the oil pan.
10. Remove the upper torque rod (see step 10 on page 6-18).
11. Remove the ground cable, then remove the side engine mount bracket (see step 11 on page 6-19).
12. Remove the side engine mount bracket (see step 12 on page 6-19).
13. Remove the cam chain case (see step 13 on page 6-19).
14. Remove the CKP pulse plate.



15. Install the CKP pulse plate.
16. Check the chain case oil seal for damage. If the oil seal is damaged, replace the chain case oil seal (see page 6-31).
17. Remove all of the old liquid gasket from the chain case mating surfaces, bolt and bolt holes.
18. Clean, and dry the chain case mating surfaces.
19. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the chain case, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket (see step 17 on page 6-24).

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

20. Apply liquid gasket to the engine block upper surface contact areas on the chain case and lower block upper surface contact areas on the chain case (see step 18 on page 6-24).

21. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the chain case, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket (see step 19 on page 6-24).

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

22. Install the new O-ring on the chain case. Set the edge of the chain case to the edge of the oil pan, then install the chain case on the engine block (see step 20 on page 6-24). Wipe off the excess liquid gasket on the oil pan and chain case mating surface.

    NOTE:
    - When installing the chain case, do not slide the bottom surface onto the oil pan mounting surface.
    - Wait at least 30 minutes before filling the engine with oil.
    - Do not run the engine for at least 3 hours after installing the chain case.

23. Install the side engine mount bracket (see step 21 on page 6-25).

24. Install the side engine mount bracket, then loosely tighten the new bolt and nut, and loosely tighten the bolt. Install the ground cable (see step 22 on page 6-25).

25. Remove the air cleaner assembly (see page 11-345).

26. Loosen the transmission mounting bolt and nuts (see step 25 on page 6-25).

27. Raise the vehicle on the lift.

28. Loosen the lower torque rod mounting bolt (see step 27 on page 6-26).

29. M/T model: Loosen the front mount mounting bolt (see step 28 on page 6-26).

30. Lower the vehicle on the lift.

31. Tighten the side engine mount mounting bolts and nut (see step 30 on page 6-26).

32. Tighten the transmission mounting bolt and nuts (see step 31 on page 6-27).

33. Raise the vehicle on the lift.

34. Tighten the lower torque rod mounting bolt (see step 33 on page 6-27).

35. Lower the vehicle on the lift.

36. Install the air cleaner assembly (see page 11-345).

37. Install the upper torque rod, then tighten the new upper torque rod mounting bolts in the numbered sequence shown (see step 36 on page 6-28).

38. Raise the vehicle on the lift.

39. M/T model: Tighten the front mount mounting bolt (see step 38 on page 6-28).

40. Install the splash shield (see step 40 on page 5-20).

41. Lower the vehicle on the lift.

42. Install the VTC oil control solenoid valve (see page 11-294).

43. Install the harness clamps, and connect the CKP sensor connector and the VTC oil control solenoid valve connector (see step 42 on page 6-28).

44. Install the crankshaft pulley (see page 6-17).

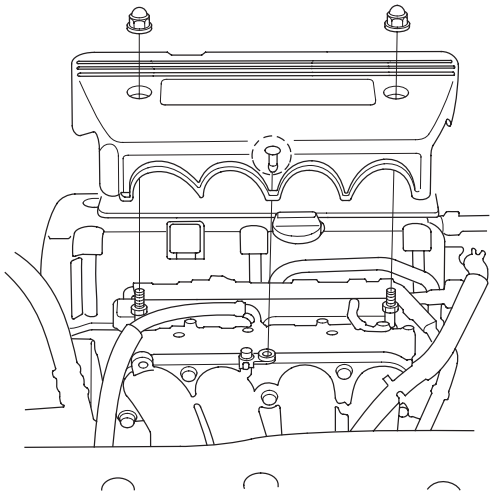
45. Install the cylinder head cover (see page 6-37).

46. Install the drive belt (see page 4-31).

47. Do the CKP pattern clear/CKP learn procedure (see page 11-4).

Cylinder Head Cover Removal

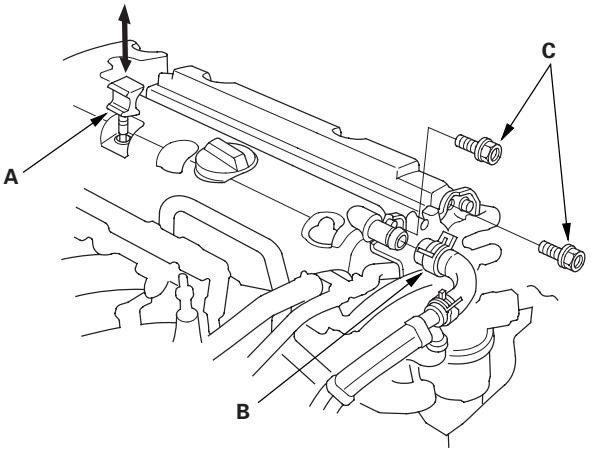
1. Remove the engine cover.



2. Remove the four ignition coils (see page 4-21).

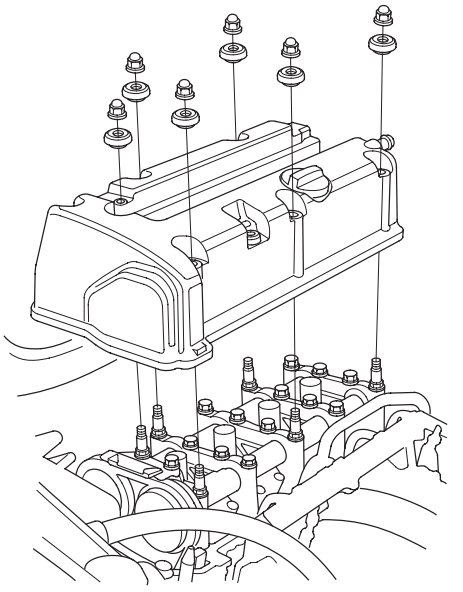
3. Disconnect the evaporative emission (EVAP) canister purge valve connector.

4. Remove the dipstick (A), and disconnect the breather hose (B).



5. Remove two bolts (C) securing the evaporative emission (EVAP) canister purge valve bracket.

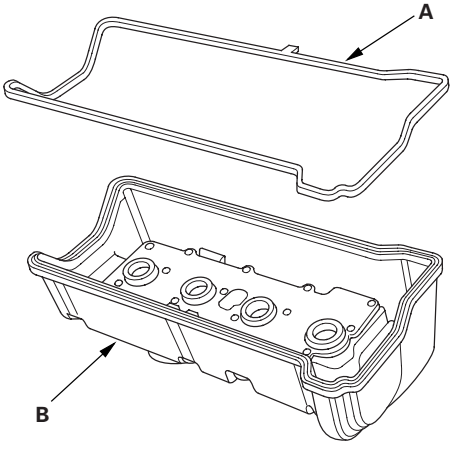
6. Remove the cylinder head cover.



Cylinder Head Cover Installation

1. Thoroughly clean the head cover gasket and the groove.

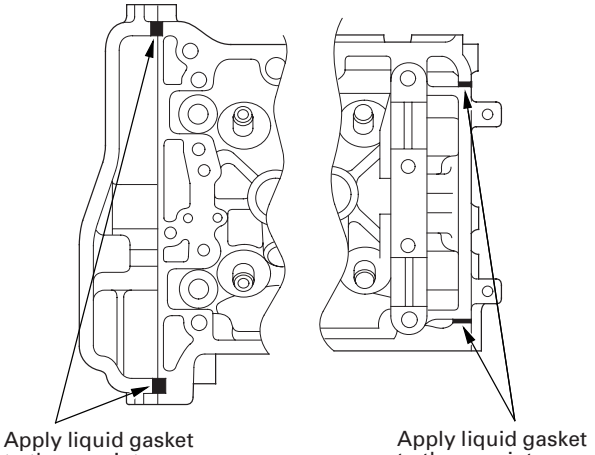
2. Install the head cover gasket (A) in the groove of the cylinder head cover (B).



3. Check that the mating surfaces are clean and dry.

4. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the chain case and the No. 5 rocker shaft holder mating areas. Install the component within 5 minutes of applying the liquid gasket.

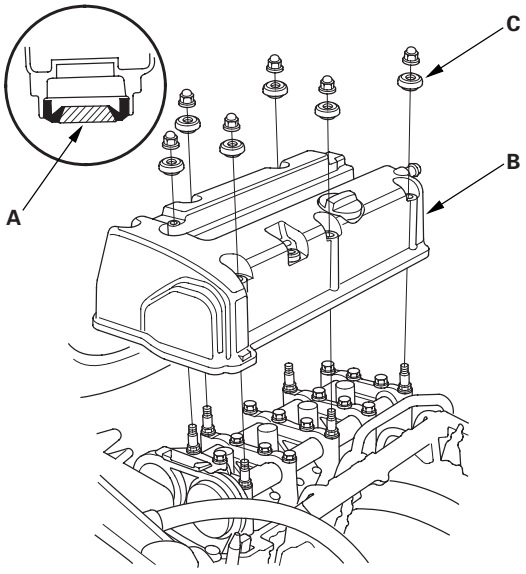
   NOTE:
   - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
   - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



Apply liquid gasket to these points.

Apply liquid gasket to these points.

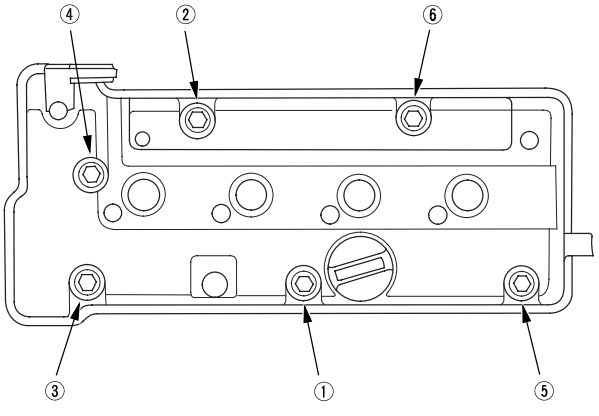
5. Set the spark plug seals (A) on the spark plug tubes. Place the cylinder head cover (B) on the cylinder head, then slide the cover slightly back and forth to seat the head cover gasket.



6. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

7. Tighten the bolts in three steps. In the final step tighten all bolts, in sequence, to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).

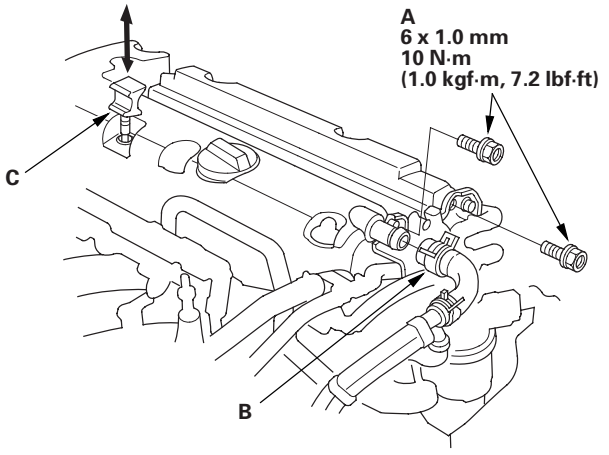
   NOTE:
   - Wait at least 30 minutes before filling the engine with oil.
   - Do not run the engine for at least 3 hours after installing the head cover.



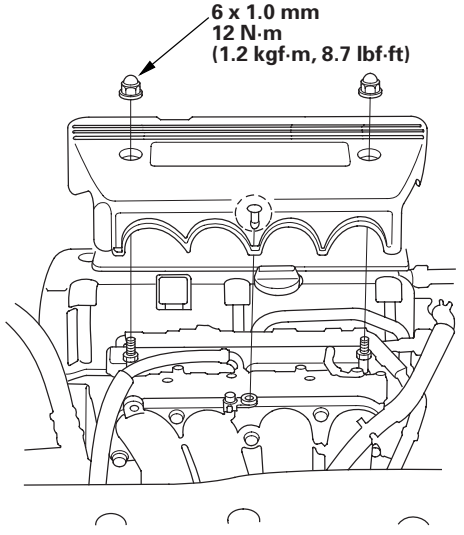
(cont'd)

Cylinder Head Cover Installation (cont'd)

8. Install two bolts (A) securing the evaporative emission (EVAP) canister purge valve bracket.



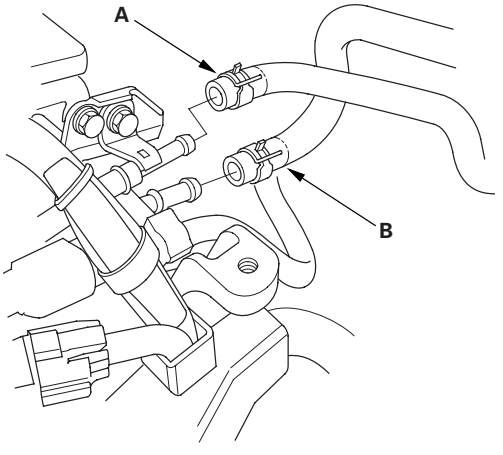
9. Connect the breather hose (B), and install the dipstick (C).
10. Connect the evaporative emission (EVAP) canister purge valve connector.
11. Install the four ignition coils (see page 4-21).
12. Install the engine cover.



Cylinder Head Removal

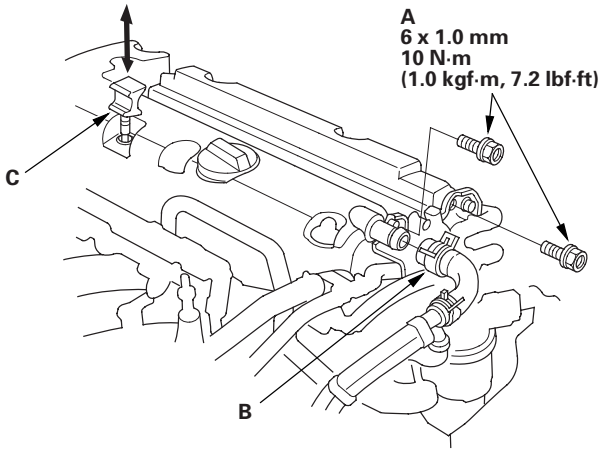
NOTE:
- Use fender covers to avoid damaging the painted surfaces.
- To avoid damaging the wire and terminals, unplug the wiring connectors carefully while holding the connector portion.
- Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3), and monitor the engine coolant temperature (ECT) sensor 1. To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 38 ℃ (100 ℉) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

1. Relieve the fuel pressure (see page 11-322).
2. Drain the engine coolant (see page 10-8).
3. Remove the air cleaner assembly (see page 11-345).
4. Remove the drive belt (see page 4-31).
5. Remove the intake manifold:
   - K20Z2 engine (see page 9-3)
   - K20Z3 engine (see page 9-7)
6. Remove the exhaust manifold (see page 9-11).
7. Disconnect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).

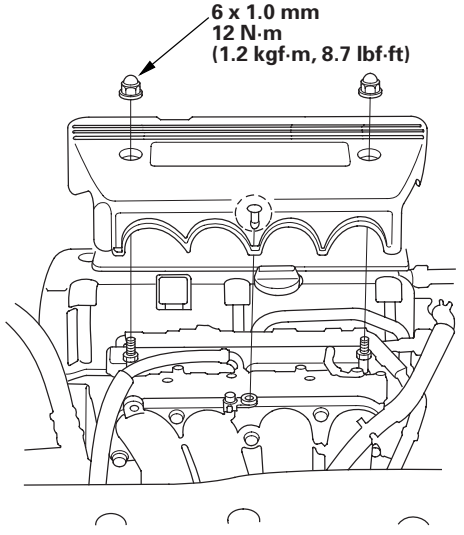


Cylinder Head Cover Installation (cont'd)

8. Install two bolts (A) securing the evaporative emission (EVAP) canister purge valve bracket.



9. Connect the breather hose (B), and install the dipstick (C).
10. Connect the evaporative emission (EVAP) canister purge valve connector.
11. Install the four ignition coils (see page 4-21).
12. Install the engine cover.



Cylinder Head Removal

NOTE:
- Use fender covers to avoid damaging the painted surfaces.
- To avoid damaging the wire and terminals, unplug the wiring connectors carefully while holding the connector portion.
- Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3), and monitor the engine coolant temperature (ECT) sensor 1. To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 38 ℃ (100 ℉) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

1. Relieve the fuel pressure (see page 11-322).
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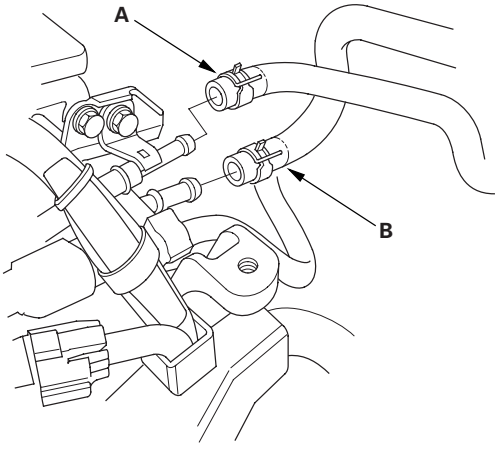
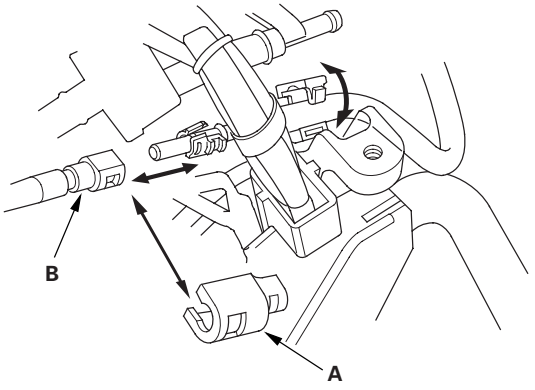
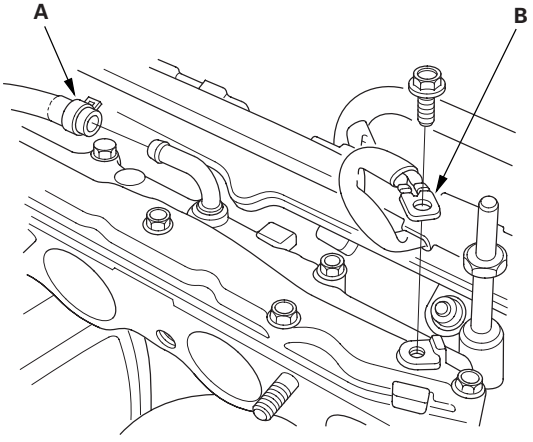
5. Remove the intake manifold:
   - K20Z2 engine (see page 9-3)
   - K20Z3 engine (see page 9-7)
6. Remove the exhaust manifold (see page 9-11).
7. Disconnect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).



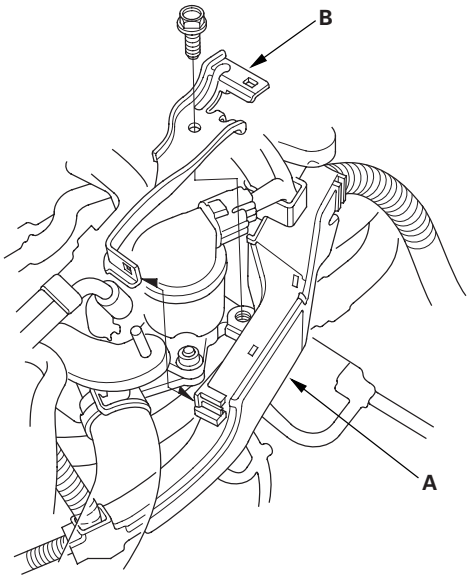
8. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-329).



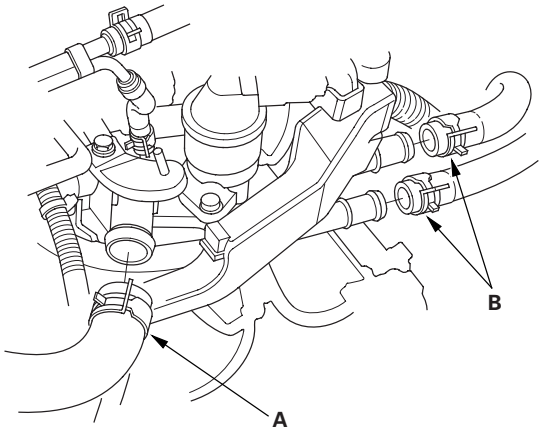
9. Disconnect the positive crankcase ventilation (PCV) hose (A) (K20Z2 engine) and remove the ground cable (B).



10. Remove the harness holder (A) from the bracket, then remove the harness holder bracket (B).



11. Disconnect the upper radiator hose (A) and the heater hoses (B).



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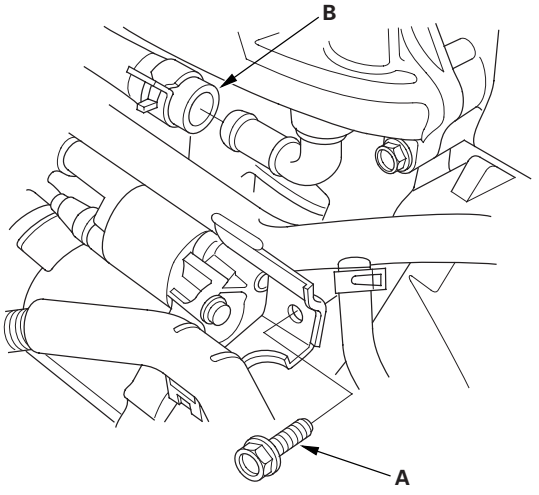
Cylinder Head Removal (cont'd)

12. Remove the bolt (A) securing the connecting pipe.



13. Disconnect the water bypass hose (B).

14. Disconnect the following engine wire harness connectors, and remove the wire harness clamps from the cylinder head.

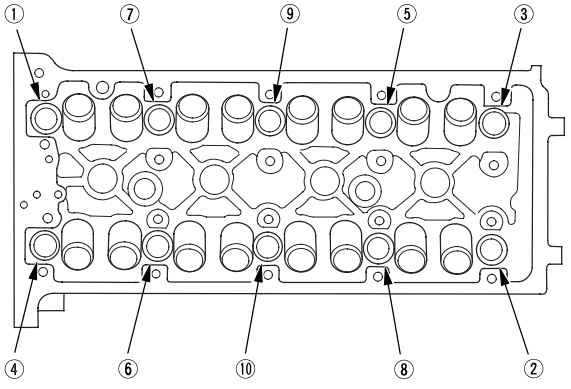
    - Four fuel injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Camshaft position (CMP) sensor A (Intake) connector
    - Camshaft position (CMP) sensor B (Exhaust) connector
    - Rocker arm oil control valve connector
    - Rocker arm oil pressure switch connector
    - EVAP canister purge valve connector
    - Variable valve timing control (VTC) oil control solenoid valve connector
    - Exhaust gas recirculation (EGR) valve connector (K20Z2 engine)
    - Engine oil pressure switch connector

15. Remove the cam chain (see page 6-18).

16. Remove the rocker arm assembly:

    - K20Z2 engine (see page 6-43)
    - K20Z3 engine (see page 6-44)

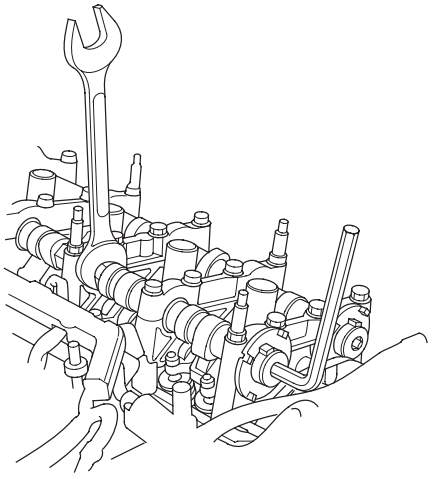
17. Remove the cylinder head bolts. To prevent warpage, loosen the bolts in sequence 1/3 turn at a time. Repeat the sequence until all bolts are loosened.



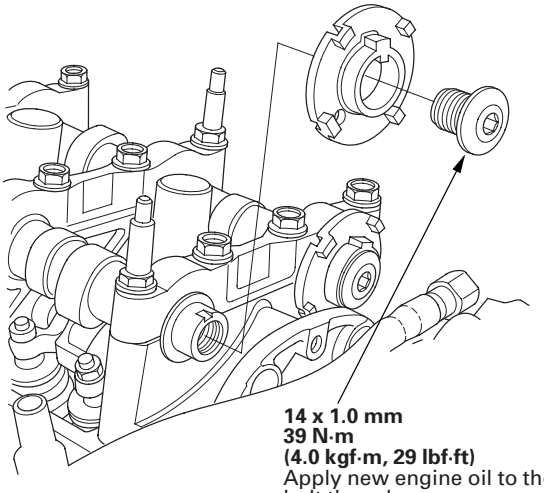
18. Remove the cylinder head.

CMP Pulse Plate A Replacement

1. Remove the cylinder head cover (see page 6-36).
2. Remove camshaft position (CMP) sensor A (see page 11-295).
3. Hold the intake camshaft with an open-end wrench, then loosen the bolt.



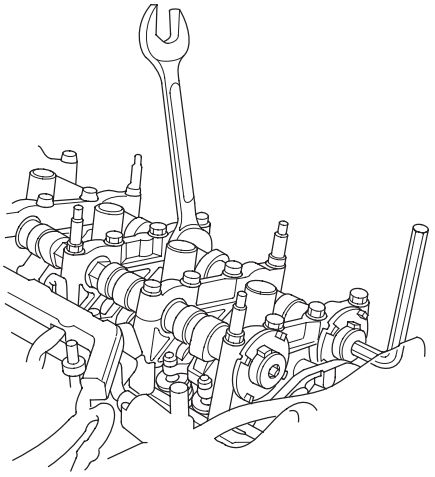
4. Remove CMP pulse plate A.



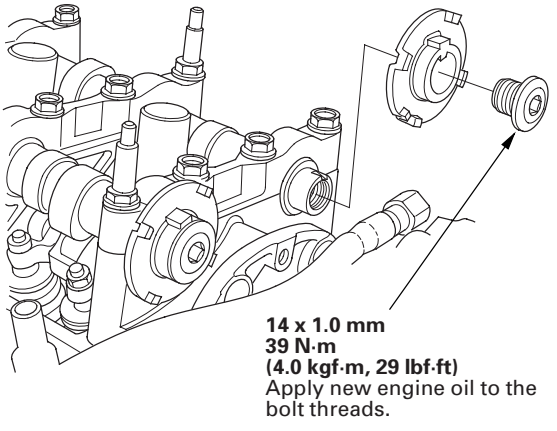
5. Install CMP pulse plate A in the reverse order of removal.

CMP Pulse Plate B Replacement

1. Remove the cylinder head cover (see page 6-36).
2. Remove camshaft position (CMP) sensor B (see page 11-222).
3. Hold the exhaust camshaft with an open-end wrench, then loosen the bolt.



4. Remove CMP pulse plate B.



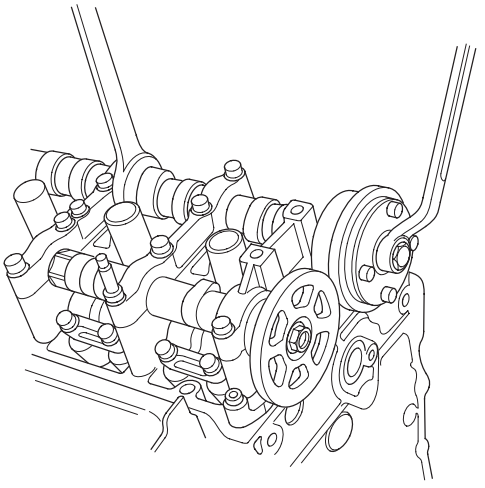
5. Install CMP pulse plate B in the reverse order of removal.

VTC Actuator, Exhaust Camshaft Sprocket Replacement

Removal

1. Remove the cam chain (see page 6-18).

2. Hold the exhaust camshaft with an open-end wrench, then loosen the variable valve timing control (VTC) actuator mounting bolt and the exhaust camshaft sprocket mounting bolt.



3. If the VTC actuator is reused, do these steps.

   1. Remove the intake camshaft, and seal the advance holes and retard holes in the No. 1 camshaft journal with tape (see step 6 on page 6-11).
   2. Punch a hole in the tape over one of the advance holes (see step 7 on page 6-11).
   3. Apply air to the advance hole to release the lock (see step 8 on page 6-11).
   4. Remove the tape from the No. 1 camshaft journal.

4. Remove the VTC actuator and the exhaust camshaft sprocket.

Installation

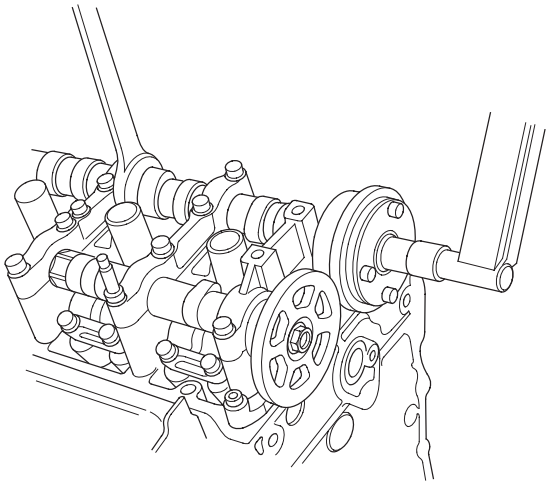
1. Install the variable valve timing control (VTC) actuator and exhaust camshaft sprocket.

   NOTE: Install the VTC actuator to unlock position.

2. Apply new engine oil to the threads of the VTC actuator mounting bolt and the exhaust camshaft mounting bolt, then install them.

3. Hold the exhaust camshaft with an open-end wrench, then tighten the mounting bolts.

   Specified Torque
   VTC Actuator Mounting Bolt:
   12 x 1.25 mm
   113 N·m (11.5 kgf·m, 83 lbf·ft)
   Exhaust Camshaft Sprocket Mounting Bolt:
   10 x 1.25 mm
   72 N·m (7.3 kgf·m, 53 lbf·ft)



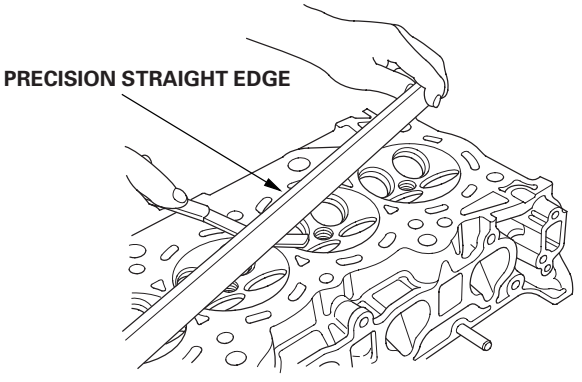
4. Hold the exhaust camshaft with an open-end wrench, and turn the VTC actuator clockwise until you hear it click. Make sure to lock the VTC actuator by turning it.

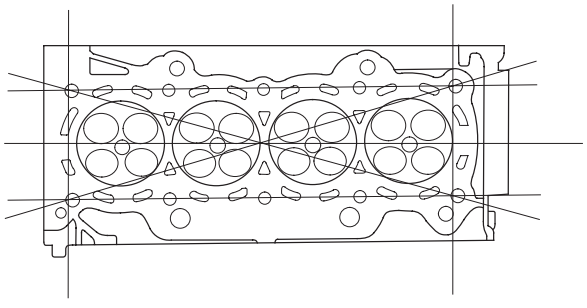
5. Install the cam chain (see page 6-21).

Cylinder Head Inspection for Warpage

1. Remove the cylinder head (see page 6-38).
2. Inspect the camshaft:
   - K20Z2 engine (see page 6-50)
   - K20Z3 engine (see page 6-52)
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
   - If warpage is less than 0.05 mm (0.002 in.) cylinder head resurfacing is not required.
   - If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
   - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 104 mm (4.09 in.).

Cylinder Head Height
Standard (New): 103.95—104.05 mm (4.093—4.096 in.)

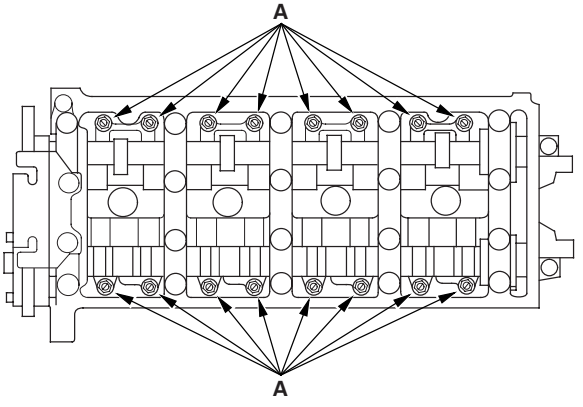




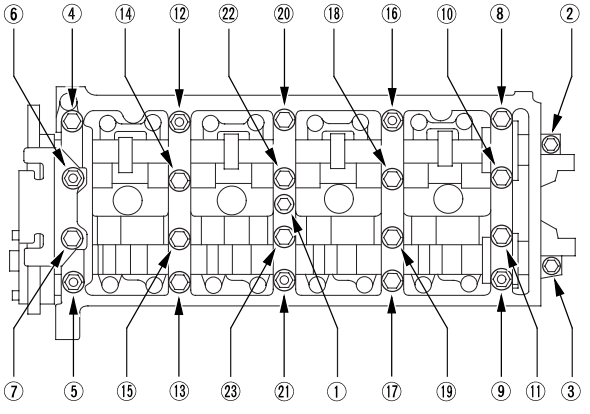
Rocker Arm Assembly Removal

K20Z2 engine

1. Remove the cam chain (see page 6-18).
2. Loosen the rocker arm adjusting screws (A).



3. Remove the camshaft holder bolts. To prevent damaging the camshafts, loosen the bolts, in sequence, two turns at a time in a crisscross pattern.



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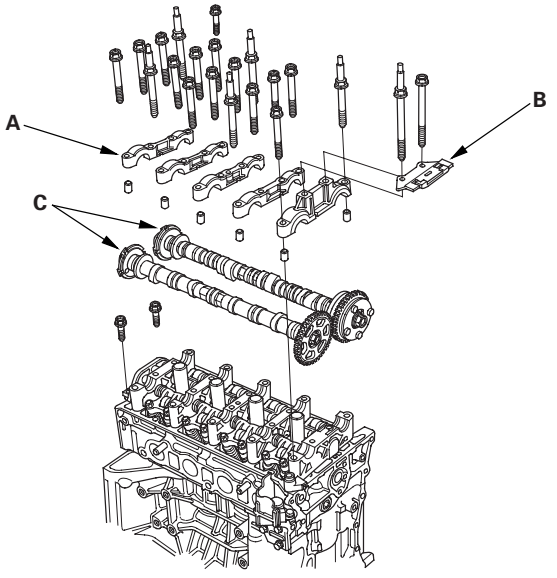
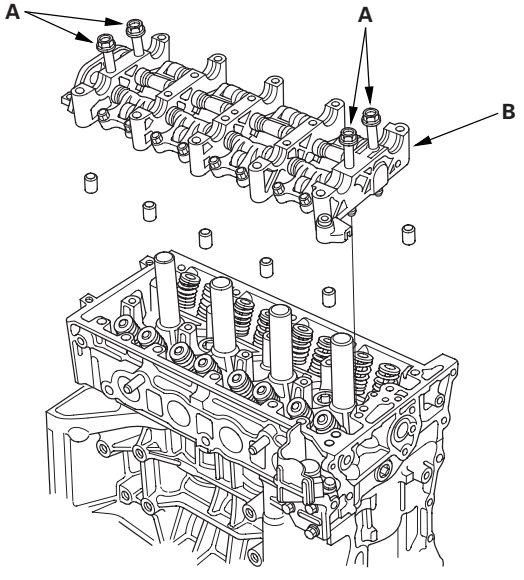
Rocker Arm Assembly Removal (cont'd)

4. Remove cam chain guide B, the camshaft holders (A), and the camshafts (C).



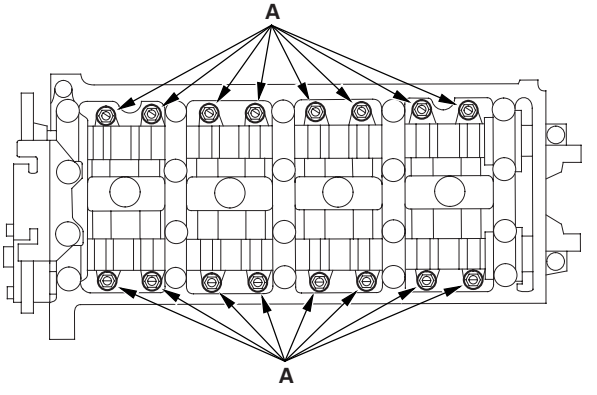
5. Insert the bolts (A) into the rocker shaft holder, then remove the rocker arm assembly (B).



K20Z3 engine

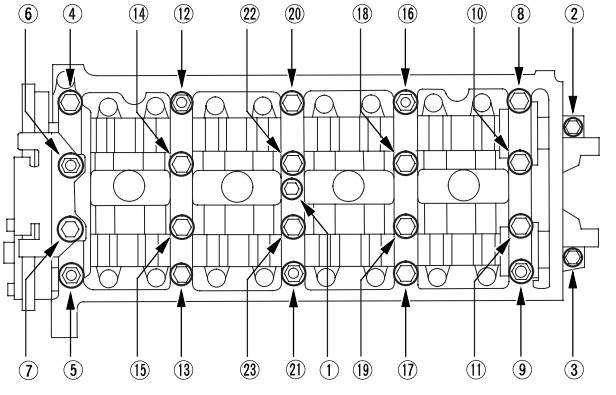
1. Remove the cam chain (see page 6-18).

2. Loosen the rocker arm adjusting screws (A).

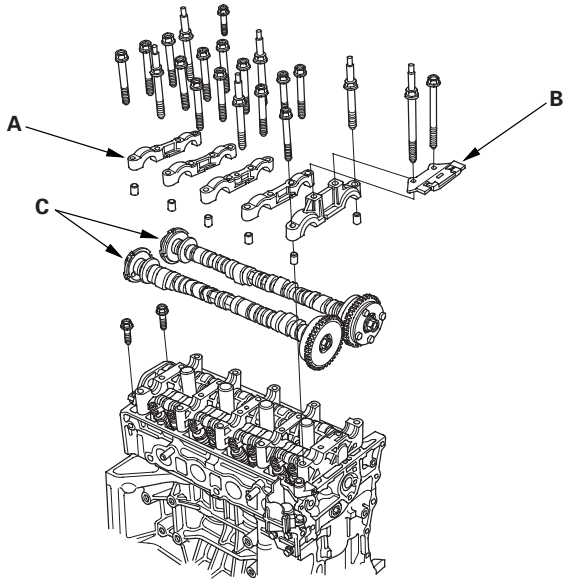


3. Remove the camshaft holder bolts. To prevent damaging the camshafts, loosen the bolts, in sequence, two turns at a time in a crisscross pattern.

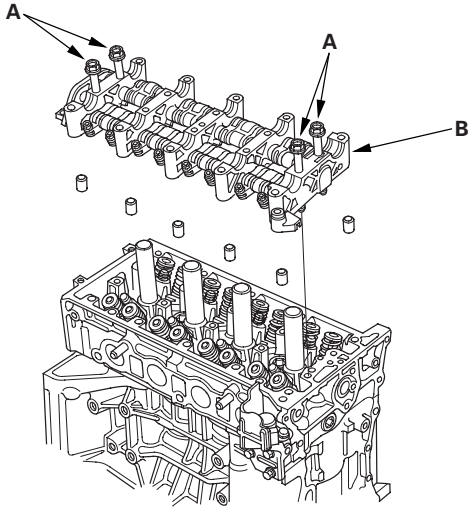
   NOTE: Bolt ① is not on all engines.



4. Remove cam chain guide B, the camshaft holders (A), and the camshafts (C).



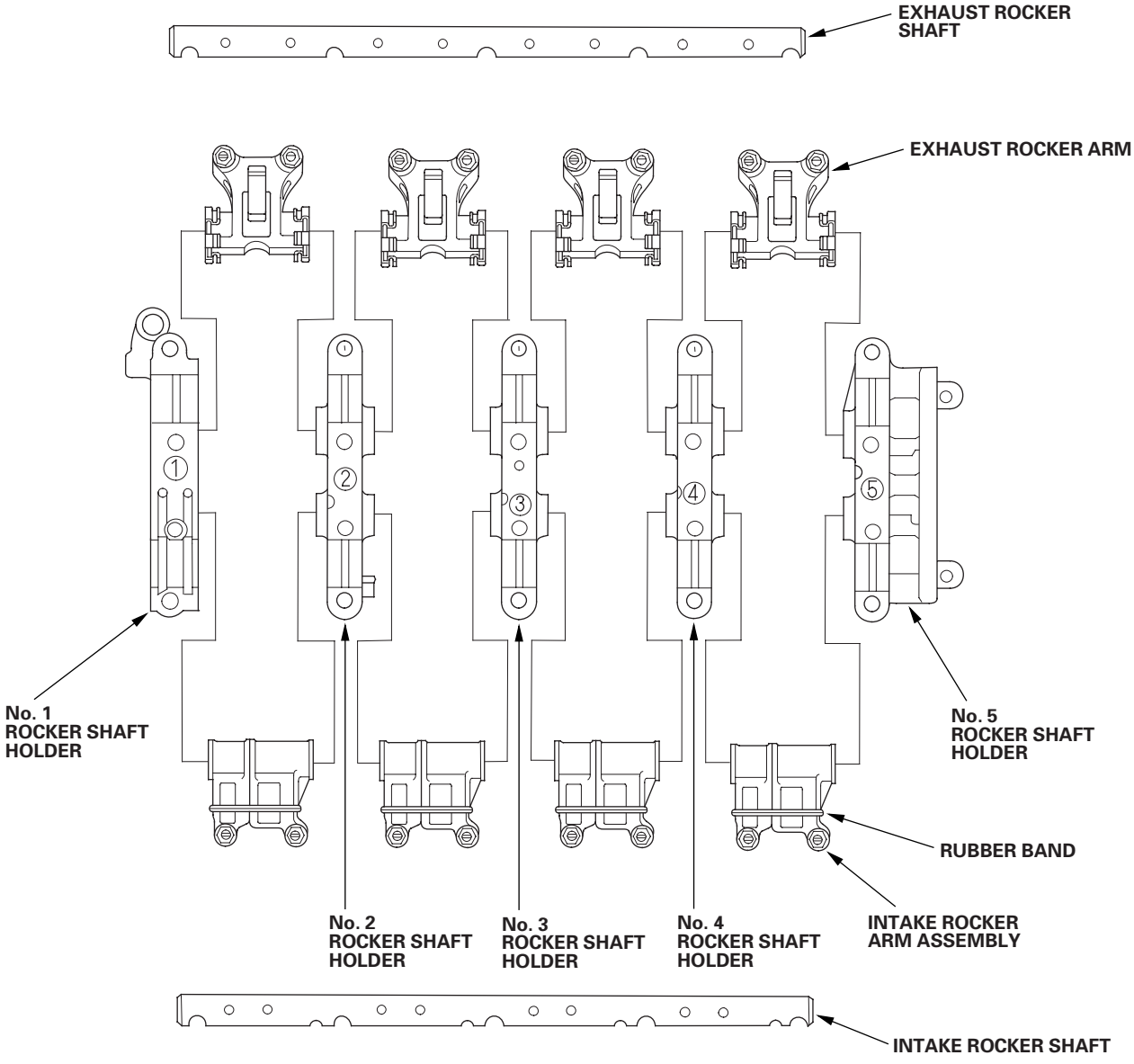
5. Insert the bolts (A) into the rocker shaft holder, then remove the rocker arm assembly (B).



Rocker Arm and Shaft Disassembly/Reassembly

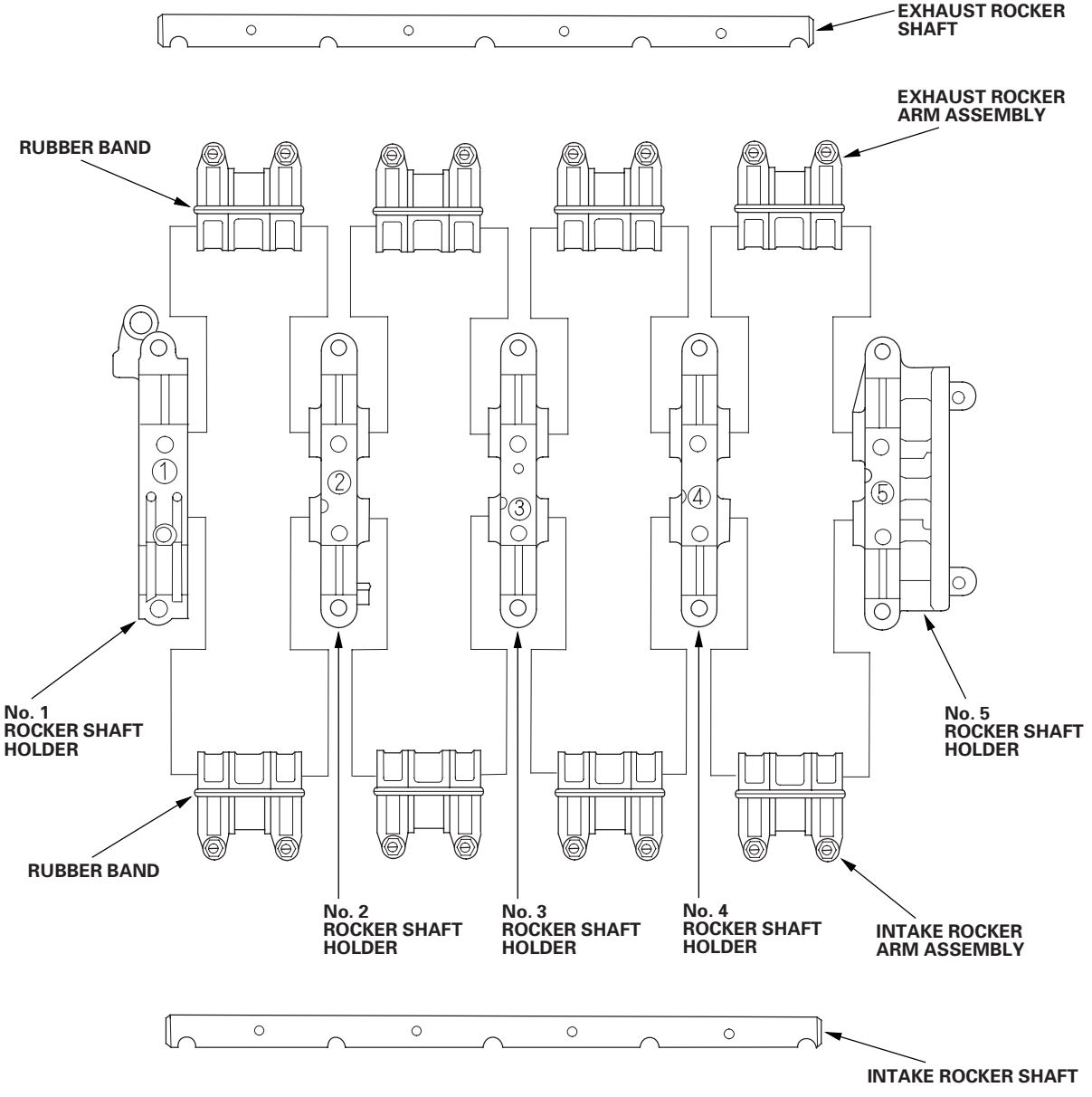
K20Z2 engine

NOTE:
- Identify each part as it is removed so that each item can be reinstalled in its original position.
- Inspect the rocker shafts and the rocker arms (see page 6-48).
- If reused, the rocker arms must be installed in the same positions.
- When removing, or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them, and apply new engine oil to any contact points.
- Bundle the intake rocker arms with rubber bands to keep them together as a set.
- When replacing the intake rocker arm assembly, remove the fastening hardware from the new intake rocker arm assembly.



K20Z3 engine

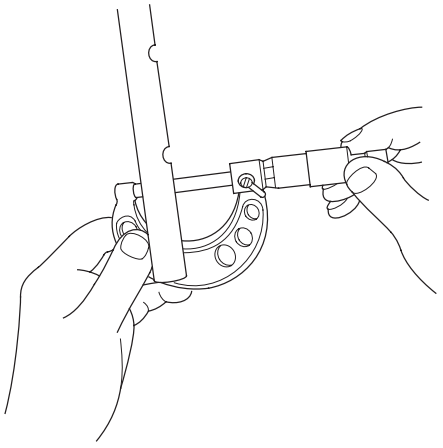
NOTE:
- Identify each part as it is removed so that each item can be reinstalled in its original position.
- Inspect the rocker shafts and the rocker arms (see page 6-49).
- If reused, the rocker arms must be installed in the same positions.
- When removing, or installing the rocker arm assembly, do not remove the camshaft holder bolts. The bolts will keep the holders and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them, and apply new engine oil to any contact points.
- Bundle the rocker arms with rubber bands to keep them together as a set.
- When replacing the VTEC rocker arm assembly, remove the fastening hardware from the new VTEC rocker arm assembly.



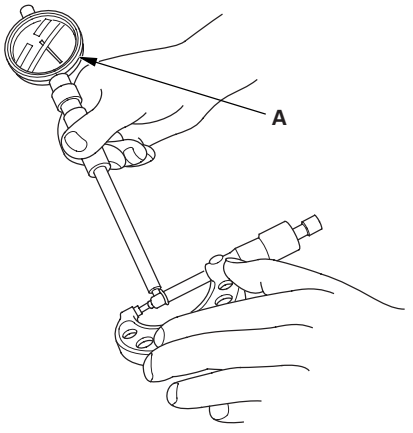
Rocker Arm and Shaft Inspection

K20Z2 engine

1. Remove the rocker arm assembly (see page 6-43).
2. Disassemble the rocker arm assembly (see page 6-46).
3. Measure the diameter of the shaft at the first rocker location.



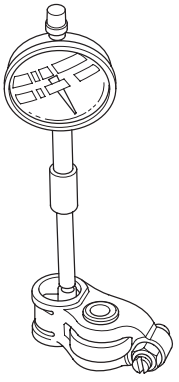
4. Zero the gauge (A) to the shaft diameter.



5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

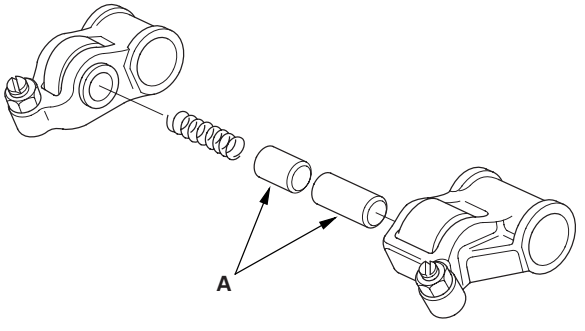
Rocker Arm-to-Shaft Clearance
Standard (New):

Intake:	**0.025—0.052 mm (0.0010—0.0020 in.)**
Exhaust:	**0.018—0.056 mm (0.0007—0.0022 in.)**
Service Limit:	**0.08 mm (0.003 in.)**



6. Repeat for all rocker arms and both shafts. If the clearance is beyond the service limit, replace the rocker shaft and all out of service limit rocker arms. If any VTEC rocker arm needs replacement, replace the rocker arms (primary and secondary), as a set.
7. Inspect the rocker arm pistons (A). Push on each piston manually. If it does not move smoothly, replace the rocker arm as a set.

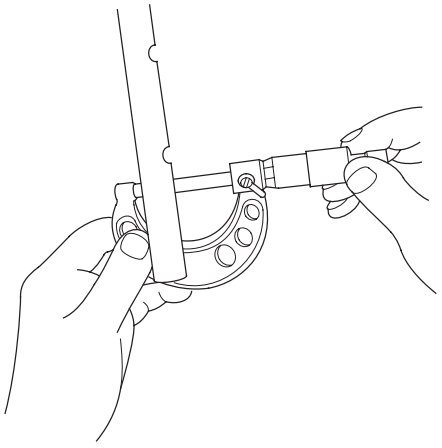
   NOTE: Apply new engine oil to the rocker arm pistons when reassembling.



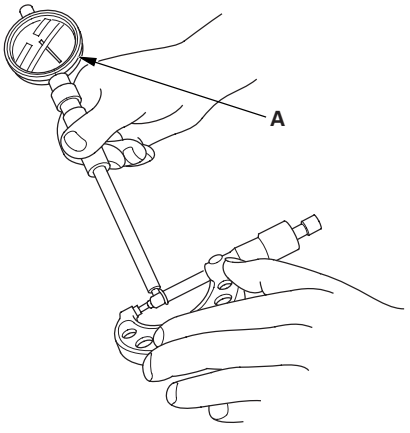
8. Install the rocker arm assembly (see page 6-60).

K20Z3 engine

1. Remove the rocker arm assembly (see page 6-44).
2. Disassemble the rocker arm assembly (see page 6-47).
3. Measure the diameter of the shaft at the first rocker location.

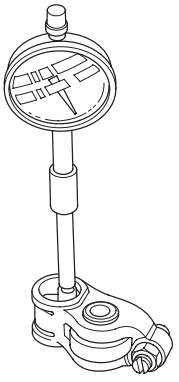


4. Zero the gauge (A) to the shaft diameter.



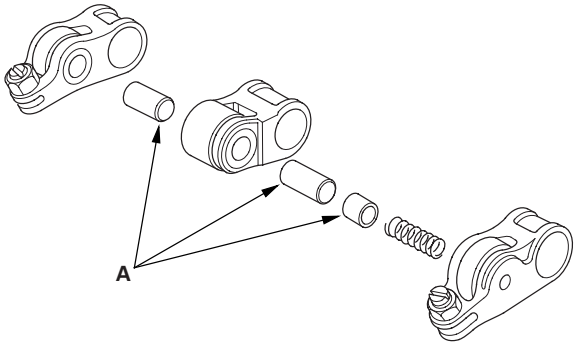
5. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

Rocker Arm-to-Shaft Clearance
Standard (New): 0.025—0.052 mm (0.0010—0.0020 in.)
Service Limit: 0.08 mm (0.003 in.)



6. Repeat for all rocker arms and both shafts. If the clearance is beyond the service limit, replace the rocker shaft and all out of service limit rocker arms. If any VTEC rocker arm needs replacement, replace the rocker arms (primary, mid, and secondary), as a set.
7. Inspect the rocker arm pistons (A). Push on each piston manually. If it does not move smoothly, replace the rocker arms as a set.

   NOTE: Apply new engine oil to the rocker arm pistons when reassembling.



8. Install the rocker arm assembly (see page 6-61).

Camshaft Inspection

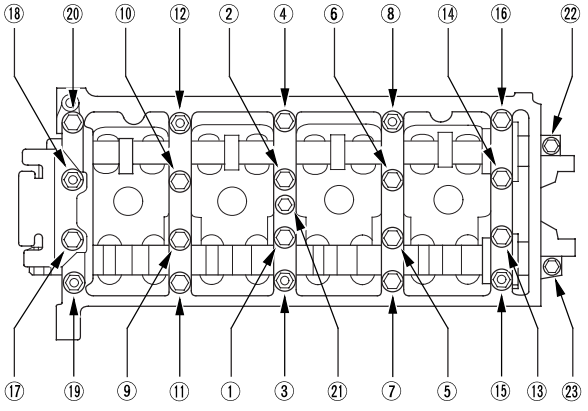
K20Z2 engine

NOTE: Do not rotate the camshaft during inspection.

1. Remove the rocker arm assembly (see page 6-43).

2. Put the rocker shaft holders, the camshaft, and the camshaft holders on the cylinder head, then tighten the bolts, in sequence, to the specified torque.

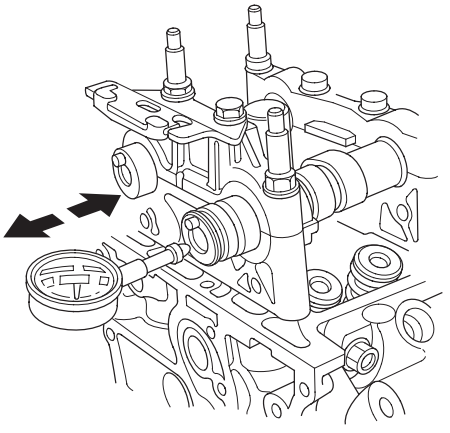
   Specified Torque
   8 x 1.25 mm
   22 N·m (2.2 kgf·m, 16 lbf·ft)
   6 x 1.0 mm
   12 N·m (1.2 kgf·m, 8.7 lbf·ft)
   6 x 1.0 mm Bolts: ㉑, ㉒, ㉓



3. Seat the camshaft by pushing it away from the camshaft pulley end of the cylinder head.

4. Zero the dial indicator against the end of the camshaft, then push the camshaft back and forth, and read the end play. If the end play is beyond the service limit, replace the cylinder head and recheck. If it is still beyond the service limit, replace the camshaft.

   Camshaft End Play
   Standard (New): 0.05—0.20 mm
   (0.002—0.008 in.)
   Service Limit: 0.4 mm (0.02 in.)



5. Loosen the camshaft holder bolts two turns at a time, in a crisscross pattern. Then remove the camshaft holders from the cylinder head.

6. Lift the camshafts out of the cylinder head, wipe them clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.

7. Clean the camshaft journal surfaces in the cylinder head, then set the camshafts back in place. Place a plastigage strip across each journal.

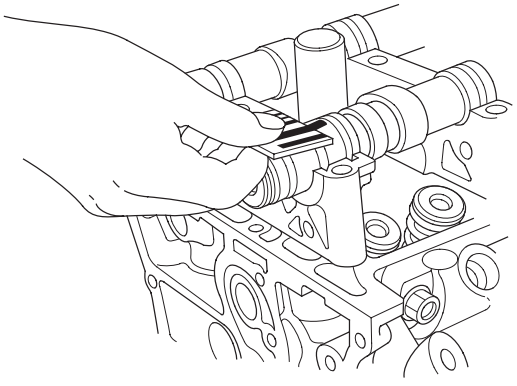
8. Install the camshaft holders, then tighten the bolts to the specified torque as shown in step 2.

9. Remove the camshaft holders. Measure the widest portion of plastigage on each journal.

   - If the camshaft-to-holder clearance is within the service limits, go to step 11.
   - If the camshaft-to-holder clearance is beyond the service limit, and the camshaft has been replaced, replace the cylinder head.
   - If the camshaft-to-holder clearance is beyond the service limit, and the camshaft has not been replaced, go to step 10.

Camshaft-to-Holder Oil Clearance
Standard (New):

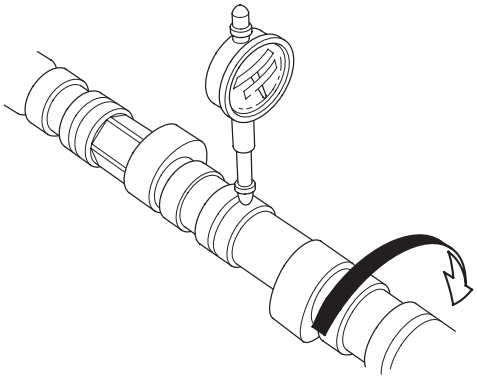
No. 1 Journal:	**0.030—0.069 mm (0.001—0.003 in.)**
No. 2, 3, 4, 5 Journals:	**0.060—0.099 mm (0.002—0.004 in.)**
Service Limit:	**0.15 mm (0.006 in.)**



10. Check the total runout with the camshaft supported on V-blocks.

    - If the total runout of the camshaft is within the service limit, replace the cylinder head.
    - If the total runout is beyond the service limit, replace the camshaft, and recheck the camshaft-to-holder oil clearance. If the oil clearance is still beyond the service limit, replace the cylinder head.

Camshaft Total Runout
Standard (New): 0.03 mm (0.001 in.) max.
Service Limit: 0.04 mm (0.002 in.)

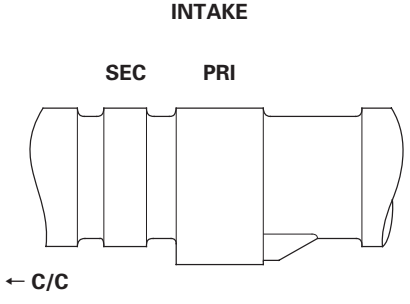


11. Measure the cam lobe height.

Cam Lobe Height Standard (New):

	INTAKE	EXHAUST
PRI	34.263 mm (1.3489 in.)	34.092 mm (1.3422 in.)
SEC	29.638 mm (1.1668 in.)	

PRI: Primary SEC: Secondary C/C: Cam Chain



Camshaft Inspection (cont'd)

K20Z3 engine

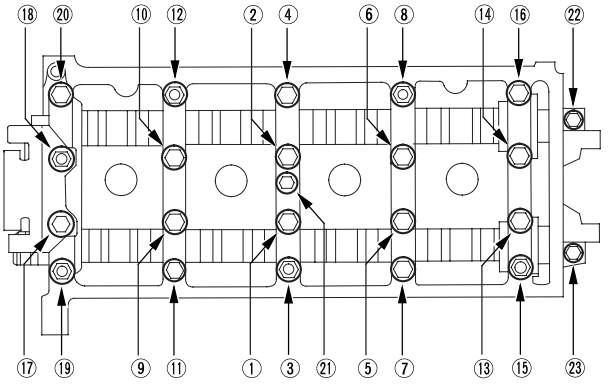
NOTE: Do not rotate the camshaft during inspection.

1. Remove the rocker arm assembly (see page 6-44).

2. Put the rocker shaft holders, camshaft, and camshaft holders on the cylinder head, then tighten the bolts in sequence to the specified torque.

   NOTE: If the engine does not have bolt ㉑, skip it and continue the torque sequence.

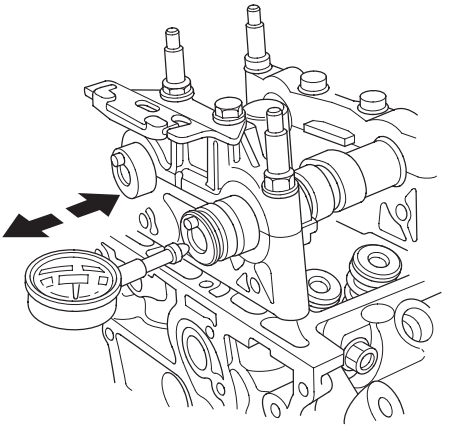
   Specified Torque
   8 x 1.25 mm
   22 N·m (2.2 kgf·m, 16 lbf·ft)
   6 x 1.0 mm
   12 N·m (1.2 kgf·m, 8.7 lbf·ft)
   6 x 1.0 mm Bolts: ㉑, ㉒, ㉓



3. Seat the camshaft by pushing it away from the camshaft pulley end of the cylinder head.

4. Zero the dial indicator against the end of the camshaft, then push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the cylinder head and recheck. If it is still beyond the service limit, replace the camshaft.

   Camshaft End Play
   Standard (New): 0.05—0.20 mm (0.002—0.008 in.)
   Service Limit: 0.4 mm (0.02 in.)



5. Loosen the camshaft holder bolts two turns at a time, in a crisscross pattern. Then remove the camshaft holders from the cylinder head.

6. Lift the camshafts out of the cylinder head, wipe them clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.

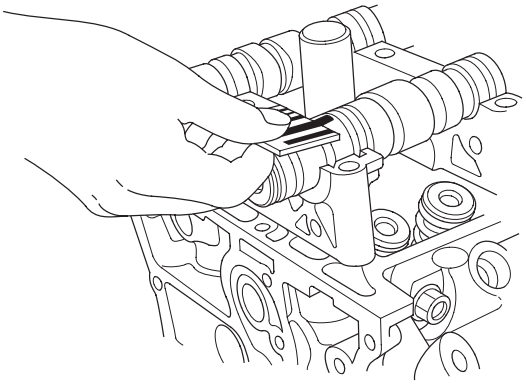
7. Clean the camshaft journal surfaces in the cylinder head, then set the camshafts back in place. Place a plastigage strip across each journal.

8. Install the camshaft holders, then tighten the bolts to the specified torque as shown in step 2.

9. Remove the camshaft holders. Measure the widest portion of plastigage on each journal.

   - If the camshaft-to-holder clearance is within the service limits, go to step 11.
   - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
   - If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 10.

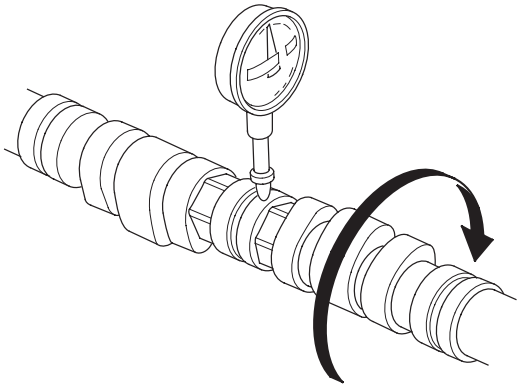
Camshaft-to-Holder Oil Clearance
Standard (New):
No. 1 Journal: **0.030—0.069 mm (0.001—0.003 in.)**
No. 2, 3, 4, 5 Journals: **0.060—0.099 mm (0.002—0.004 in.)**
Service Limit: **0.15 mm (0.006 in.)**



10. Check the total runout with the camshaft supported on V-blocks.

    - If the total runout of the camshaft is within the service limit, replace the cylinder head.
    - If the total runout is beyond the service limit, replace the camshaft and recheck the camshaft-to-holder oil clearance. If the oil clearance is still beyond the service limit, replace the cylinder head.

Camshaft Total Runout
Standard (New): 0.03 mm (0.001 in.) max.
Service Limit: 0.04 mm (0.002 in.)

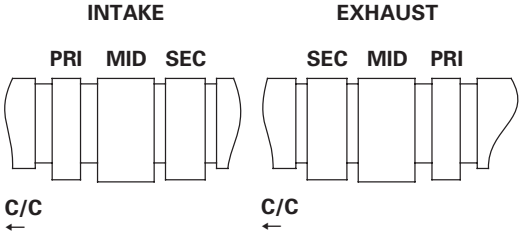


11. Measure the cam lobe height.

Cam Lobe Height Standard (New):

	INTAKE	EXHAUST
PRI	32.791 mm (1.2910 in.)	32.772 mm (1.2902 in.)
MID	35.534 mm (1.3990 in.)	34.768 mm (1.3688 in.)
SEC	32.678 mm (1.2865 in.)	32.661 mm (1.2859 in.)

PRI: Primary MID: Mid SEC: Secondary
C/C: Cam Chain



Valve, Spring, and Valve Seal Removal

Special Tools Required
Valve spring compressor attachment 07757-PJ1010A

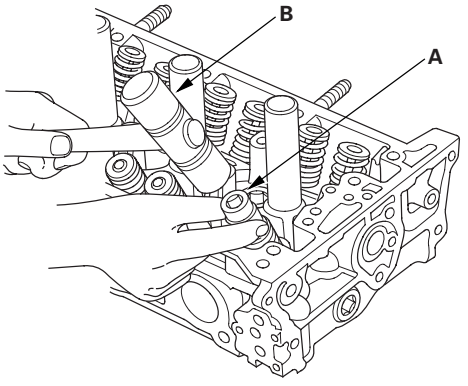
Identify the valves and the valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-38).

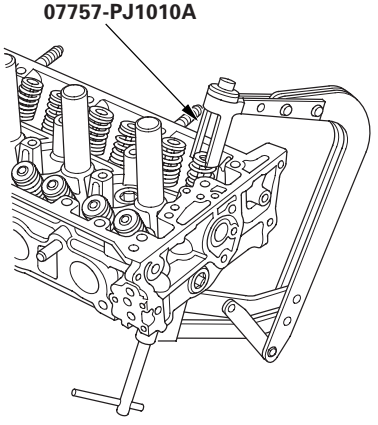
2. Remove the rocker arm assembly:

   - K20Z2 engine (see page 6-43)
   - K20Z3 engine (see page 6-44)

3. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the spring retainer to loosen the valve cotters.

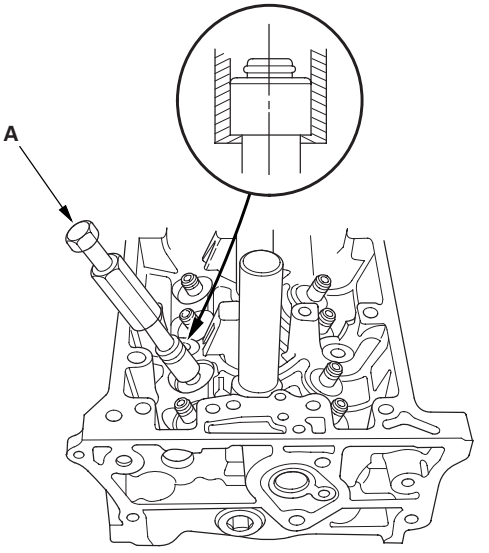


4. Install the valve spring compressor attachment and the valve spring compressor. Compress the valve spring, and remove the valve cotters.

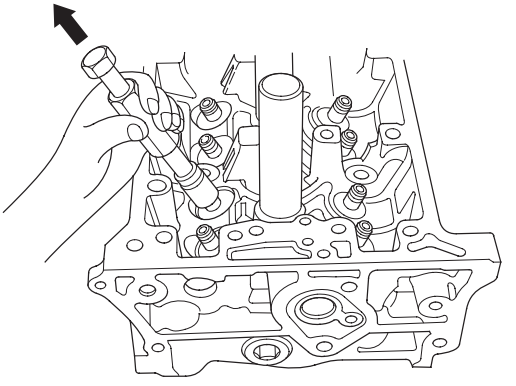


5. Remove the valve spring compressor, the valve spring compressor attachment, the spring retainer, the valve spring and the valve.

6. Install the valve guide seal remover (A).



7. Remove the valve seal.



8. Remove the valve spring seat.

Valve Inspection

1. Remove the valves (see page 6-54).

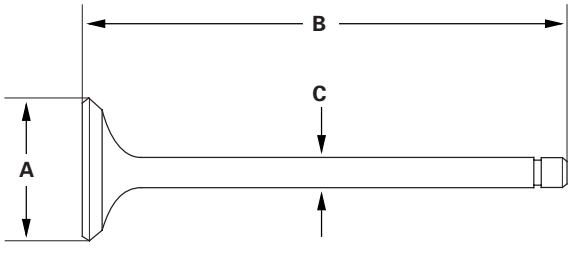
2. Measure the valve in these areas.

K20Z2 engine
Intake Valve Dimensions
A Standard (New): 34.85—35.15 mm (1.372—1.384 in.)
B Standard (New): 108.7—109.5 mm (4.280—4.311 in.)
C Standard (New): 5.475—5.485 mm (0.2156—0.2159 in.)
C Service Limit: 5.445 mm (0.214 in.)

Exhaust Valve Dimensions
A Standard (New): 29.85—30.15 mm (1.175—1.187 in.)
B Standard (New): 108.3—109.1 mm (4.264—4.295 in.)
C Standard (New): 5.450—5.460 mm (0.2146—0.2150 in.)
C Service Limit: 5.420 mm (0.213 in.)

K20Z3 engine
Intake Valve Dimensions
A Standard (New): 34.85—35.15 mm (1.372—1.384 in.)
B Standard (New): 108.5—109.1 mm (4.272—4.295 in.)
C Standard (New): 5.475—5.485 mm (0.2156—0.2159 in.)
C Service Limit: 5.445 mm (0.214 in.)

Exhaust Valve Dimensions
A Standard (New): 29.85—30.15 mm (1.175—1.187 in.)
B Standard (New): 108.4—109.0 mm (4.268—4.291 in.)
C Standard (New): 5.450—5.460 mm (0.2146—0.2150 in.)
C Service Limit: 5.420 mm (0.213 in.)



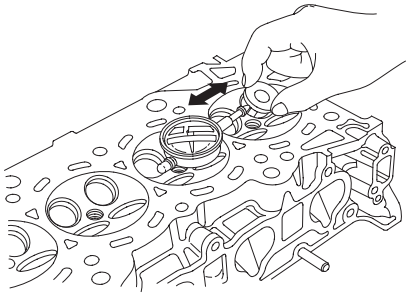
Valve Stem-to-Guide Clearance Inspection

1. Remove the valves (see page 6-54).

2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the stem-to-guide clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).
   - If the measurement exceeds the service limit, recheck it using a new valve.
   - If the measurement is now within the service limit, reassemble using a new valve.
   - If the measurement with a new valve still exceeds the service limit, go to step 3.

Intake Valve Stem-to-Guide Clearance
Standard (New): 0.06—0.11 mm (0.002—0.004 in.)
Service Limit: 0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance
Standard (New): 0.11—0.16 mm (0.004—0.006 in.)
Service Limit: 0.22 mm (0.009 in.)



3. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, measured with an inside micrometer or ball gauge. Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

Intake Valve Stem-to-Guide Clearance
Standard (New): 0.030—0.055 mm (0.0012—0.0022 in.)
Service Limit: 0.08 mm (0.003 in.)

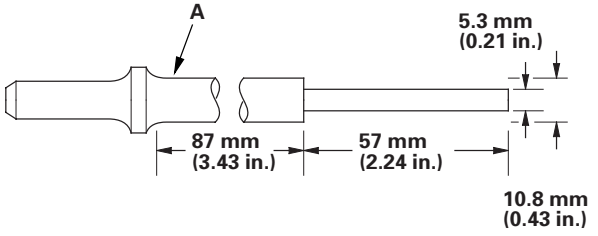
Exhaust Valve Stem-to-Guide Clearance
Standard (New): 0.055—0.080 mm (0.0022—0.0031 in.)
Service Limit: 0.11 mm (0.004 in.)

Valve Guide Replacement

Special Tools Required
- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

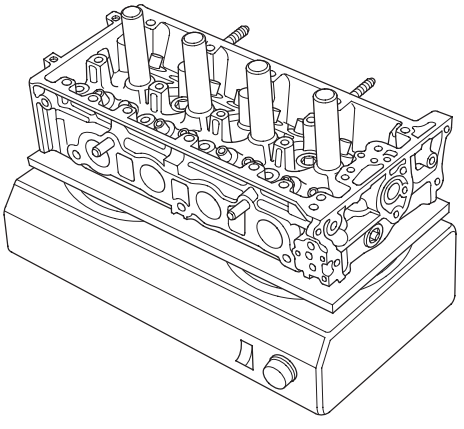
1. Inspect the valve stem-to-guide clearance (see page 6-55).

2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the valve guide driver and a conventional hammer.



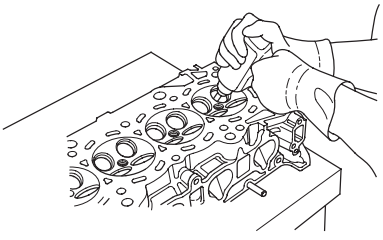
3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for at least an hour.

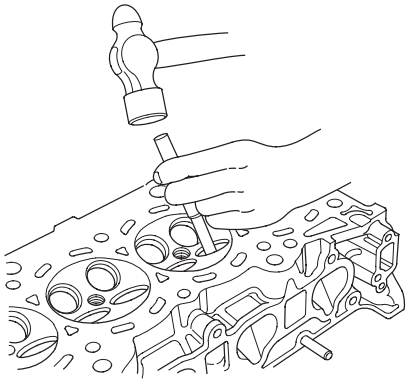
4. Use a hot plate or oven to evenly heat the cylinder head to 150 ℃ (300 ℉). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 150 ℃ (300 ℉); excessive heat may loosen the valve seats.



5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver.

6. Turn the head over, and drive the guide out toward the camshaft side of the head.





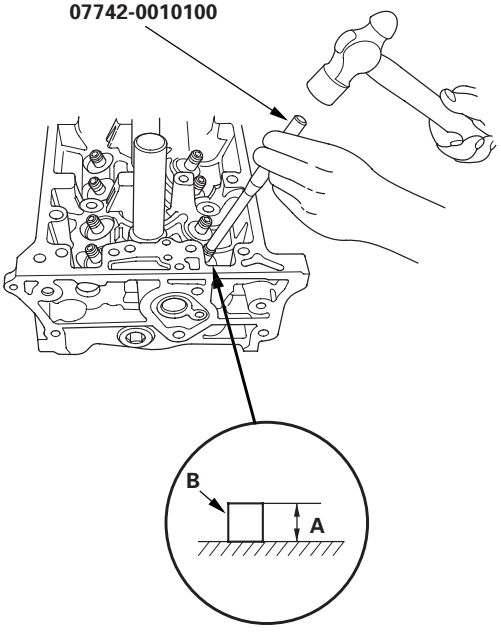
7. If a valve guide won't move, drill it out with a 8 mm (5/16 in.) bit, then try again.

   NOTE: Drill guides only in extreme cases, you could damage the cylinder head if the guide breaks.

8. Remove out the new guide(s) from the freezer, one at a time, as you need them.

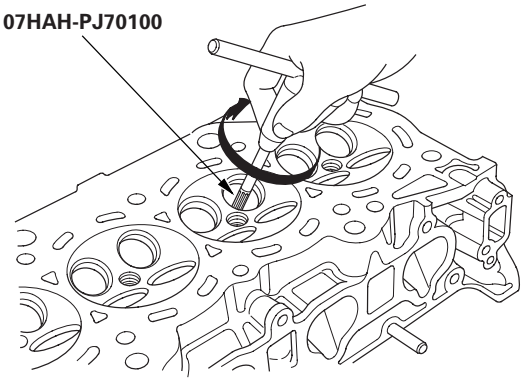
9. Apply a thin coat of new engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head, use the valve guide driver to drive the guide in to the specified installed height (A) of the guide (B). If you have all 16 guides to do, you may have to reheat the head.

Valve Guide Installed Height
Intake: 15.2—16.2 mm (0.598—0.638 in.)
Exhaust: 15.5—16.5 mm (0.610—0.650 in.)



10. Coat both valve guide reamer, 5.5 mm and the valve guide with cutting oil.

11. Rotate the reamer clockwise to the full length of the valve guide bore.



12. Continue to rotate the reamer clockwise while removing it from the bore.

13. Thoroughly wash the guide in detergent and water to remove any cutting residue.

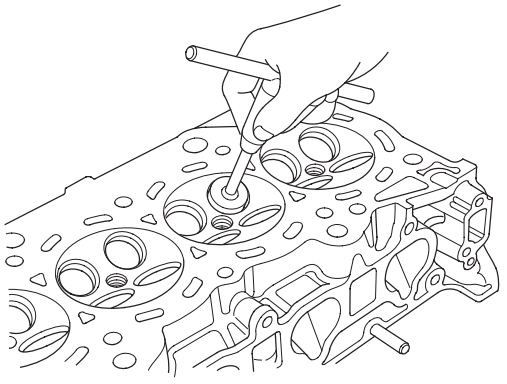
14. Check the clearances with a valve (see page 6-55). Verify that a valve slides into the intake and exhaust valve guides without sticking.

15. Inspect the valve seating, if necessary renew the valve seat using a valve seat cutter (see page 6-58).

Valve Seat Reconditioning

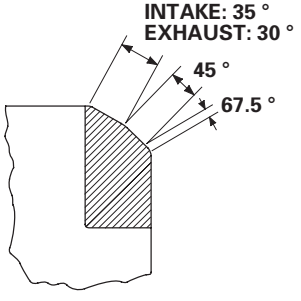
1. Inspect the valve stem-to-guide clearance (see page 6-55). If the valve guides are worn, replace them (see page 6-56) before cutting the valve seats.

2. Renew the valve seats in the cylinder head using a valve seat cutter.



3. Carefully cut a 45 ° seat, removing only enough material to ensure a smooth and concentric seat.

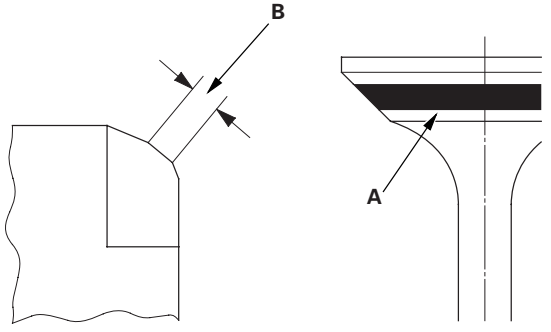
4. Bevel the upper and lower edges at the angles shown in the illustration.
Check the width of the seat and adjust accordingly.



5. Make one more very light pass with the 45 ° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width
Standard (New): 1.25—1.55 mm (0.049—0.061 in.)
Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect for even valve seating. Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.

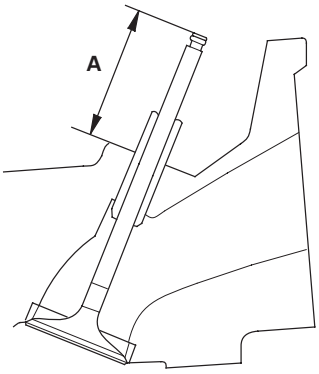
- If it is too high (closer to the valve stem), you must make a second cut with the 67.5 ° cutter to move it down, then one more cut with the 45 ° cutter to restore seat width.
- If it is too low (close to the valve edge), you must make a second cut with the 35 ° cutter (intake side) or the 30 ° cutter (exhaust side) to move it up, then make one more cut with the 45 ° cutter to restore seat width.

NOTE: The final cut should always be made with the 45 ° cutter.

8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height
Standard (New): 44.0—44.5 mm (1.73—1.75 in.)
Service Limit: 44.7 mm (1.76 in.)

Exhaust Valve Stem Installed Height
Standard (New): 44.1—44.6 mm (1.74—1.76 in.)
Service Limit: 44.8 mm (1.76 in.)



9. If the valve stem installed height is beyond the service limit, replace the valve and recheck. If it is still beyond the service limit, replace the cylinder head, the valve seat in the head is too deep.

Valve, Spring, and Valve Seal Installation

Special Tools Required
- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

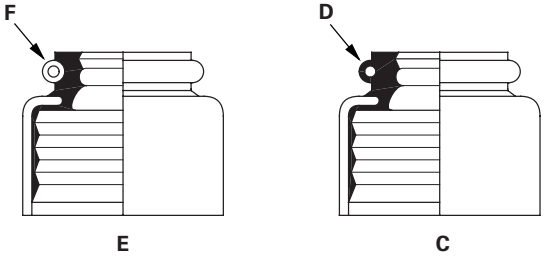
1. Coat the valve stems with new engine oil. Install the valves in the valve guides.

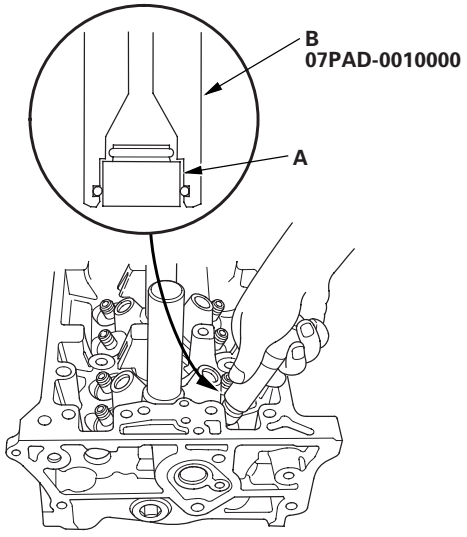
2. Check that the valves move up and down smoothly.

3. Install the spring seats on the cylinder head.

4. Install the new valve seals (A) using the 5.5 mm side of the stem seal driver (B).

NOTE: The exhaust valve seal (C) has a black spring (D), and the intake valve seal (E) has a white spring (F). They are not interchangeable.



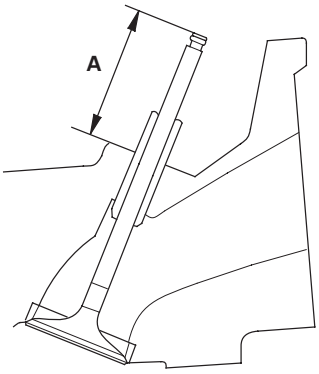


(cont'd)

8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height
Standard (New): 44.0—44.5 mm (1.73—1.75 in.)
Service Limit: 44.7 mm (1.76 in.)

Exhaust Valve Stem Installed Height
Standard (New): 44.1—44.6 mm (1.74—1.76 in.)
Service Limit: 44.8 mm (1.76 in.)



9. If the valve stem installed height is beyond the service limit, replace the valve and recheck. If it is still beyond the service limit, replace the cylinder head, the valve seat in the head is too deep.

Valve, Spring, and Valve Seal Installation

Special Tools Required
- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

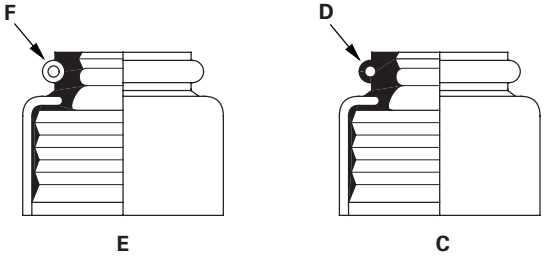
1. Coat the valve stems with new engine oil. Install the valves in the valve guides.

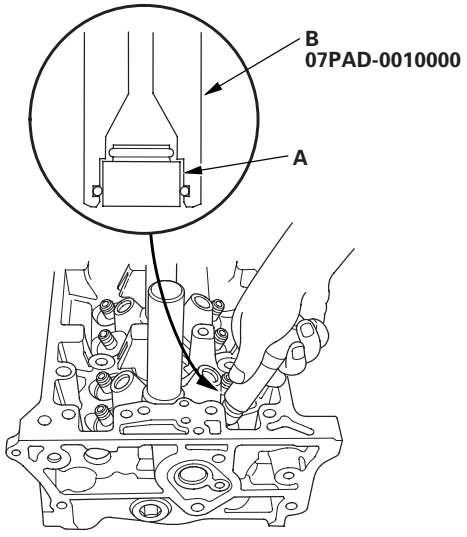
2. Check that the valves move up and down smoothly.

3. Install the spring seats on the cylinder head.

4. Install the new valve seals (A) using the 5.5 mm side of the stem seal driver (B).

NOTE: The exhaust valve seal (C) has a black spring (D), and the intake valve seal (E) has a white spring (F). They are not interchangeable.



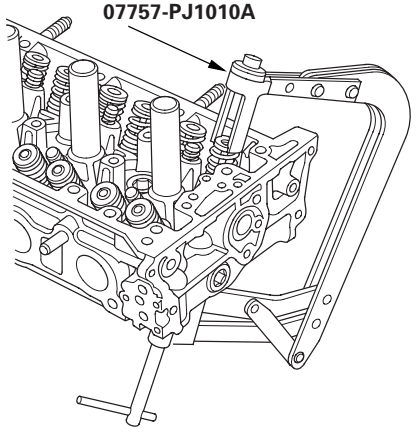


(cont'd)

Valve, Spring, and Valve Seal Installation (cont'd)

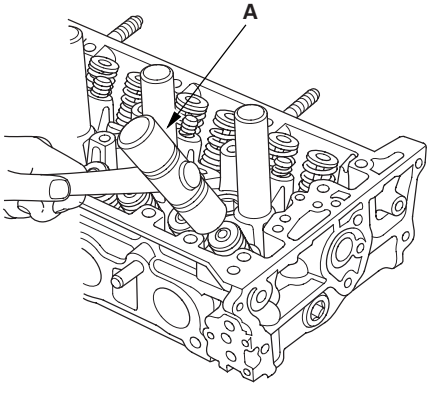
5. Install the valve spring and the spring retainer. Place the end of the valve spring with the closely wound coils toward the cylinder head.

6. Install the valve spring compressor attachment and the valve spring compressor. Compress the valve spring, and install the valve cotters.



7. Remove the valve spring compressor and the valve spring compressor attachment.

8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve keepers. Tap the valve stem only along its axis so you do not bend the stem.



Rocker Arm Assembly Installation

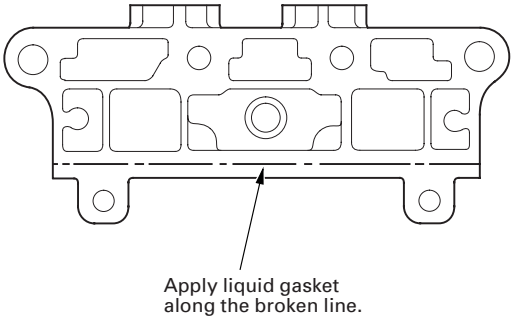
K20Z2 engine

1. Reassemble the rocker arm assembly (see page 6-46).

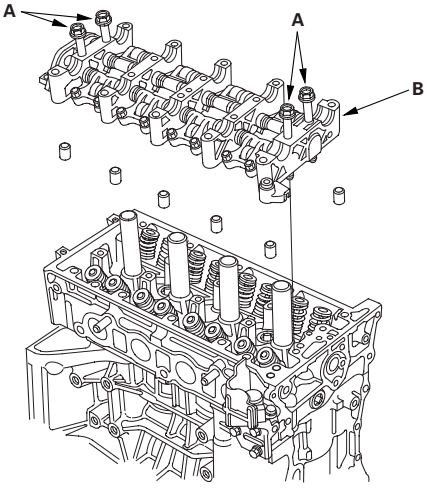
2. Clean and dry the No. 5 rocker shaft holder mating surface.

3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the cylinder head mating surface of the No. 5 rocker shaft holder. Install the component within 5 minutes of applying the liquid gasket.

   NOTE:
   - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
   - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



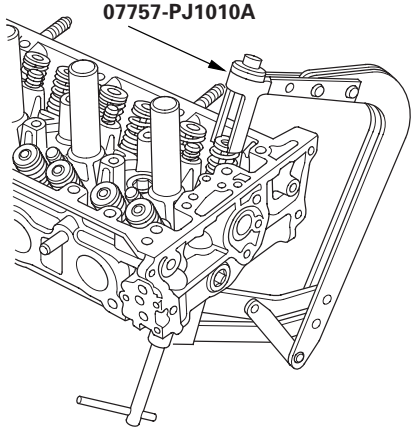
4. Insert the bolts (A) into the rocker shaft holder, then install the rocker arm assembly (B) on the cylinder head.



Valve, Spring, and Valve Seal Installation (cont'd)

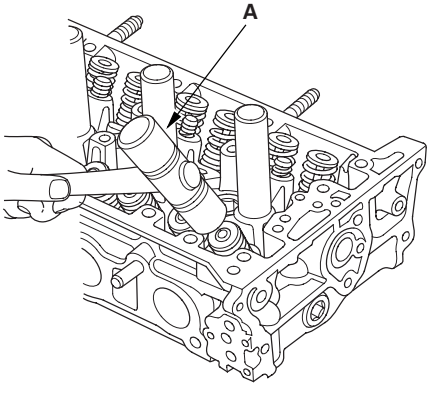
5. Install the valve spring and the spring retainer. Place the end of the valve spring with the closely wound coils toward the cylinder head.

6. Install the valve spring compressor attachment and the valve spring compressor. Compress the valve spring, and install the valve cotters.



7. Remove the valve spring compressor and the valve spring compressor attachment.

8. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve keepers. Tap the valve stem only along its axis so you do not bend the stem.



Rocker Arm Assembly Installation

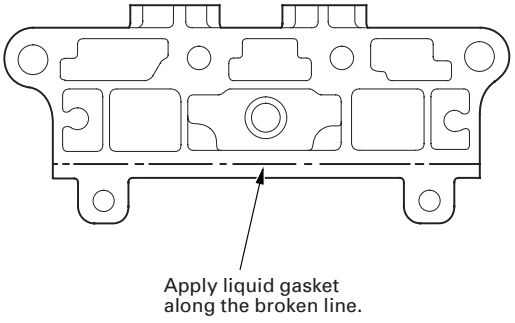
K20Z2 engine

1. Reassemble the rocker arm assembly (see page 6-46).

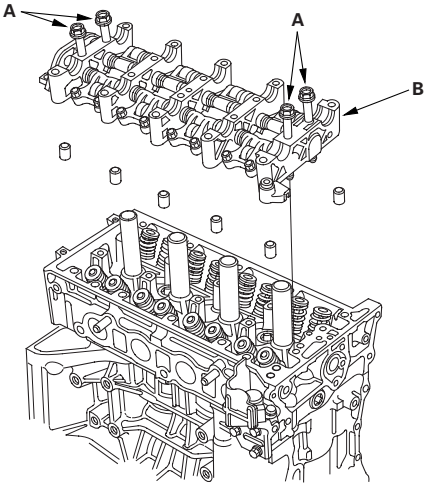
2. Clean and dry the No. 5 rocker shaft holder mating surface.

3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the cylinder head mating surface of the No. 5 rocker shaft holder. Install the component within 5 minutes of applying the liquid gasket.

   NOTE:
   - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
   - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

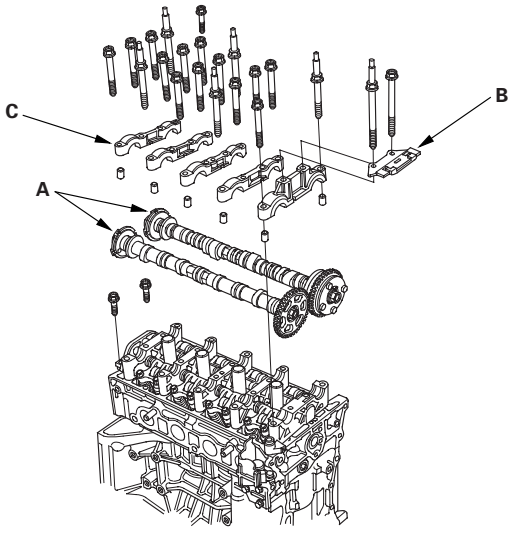


4. Insert the bolts (A) into the rocker shaft holder, then install the rocker arm assembly (B) on the cylinder head.



5. Remove the bolts from the rocker shaft holder.

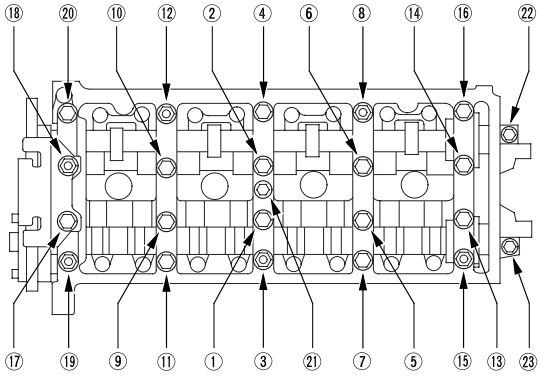
6. Make sure the punch marks on the variable valve timing control (VTC) actuator and the exhaust camshaft sprocket are facing up, then set the camshafts (A) in the holder. Apply new engine oil to the camshaft journals and lobes.



7. Set the camshaft holders (C) and cam chain guide B in place.

8. Tighten the bolts to the specified torque.

Specified Torque
8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)
6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)
6 x 1.0 mm Bolts: ㉑, ㉒, ㉓



9. Install the cam chain (see page 6-21), then adjust the valve clearance (see page 6-12).

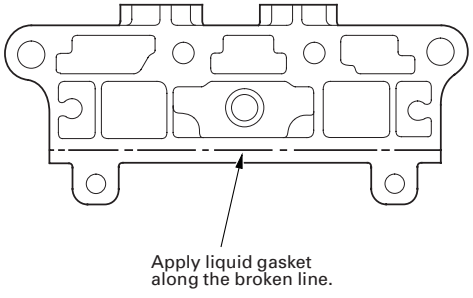
K20Z3 engine

1. Reassemble the rocker arm assembly (see page 6-47).

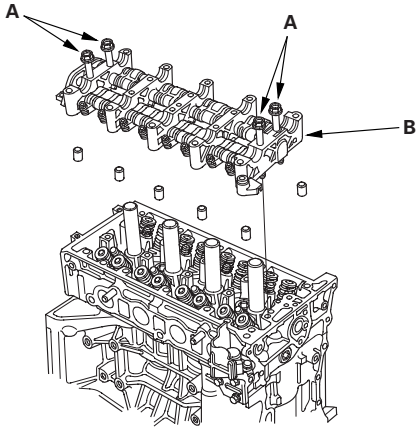
2. Clean and dry the No. 5 rocker shaft holder mating surface.

3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the cylinder head mating surface of the No. 5 rocker shaft holder. Install the component within 5 minutes of applying the liquid gasket.

   NOTE:
   - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
   - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



4. Insert the bolts (A) into the rocker shaft holder, then install the rocker arm assembly (B) on the cylinder head.

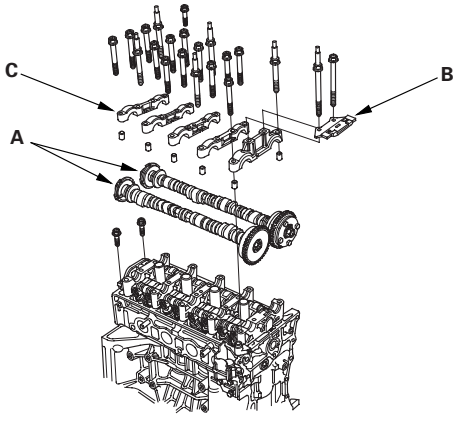


5. Remove the bolts from the rocker shaft holder.

(cont'd)

Rocker Arm Assembly Installation (cont'd)

6. Make sure the punch marks on the variable valve timing control (VTC) actuator and the exhaust camshaft sprocket are facing up, then set the camshafts (A) in the holder. Apply new engine oil to the camshaft journals and lobes.

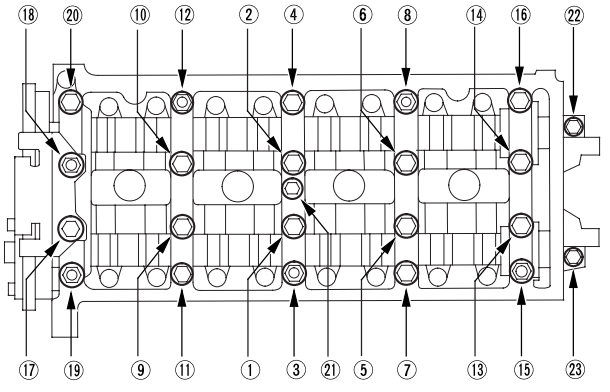


7. Set the camshaft holders (C) and cam chain guide B in place.

8. Tighten the bolts in sequence to the specified torque.

   NOTE: If the engine does not have bolt ㉑, skip it and continue the torque sequence.

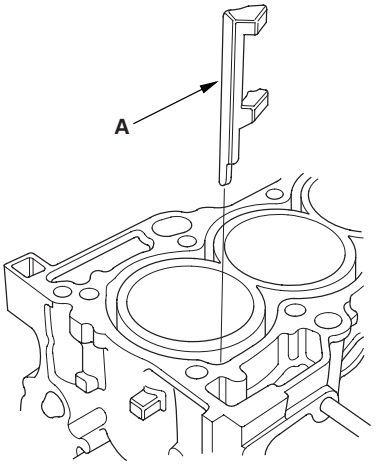
   Specified Torque
   8 x 1.25 mm
   22 N·m (2.2 kgf·m, 16 lbf·ft)
   6 x 1.0 mm
   12 N·m (1.2 kgf·m, 8.7 lbf·ft)
   6 x 1.0 mm Bolts: ㉑, ㉒, ㉓



9. Install the cam chain (see page 6-21), then adjust the valve clearance (see page 6-14).

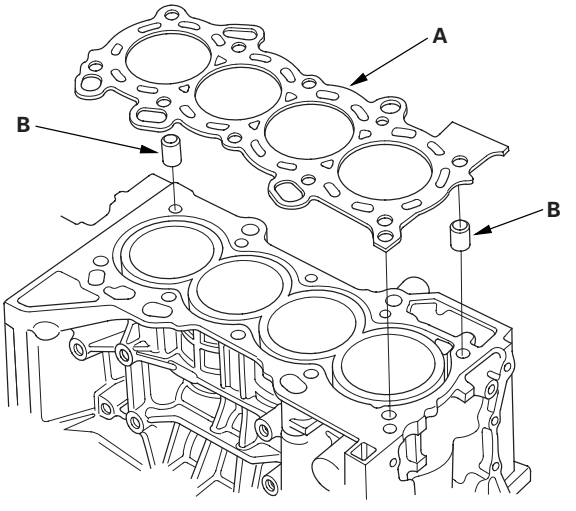
Cylinder Head Installation

1. Install a new coolant separator (A) in the engine block whenever the engine block is replaced.



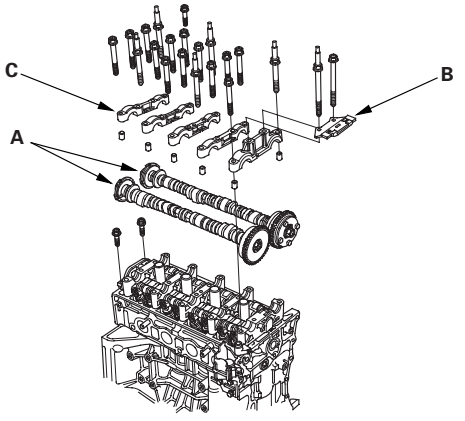
2. Clean the cylinder head and the engine block surface.

3. Install the new cylinder head gasket (A) and the dowel pins (B) on the engine block. Always use a new cylinder head gasket.



Rocker Arm Assembly Installation (cont'd)

6. Make sure the punch marks on the variable valve timing control (VTC) actuator and the exhaust camshaft sprocket are facing up, then set the camshafts (A) in the holder. Apply new engine oil to the camshaft journals and lobes.

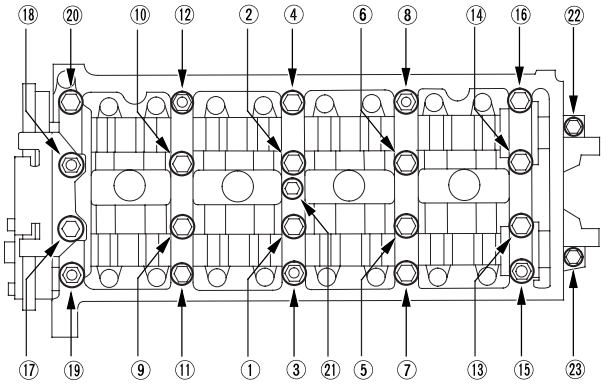


7. Set the camshaft holders (C) and cam chain guide B in place.

8. Tighten the bolts in sequence to the specified torque.

   NOTE: If the engine does not have bolt ㉑, skip it and continue the torque sequence.

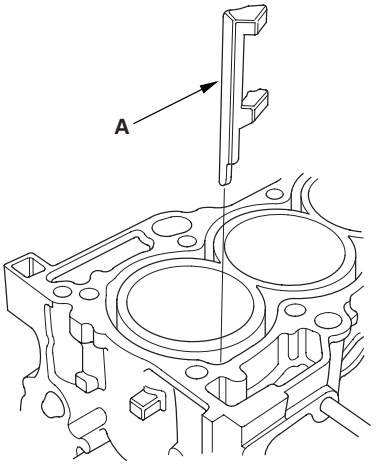
   Specified Torque
   8 x 1.25 mm
   22 N·m (2.2 kgf·m, 16 lbf·ft)
   6 x 1.0 mm
   12 N·m (1.2 kgf·m, 8.7 lbf·ft)
   6 x 1.0 mm Bolts: ㉑, ㉒, ㉓



9. Install the cam chain (see page 6-21), then adjust the valve clearance (see page 6-14).

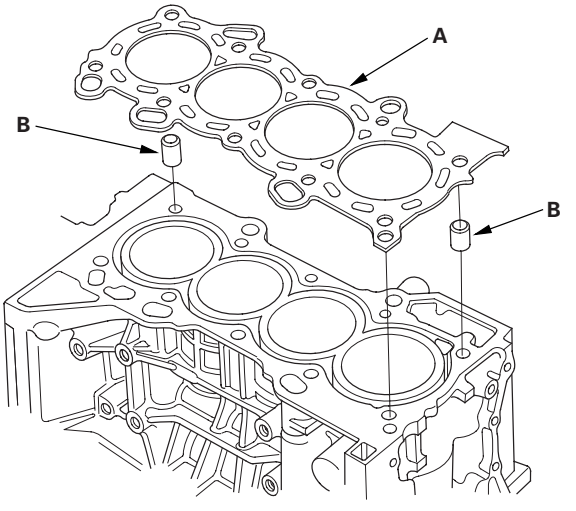
Cylinder Head Installation

1. Install a new coolant separator (A) in the engine block whenever the engine block is replaced.

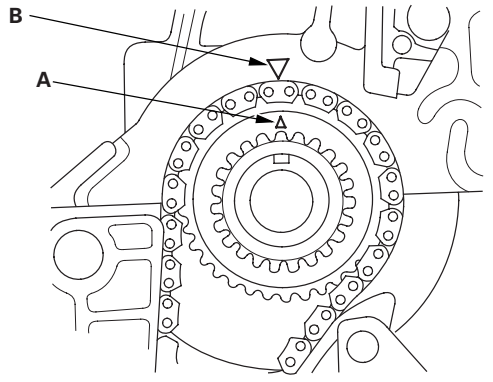


2. Clean the cylinder head and the engine block surface.

3. Install the new cylinder head gasket (A) and the dowel pins (B) on the engine block. Always use a new cylinder head gasket.



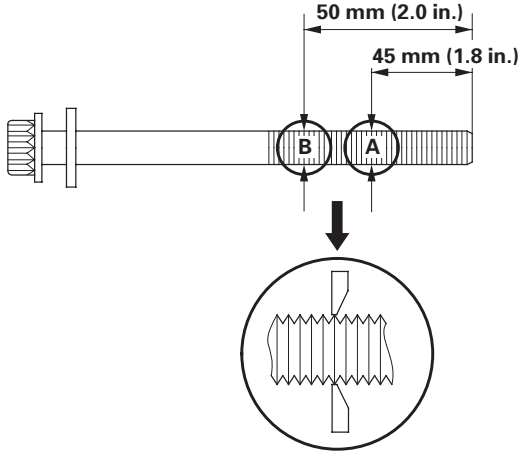
4. Set the crankshaft to top dead center (TDC). Align the TDC mark (A) on the crankshaft sprocket with the pointer (B) on the engine block.



5. Set the camshaft pulley to TDC (see step 2 on page 6-21).

6. Install the cylinder head on the engine block.

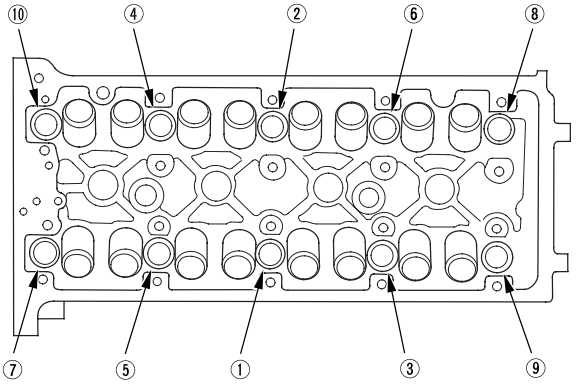
7. Measure the diameter of each cylinder head bolt at point A and point B.



8. If either diameter is less than 10.6 mm (0.42 in.), replace the cylinder head bolt.

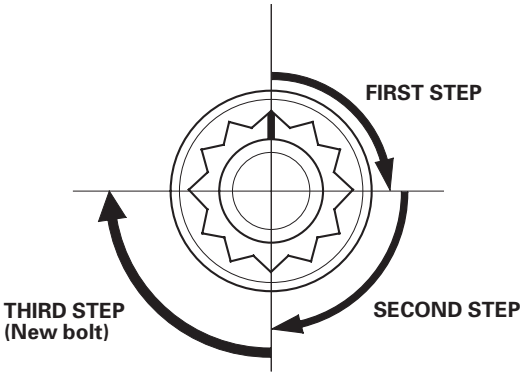
9. Apply new engine oil to the threads and under the bolt heads of all cylinder head bolts.

10. Tighten the cylinder head bolts in sequence to 39 N·m (4.0 kgf·m, 29 lbf·ft). Use a beam-type torque wrench. When using a preset click-type torque wrench, be sure to tighten slowly and do not overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt and retighten it from the first step.



11. After torquing, tighten all cylinder head bolts in two steps (90 ° per step) using the sequence shown in step 10. If you are using a new cylinder head bolt, tighten the bolt an extra 90 °.

    NOTE: Remove the cylinder head bolt if you tightened it beyond the specified angle, and go back to step 6 of the procedure. Do not loosen it back to the specified angle.



(cont'd)

Cylinder Head Installation (cont'd)

12. Install the rocker arm assembly:

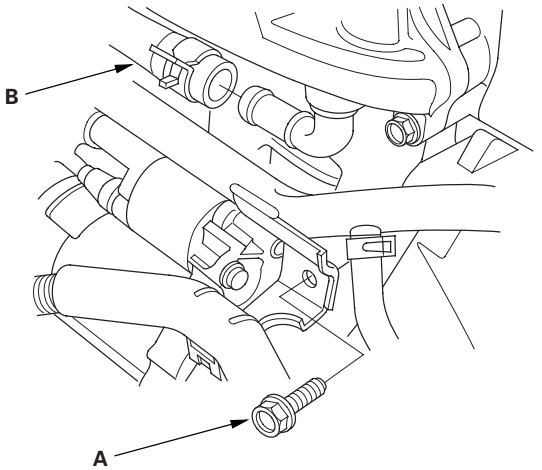
    - K20Z2 engine (see page 6-60)
    - K20Z3 engine (see page 6-61)

13. Install the cam chain (see page 6-21).

14. Connect the following engine wire harness connectors, and install the wire harness clamps to the cylinder head:

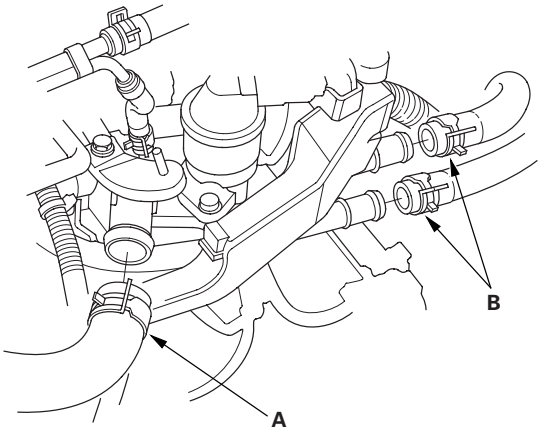
    - Four fuel injector connectors
    - Engine coolant temperature (ECT) sensor 1 connector
    - Camshaft position (CMP) sensor A (Intake) connector
    - Camshaft position (CMP) sensor B (Exhaust) connector
    - Rocker arm oil control valve connector
    - Rocker arm oil pressure switch connector
    - EVAP canister purge valve connector
    - Variable valve timing control (VTC) oil control solenoid valve connector
    - Exhaust gas recirculation (EGR) valve connector (K20Z2 engine)
    - Engine oil pressure switch connector

15. Install the bolt (A) securing the connecting pipe.

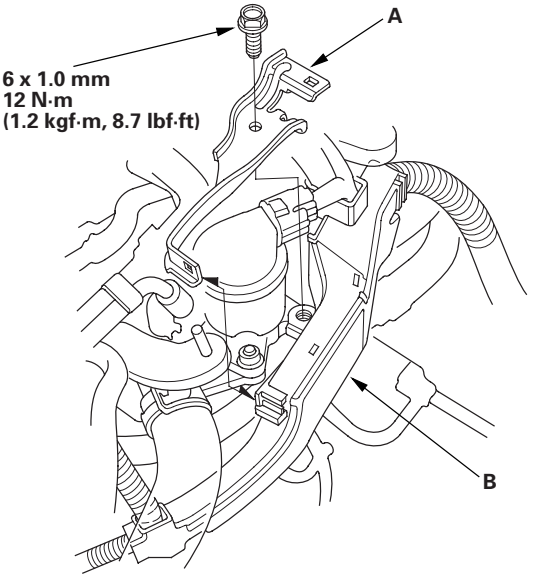


16. Connect the water bypass hose (B).

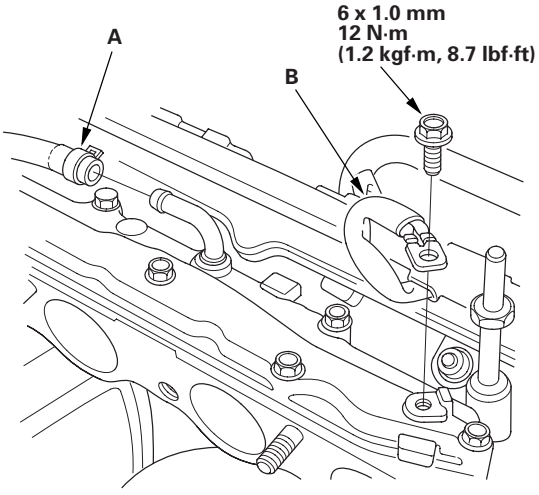
17. Connect the upper radiator hose (A) and the heater hoses (B).



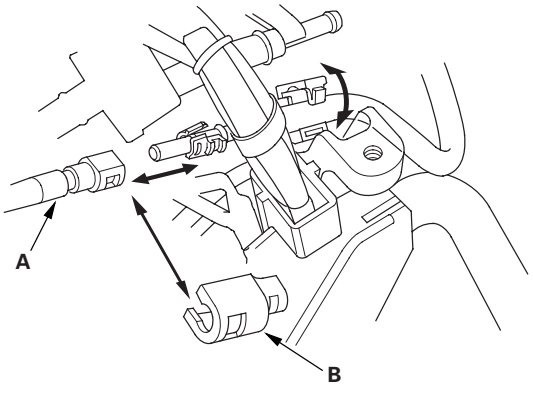
18. Install the harness holder bracket (A), then install the harness holder (B).



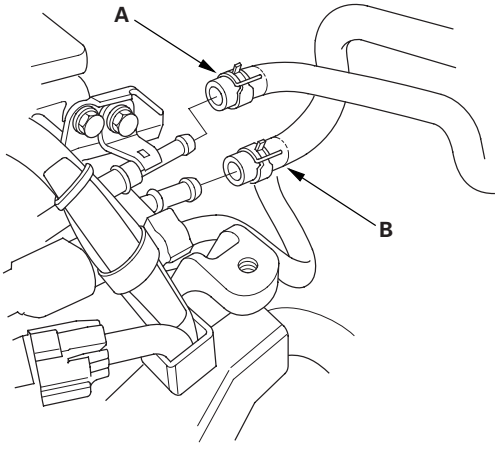
19. Connect the positive crankcase ventilation (PCV) hose (A) (K20Z2 engine) and install the ground cable (B).



20. Connect the fuel feed hose (A) (see page 11-331), then install the quick-connect fitting cover (B).



21. Connect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).



22. Install the exhaust manifold (see page 9-11).

23. Install the intake manifold:

    - K20Z2 engine (see page 9-4)
    - K20Z3 engine (see page 9-9)

24. Install the drive belt (see page 4-31).

25. Install the air cleaner assembly (see page 11-345).

26. After installation, check that all tubes, hoses and connectors are installed correctly.

27. Inspect for fuel leaks. Turn the ignition switch to ON (II) (do not operate the starter) so that the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.

(cont'd)

Cylinder Head Installation (cont'd)

28. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

29. Do the engine control module (ECM)/powertrain control module (PCM) idle lean procedure (see page 11-310).

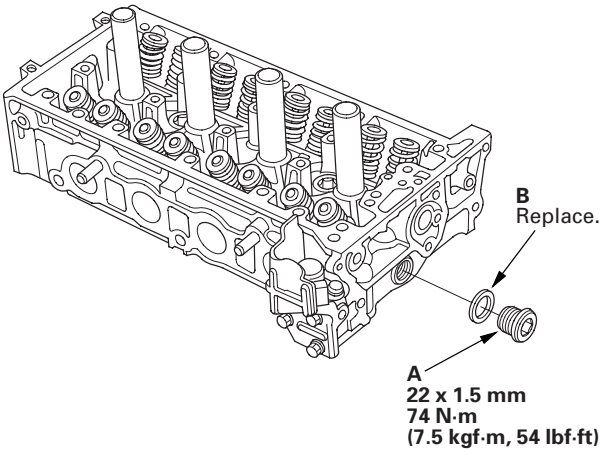
30. Do the crankshaft position (CKP) pattern clear/CKP pattern lean procedure (see page 11-4).

31. Inspect the idle speed (see page 11-309).

32. Inspect the ignition timing (see page 4-20).

Sealing Bolt Installation

NOTE: When installing the sealing bolt (A), always use a new washer (B).

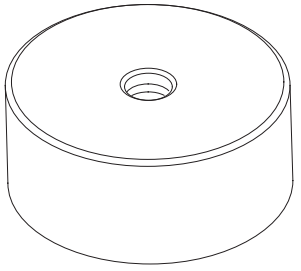


Engine Mechanical

Engine Block

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07ZAD-PNAA100	Oil Seal Driver Attachment 96	1
②	07746-0010700	Attachment, 24 x 26 mm	1
③	07749-0010000	Driver	1



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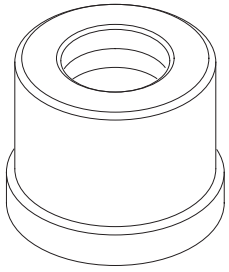

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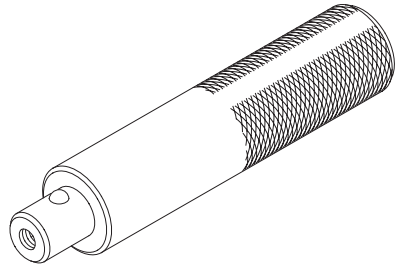
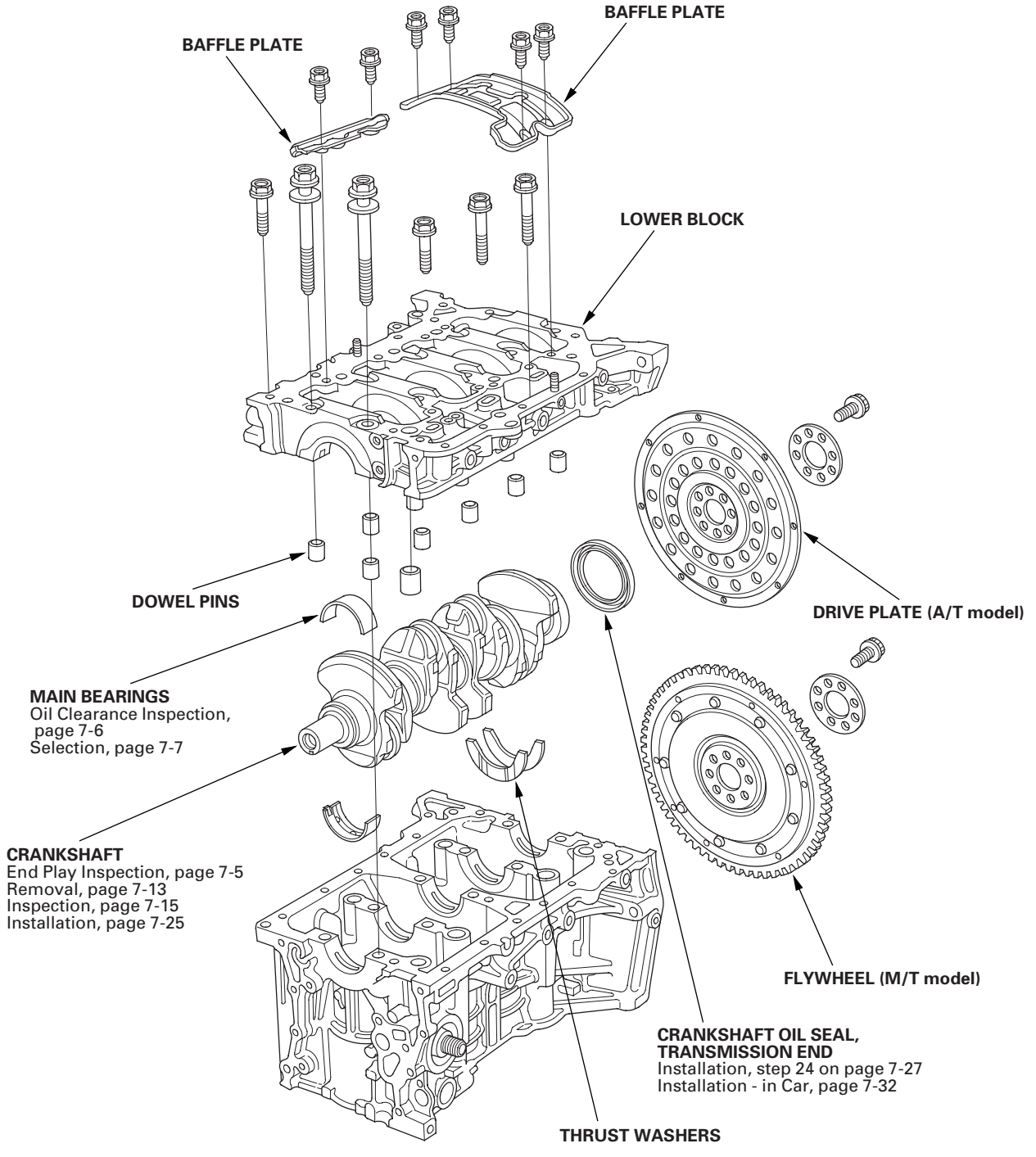


③

Component Location Index



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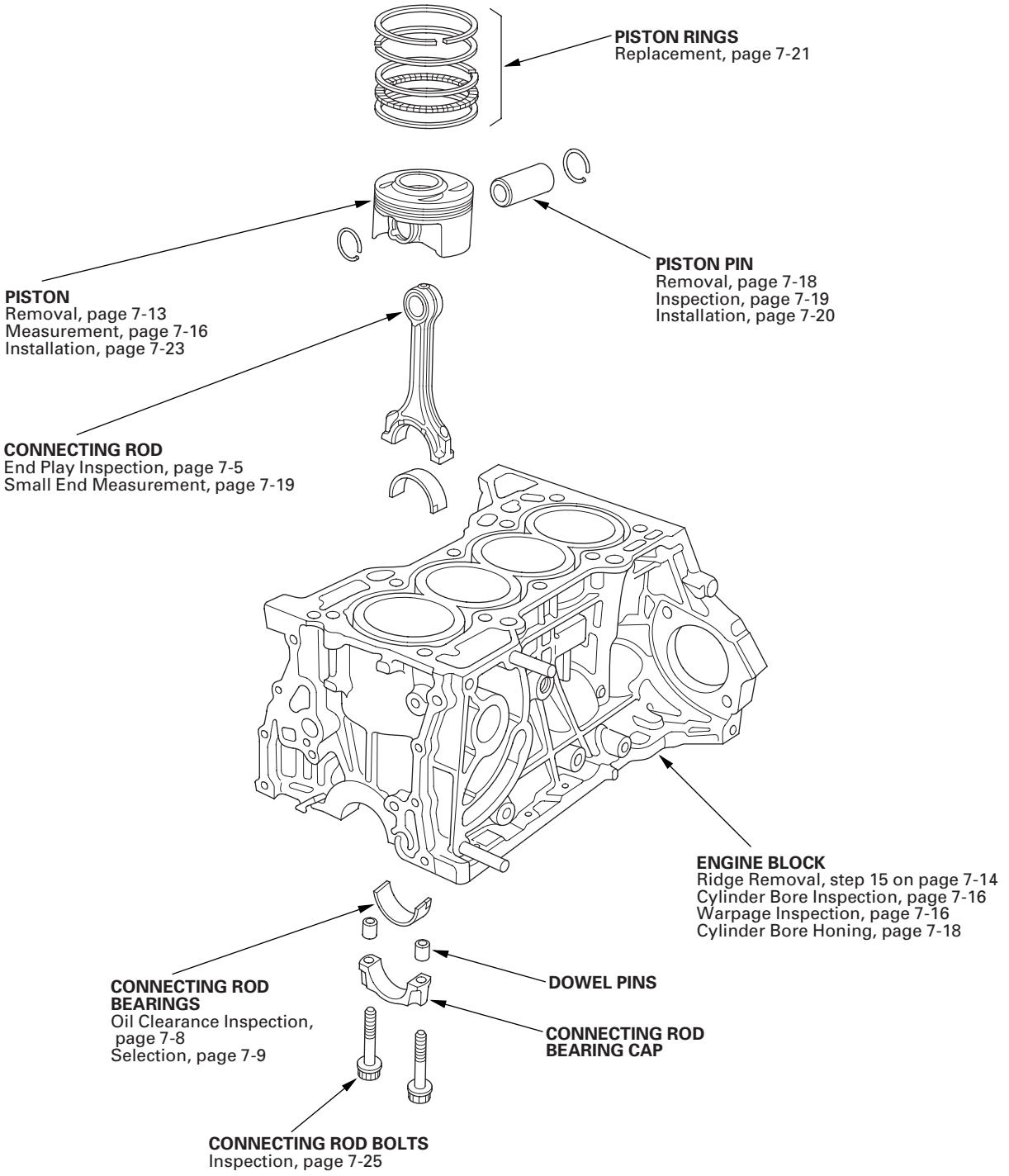
Component Location Index (cont'd)



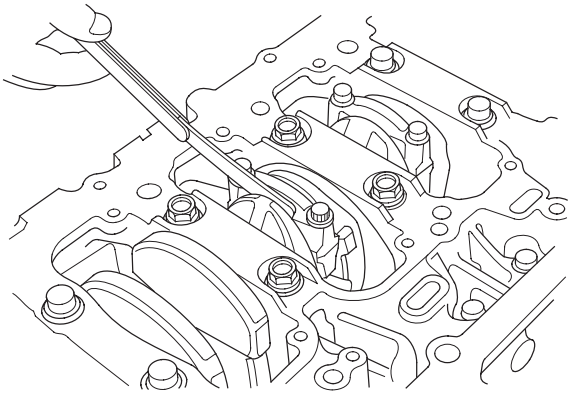
Connecting Rod and Crankshaft End Play Inspection

1. Remove the oil pump (see page 8-16).

2. Remove the baffle plates (see step 8 on page 7-13).

3. Measure the connecting rod end play with a feeler gauge between the connecting rod and the crankshaft.

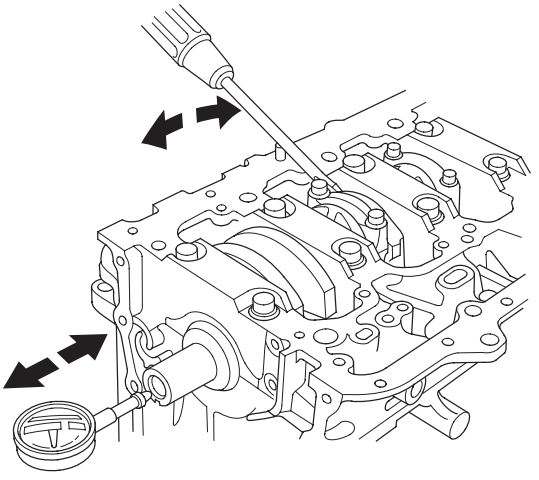
   Connecting Rod End Play
   Standard (New): 0.15—0.30 mm (0.006—0.012 in.)
   Service Limit: 0.40 mm (0.016 in.)



4. If the connecting rod end play is beyond the service limit, install a new connecting rod, and recheck. If it is still beyond the service limit; replace the crankshaft (see page 7-13).

5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator, the dial reading should not exceed the service limit.

   Crankshaft End Play
   Standard (New): 0.10—0.35 mm (0.004—0.014 in.)
   Service Limit: 0.45 mm (0.018 in.)



6. If the end play is beyond the service limit, replace the thrust washers and recheck. If it is still beyond the service limit, replace the crankshaft (see page 7-13).

Crankshaft Main Bearing Replacement

Main Bearing Clearance Inspection

1. To check the main bearing-to-journal oil clearance, remove the lower block and the bearing halves (see page 7-13).

2. Clean each main journal and bearing half with a clean shop towel.

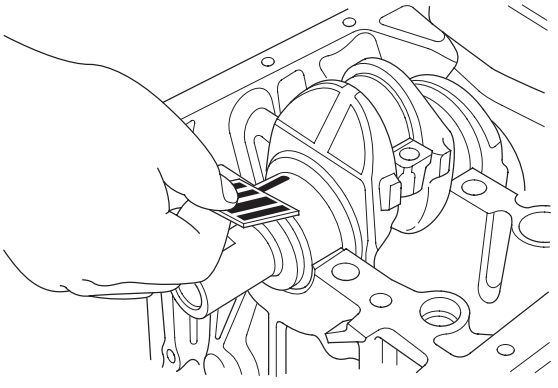
3. Place one strip of plastigage across each main journal.

4. Reinstall the bearings and lower block, then tighten the bolts to 29 N·m (3.0 kgf·m, 22 lbf·ft) + 56 ° in the proper sequence (see step 19 on page 7-27).

   NOTE:
   - Apply new engine oil to the bolt threads and flanges.
   - Do not rotate the crankshaft during inspection.

5. Remove the lower block and the bearings again, and measure the widest part of the plastigage.

   Main Bearing-to-Journal Oil Clearance
   No. 1, 2, 4, 5 Journals:
   Standard (New): 0.017—0.041 mm (0.0007—0.0016 in.)
   Service Limit: 0.050 mm (0.0020 in.)
   No. 3 Journal:
   Standard (New): 0.025—0.049 mm (0.0010—0.0019 in.)
   Service Limit: 0.055 mm (0.0022 in.)



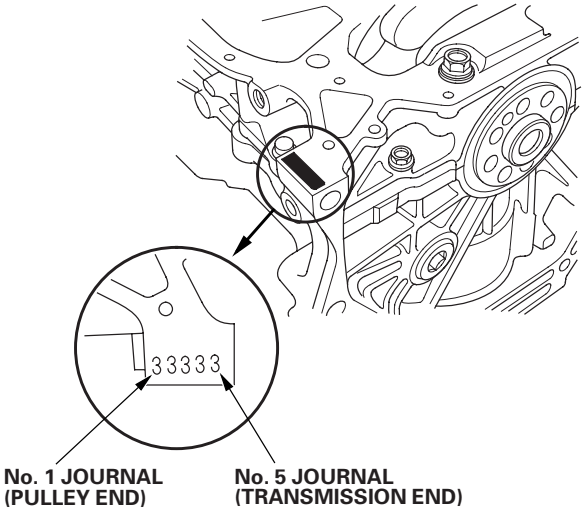
6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the appropriate color code(s), and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.

7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below the current one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft, and start over.

Main Bearing Selection

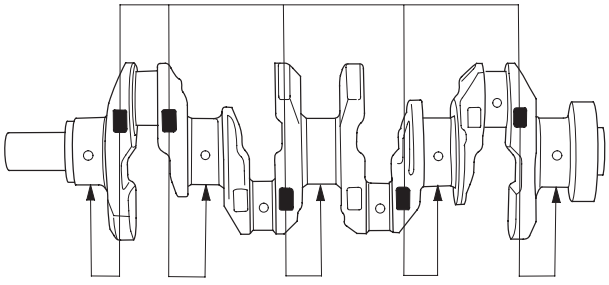
Crankshaft Bore Code Location

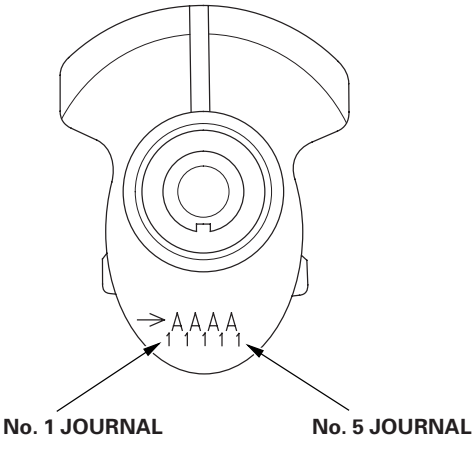
1. Numbers, letters or bars have been stamped on the end of the engine block as a code for the size of each of the five main journal bores. Write down the crank bore codes.
   If you cannot read the codes because of accumulated dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Main Journal Code Location

2. The main journal codes are stamped on the crankshaft in either location.





(cont'd)

Crankshaft Main Bearing Replacement (cont'd)

3. Use the crank bore codes and crank journal codes to select the appropriate replacement bearings from the following table.

   NOTE:
   - Color code is on the edge of the bearing.
   - When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Main journal code	Crank bore code: 1 or A or I	2 or B or II	3 or C or III	4 or D or IIII
	Larger crank bore →			
	← Smaller bearing (Thicker)			
1	Pink	Pink/ Yellow	Yellow	Green
2	Pink/ Yellow	Yellow	Green	Green/ Brown
3	Yellow	Green	Green/ Brown	Brown
4	Green	Green/ Brown	Brown	Black
5	Green/ Brown	Brown	Black	Black/ Blue
6	Brown	Black	Black/ Blue	Blue
Smaller main journal ↓	Smaller bearing (Thicker) ↓			

Connecting Rod Bearing Replacement

Connecting Rod Bearing Clearance Inspection

1. Remove the oil pump (see page 8-16).
2. Remove the baffle plates (see step 8 on page 7-13).
3. Remove the connecting rod cap and the bearing half.
4. Clean the crankshaft rod journal and the bearing half with a clean shop towel.
5. Place plastigage across the rod journal.
6. Reinstall the bearing half and connecting rod cap, and tighten the bolts to 20 N·m (2.0 kgf·m, 14 lbf·ft) + 90 ° (K20Z2 engine) or 29 N·m (3.0 kgf·m, 22 lbf·ft) + 90 ° (K20Z3 engine).

   NOTE:
   - Apply new engine oil to the bolt threads and flanges.
   - Do not rotate the crankshaft during inspection.
7. Remove the connecting rod cap and the bearing half, and measure the widest part of the plastigage.

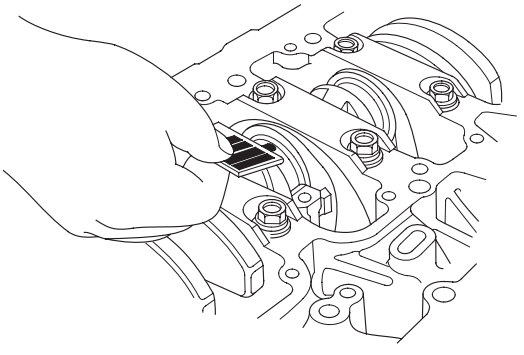
Connecting Rod Bearing-to-Journal Oil Clearance

K20Z2 engine

Standard (New):	**0.020—0.050 mm (0.0008—0.0020 in.)**
Service Limit:	**0.060 mm (0.0024 in.)**

K20Z3 engine

Standard (New):	**0.032—0.066 mm (0.0013—0.0026 in.)**
Service Limit:	**0.077 mm (0.0030 in.)**



8. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, install a new, complete bearing with the appropriate color code(s), and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.

9. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below the current one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearing, replace the crankshaft, and start over.

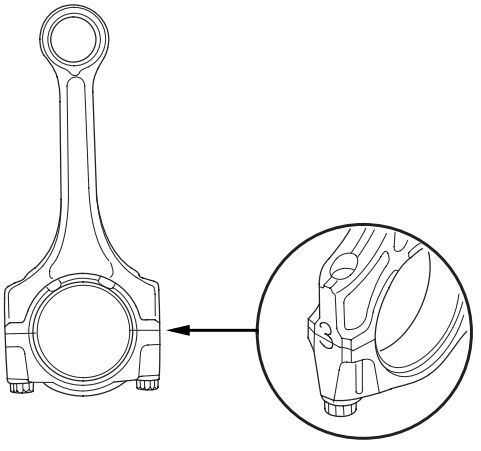
Connecting Rod Bearing Selection

1. Inspect each connecting rod for cracks and heat damage.

Connecting Rod Big End Bore Code Locations

2. Each rod has a tolerance range from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments, depending on the size of its big end bore. It is then stamped with a number or bar (1, 2, 3, or 4/I, II, III, or IIII) indicating the range. You may find any combination of numbers and bars in any engine. (Half the number or bar is stamped on the bearing cap, the other half is on the rod.)
   If you cannot read the code because of an accumulation of oil and varnish, do not scrub it with a wire brush or scraper. Clean it only with solvent or detergent.

   Normal Bore Size
   K20Z2 engine: 48.0 mm (1.89 in.)
   K20Z3 engine: 51.0 mm (2.01 in.)



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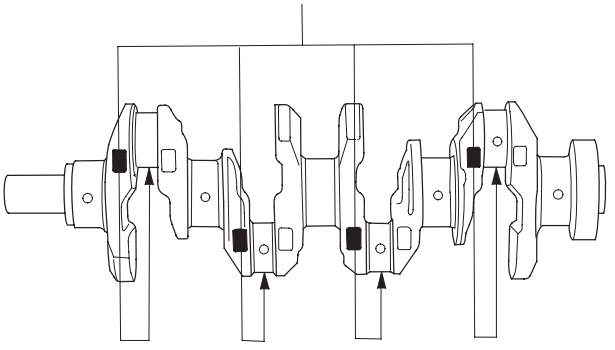
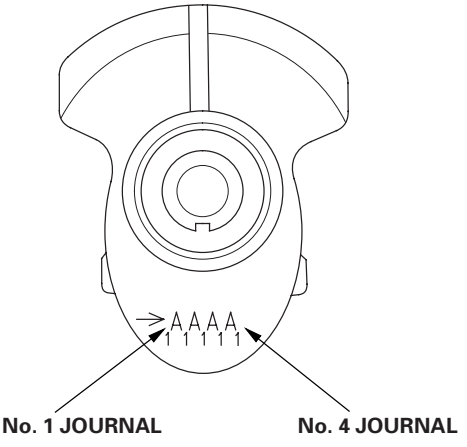
Connecting Rod Bearing Replacement (cont'd)

Connecting Rod Journal Code Location

3. The connecting rod journal codes are stamped on the crankshaft in either location.





4. Use the big end bore codes and rod journal codes to select the appropriate replacement bearings from the following table.

NOTE:
- Color code is on the edge of the bearing.
- When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Big end bore code → Larger big end bore

Rod journal code ↓ Smaller rod journal

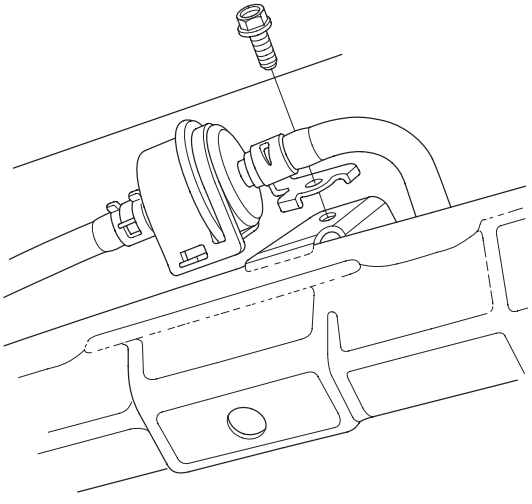
→ Smaller bearing (Thicker)

Rod journal code	1 or I	2 or II	3 or III	4 or IIII
A	Pink	Pink/ Yellow	Yellow/ Green	Green
B	Yellow	Yellow/ Green	Green/ Brown	Brown
C	Green	Green/ Brown	Brown/ Black	Black
D	Brown	Brown/ Black	Black/ Blue	Blue

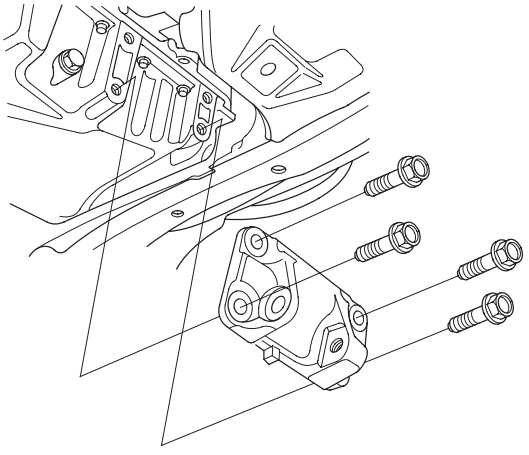
Smaller bearing (Thicker) ↓

Oil Pan Removal

1. If the engine is already out of the vehicle, go to step 18.
2. Raise the vehicle on the lift.
3. Drain the engine oil (see page 8-10).
4. Remove the front wheels.
5. Remove the splash shield (see step 25 on page 5-5).
6. Separate the stabilizer links (see page 18-25).
7. Separate the knuckles from the lower arms (see step 6 on page 18-21).
8. Remove the steering gearbox bracket. Remove the steering gearbox mounting bolt, the stiffener mounting bolt, and the stiffener (see step 36 on page 5-6).
9. Remove the steering gearbox mounting bolt, the stiffener mounting bolt, and the stiffener. Remove the harness clamp from the front subframe (see step 38 on page 5-6).
10. A/T model: Remove the bolt securing the automatic transmission fluid (ATF) filter.



11. Install the front leg assembly, the hook, and the wing nut to an A and Reds engine support hanger (AAR-T1256) onto the 2006 Civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the support eyelet. Tighten the wing nut by hand to lift and support the engine/transmission (see step 47 on page 5-8).
12. Remove the lower torque rod (see step 49 on page 5-8).
13. M/T model: Remove the front mount mounting bolt (see step 50 on page 5-9).
14. Make the appropriate reference line at both sides of the front subframe that line up with the edges on the body (see step 51 on page 5-9).
15. Loosen the mid-stiffener mounting bolts on both sides (see step 52 on page 5-9).
16. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt of the front subframe adapter over the front of the subframe. Secure the belt with its stop, then tighten the wing nut (see step 53 on page 5-9).
17. Remove the front subframe (see step 55 on page 5-10).
18. Remove the lower torque rod bracket.



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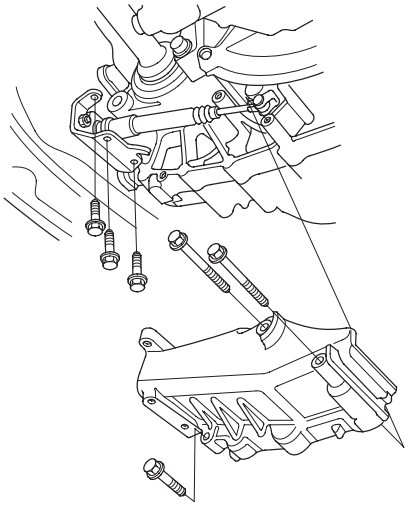
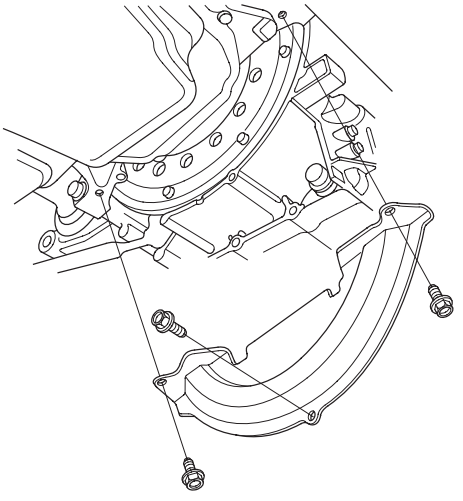
Oil Pan Removal (cont'd)

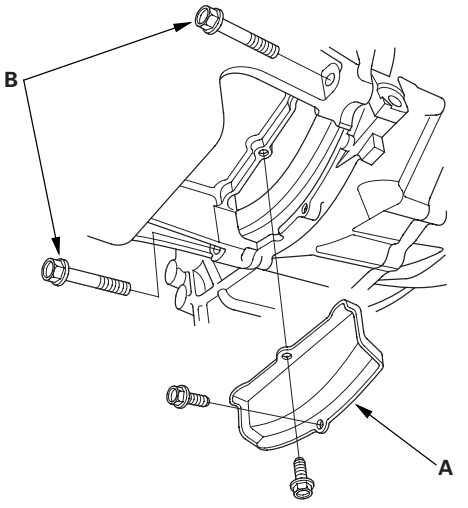
19. A/T model: Remove the shift cable cover.



20. K20Z2 engine: Remove the torque converter cover/ clutch cover.

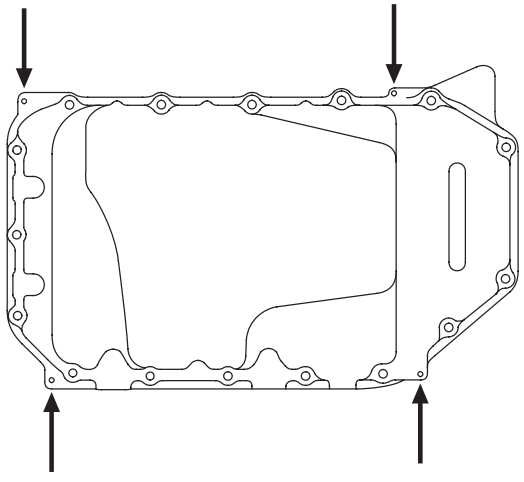


21. K20Z3 engine: Remove the clutch cover (A) and the transmission mounting bolts (B).



22. Remove the bolts securing the oil pan.

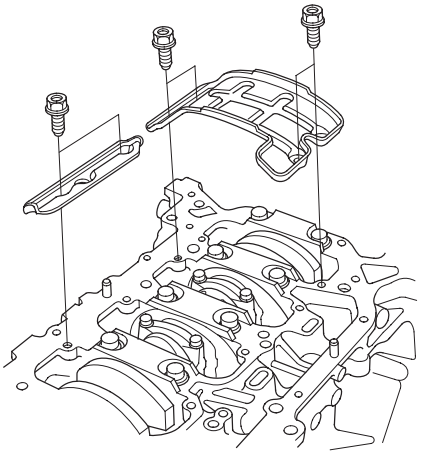
23. Using a flat blade screwdriver, separate the oil pan from the lower block in the places shown.



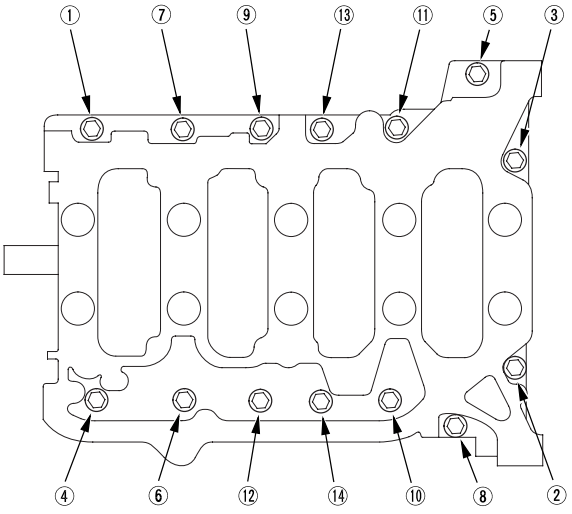
24. Remove the oil pan.

Crankshaft and Piston Removal

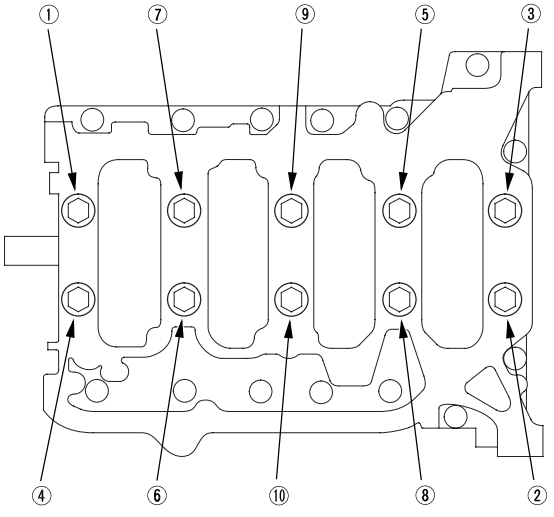
1. Remove the engine/transmission (see page 5-3).
2. Remove the transmission:
   - Manual transmission (see page 13-7)
   - Automatic transmission (see page 14-233)
3. M/T model: Remove the pressure plate (see page 12-19), the clutch disc (see page 12-20), and the flywheel (see page 12-21).
4. A/T model: Remove the drive plate (see page 14-242).
5. Remove the oil pan (see page 7-11).
6. Remove the oil pump (see page 8-16).
7. Remove the cylinder head (see page 6-38).
8. Remove the baffle plates.



9. Remove the 8 mm bolts in sequence.



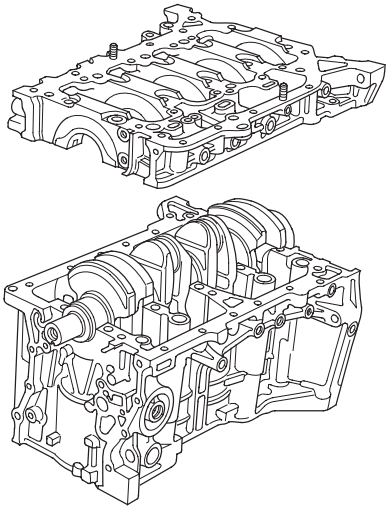
10. Remove the bearing cap bolts. To prevent warpage, loosen the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.



(cont'd)

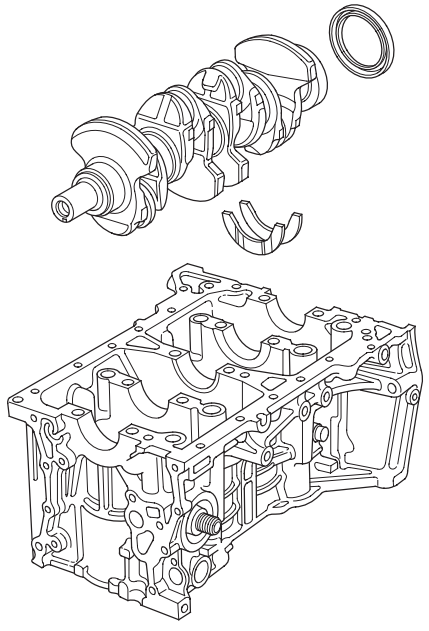
Crankshaft and Piston Removal (cont'd)

11. Remove the lower block and the bearings. Keep all the bearings in order.



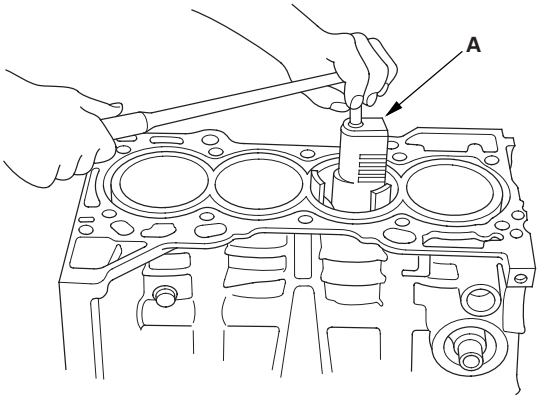
12. Remove the connecting rod caps/bearing halves. Keep all connecting rod caps/bearing halves in order.

13. Lift the crankshaft out of the engine. Be careful not to damage the journals.

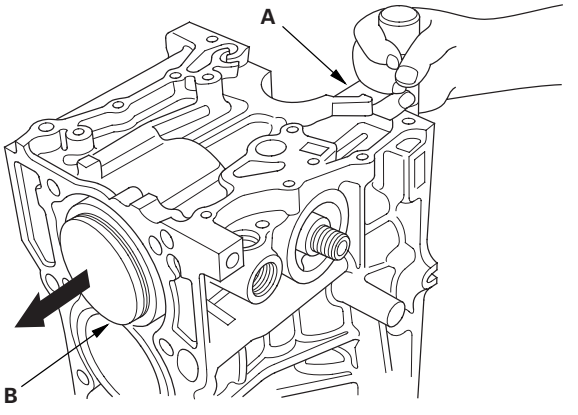


14. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.

15. If you can feel a ridge of metal or hard carbon around the top of each cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the pistons as they are pushed out.



16. Use the wooden handle of a hammer (A) to drive out the piston/connecting rod assembly (B).



17. Reinstall the lower block and the bearings on the engine in the proper order.

18. Reinstall the connecting rod bearings and the caps after removing each piston/connecting rod assembly.

19. Mark each piston/connecting rod assembly with its cylinder number to make sure they are reused in the original order.

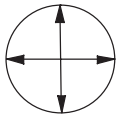
    NOTE: The existing number on the connecting rod does not indicate its position in the engine, it indicates the rod bore size.

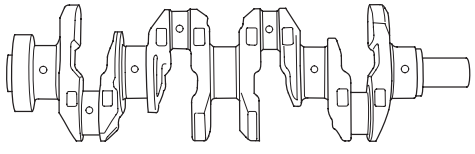
Crankshaft Inspection

Out-of-Round and Taper

1. Remove the crankshaft from the engine block (see page 7-13).
2. Clean the crankshaft oil passages with pipe cleaners or suitable brush.
3. Clean the keyway and the threads, and check for damage.
4. Measure the out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

   Journal Out-of-Round
   Standard (New): 0.005 mm (0.0002 in.) max.
   Service Limit: 0.010 mm (0.0004 in.)





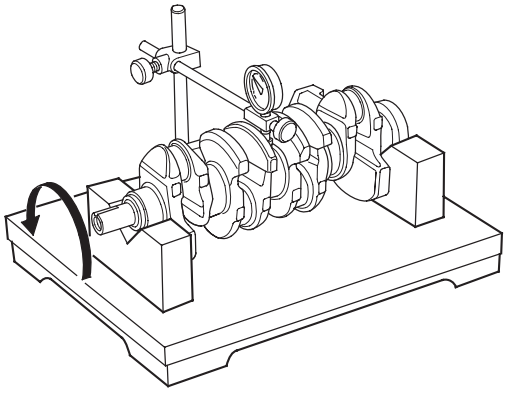
5. Measure the taper at the edges of each rod and the main journal. The difference between measurement on each journal must not be more than the service limit.

   Journal Taper
   Standard (New): 0.005 mm (0.0002 in.) max.
   Service Limit: 0.010 mm (0.0004 in.)

Straightness

6. Place the V-blocks on a flat surface.
7. Check the total runout with the crankshaft supported on V-blocks.
8. Measure the runout on all main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

   Crankshaft Total Runout
   Standard (New): 0.03 mm (0.0012 in.) max.
   Service Limit: 0.04 mm (0.0016 in.)



Block and Piston Inspection

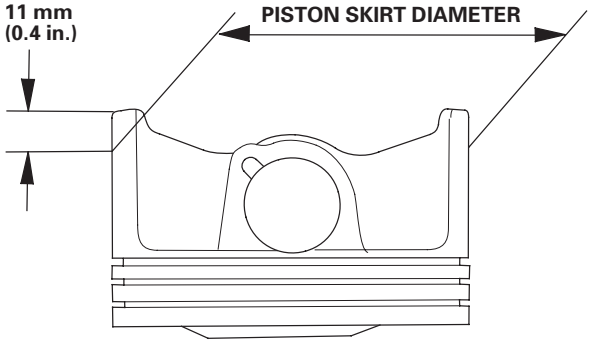
1. Remove the crankshaft and the pistons (see page 7-13).

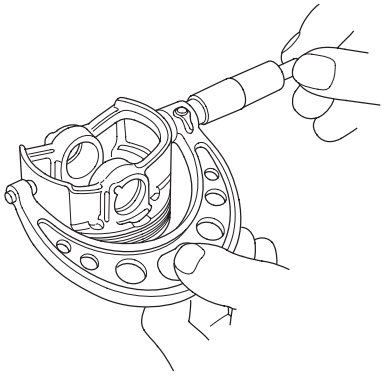
2. Check the piston for distortion or cracks.

3. Measure the piston skirt diameter at a point 11 mm (0.4 in.) from the bottom of the skirt. There are two standard-size pistons (No Letter or A, and B). The letter is stamped on the top of the piston. Letters are also stamped on the engine block as the cylinder bore sizes.

Piston Skirt Diameter
Standard (New):
No Letter (or A): 85.980—85.990 mm (3.3850—3.3854 in.)
B: 85.970—85.980 mm (3.3846—3.3850 in.)
Service Limit:
No Letter (or A): 85.930 mm (3.3831 in.)
B: 85.920 mm (3.3827 in.)

Oversize Piston Skirt Diameter
0.25: 86.230—86.240 mm (3.3949—3.3953 in.)





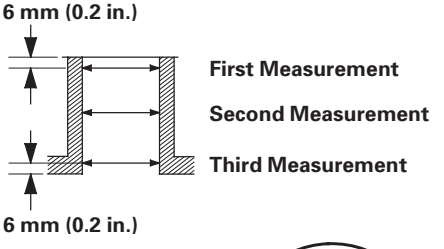
4. Measure the wear and taper in direction X and Y at three levels inside each cylinder as shown. If the measurements in any cylinder are beyond the Oversize Bore Service Limit, replace the engine block. If the engine block is being rebored, refer to step 7 after reboring.

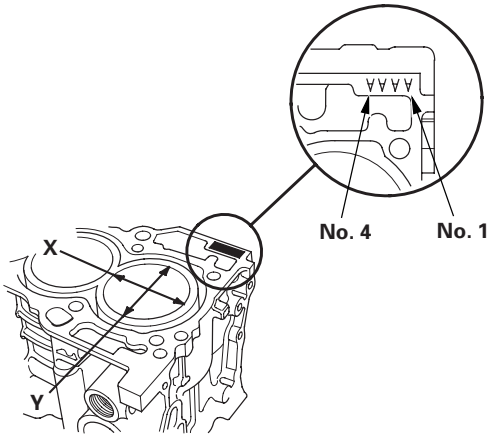
Cylinder Bore Size
Standard (New):
A or I: 86.010—86.020 mm (3.3862—3.3866 in.)
B or II: 86.000—86.010 mm (3.3858—3.3862 in.)
Service Limit: 86.070 mm (3.3886 in.)

Oversize Bore
0.25: 86.250—86.260 mm (3.3957—3.3961 in.)

Reboring Limit: 0.25 mm (0.01 in.) max.

Bore Taper
Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)

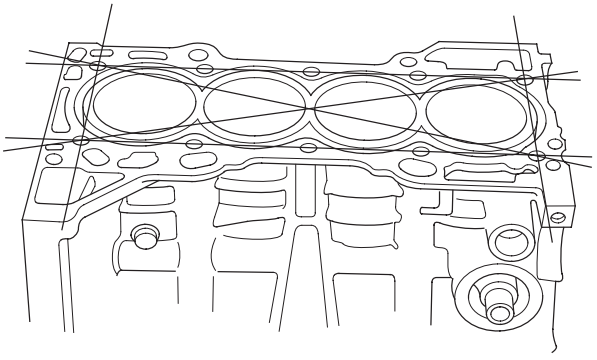




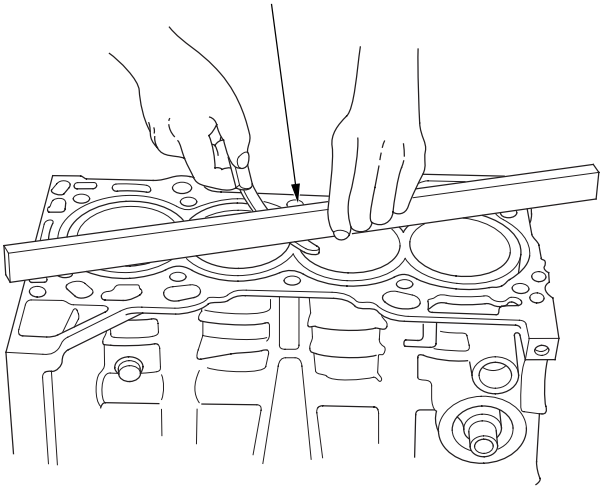
5. Scored or scratched cylinder bores must be honed.

6. Check the top of the engine block for warpage. Measure along the edges, and across the center as shown.

Engine Block Warpage
Standard (New): 0.07 mm (0.003 in.) max.
Service Limit: 0.10 mm (0.004 in.)

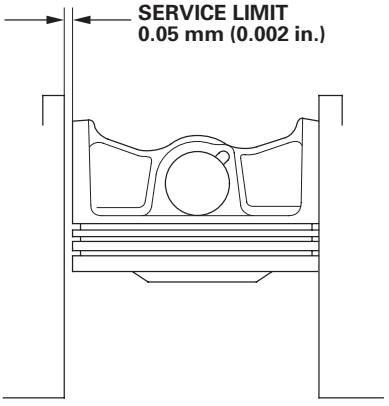


PRECISION STRAIGHT EDGE



7. Calculate the difference between the cylinder bore diameter and the piston diameter. If the clearance is near, or exceeds the service limit, inspect the piston and the cylinder bore for excessive wear.

Piston-to-Cylinder Bore Clearance
Standard (New): 0.020—0.040 mm
(0.0008—0.0016 in.)
Service Limit: 0.05 mm (0.002 in.)



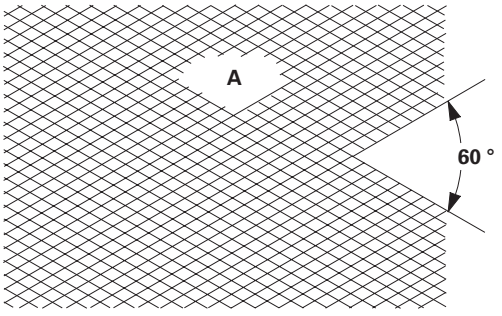
Cylinder Bore Honing

Only a scored or scratched cylinder bore must be honed.

1. Measure the cylinder bores (see page 7-16). If the engine block is to be reused, hone the cylinders, and remeasure the bores.

2. K20Z3 engine: Remove the oil jets (see page 8-13).

3. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree cross-hatch pattern (A). Use only a rigid hone with 400 grit or finer stone such as Sunnen, Ammco, or equivalent. Do not use stones that are worn or broken.



4. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.

5. If scoring or scratches are still present in the cylinder bores after honing the engine block to the service limit, rebore the engine block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail, and does not run the full length of the bore.

6. K20Z3 engine: Install the oil jets (see page 8-13).

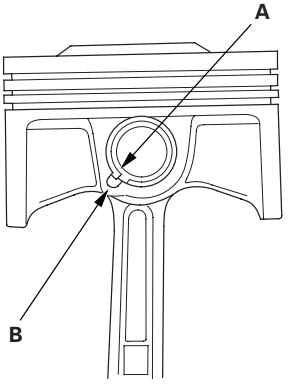
Piston, Pin, and Connecting Rod Replacement

Disassembly

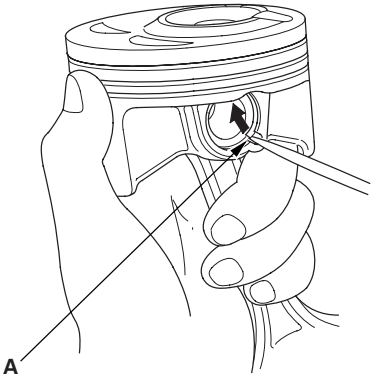
1. Remove the piston from the engine block (see page 7-13).

2. Apply new engine oil to the piston pin snap rings (A), and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

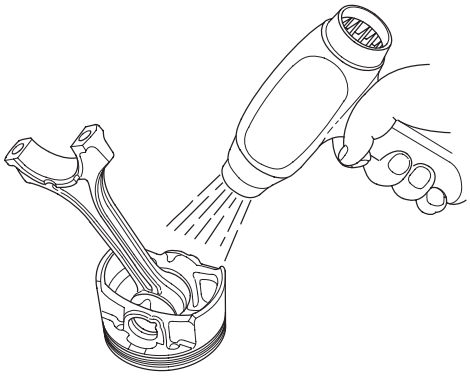
   NOTE: Take care not to damage the ring grooves.



3. Remove both snap rings (A). Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.



4. Heat the piston and connecting rod assembly to about 70 ℃ (158 ℉), then remove the piston pin.

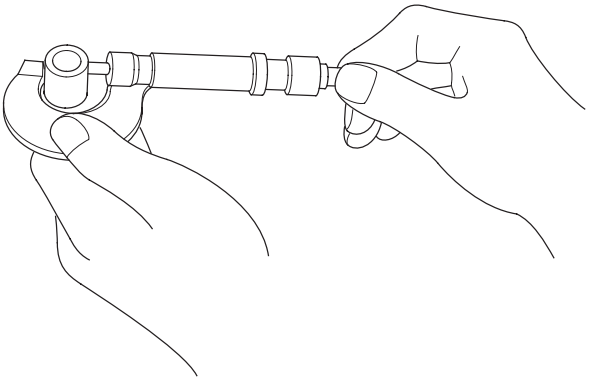


Inspection

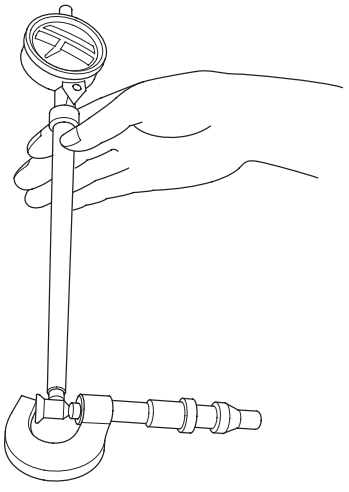
NOTE: Inspect the piston, the piston pin, and the connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

Piston Pin Diameter
Standard (New): 21.961—21.965 mm (0.8646—0.8648 in.)
Service Limit: 21.953 mm (0.8643 in.)



2. Zero the dial indicator to the piston pin diameter.

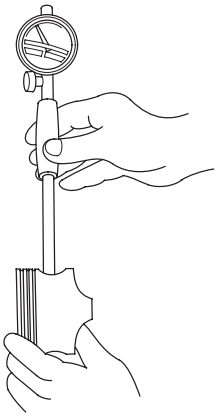


(cont'd)

Piston, Pin, and Connecting Rod Replacement (cont'd)

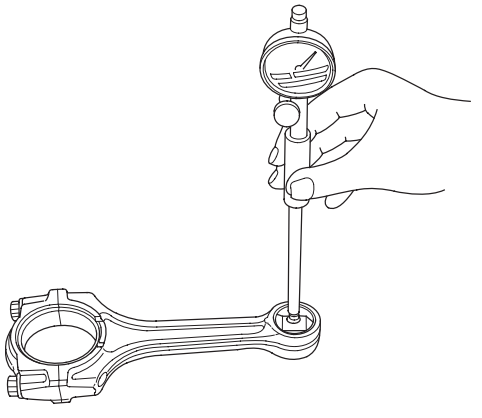
3. Check the difference between the piston pin diameter and the piston pin hole diameter in the piston.

Piston Pin-to-Piston Clearance
Standard (New): −0.005 to +0.002 mm (−0.00020 to +0.00008 in.)
Service Limit: 0.005 mm (0.0002 in.)



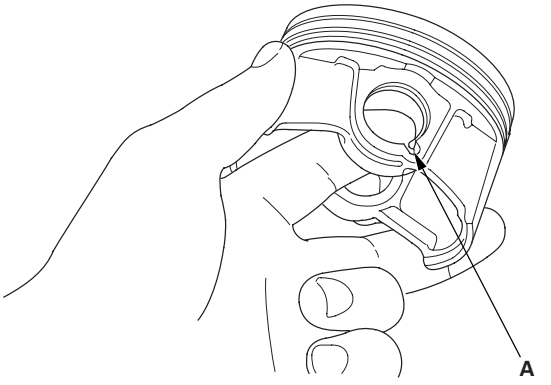
4. Measure the piston pin-to-connecting rod clearance.

Piston Pin-to-Connecting Rod Clearance
Standard (New): 0.005—0.015 mm (0.0002—0.0006 in.)
Service Limit: 0.02 mm (0.0008 in.)



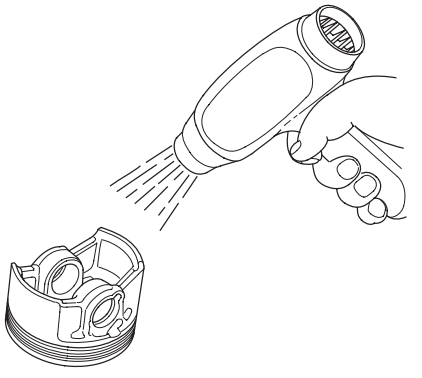
Reassembly

1. Install a piston pin snap ring (A) only on one side.

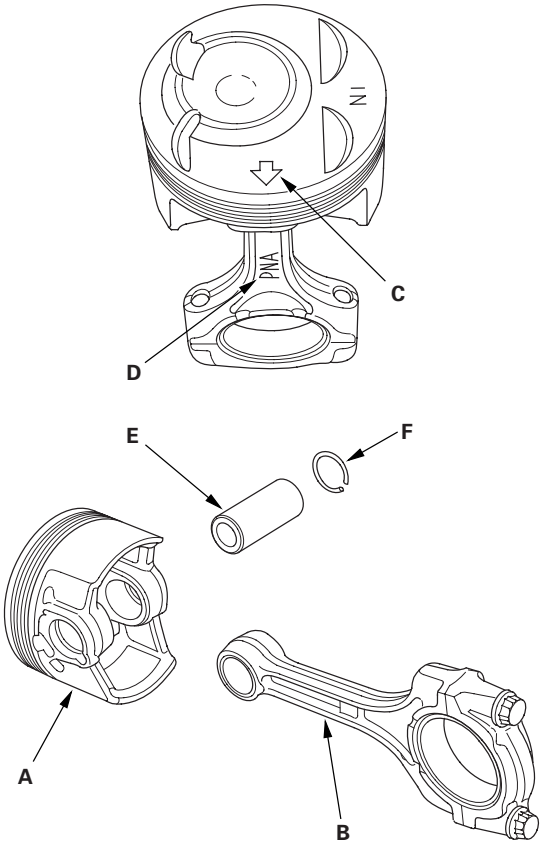


2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with new engine oil.

3. Heat the piston to about 70 ℃ (158 ℉).



4. Assemble the piston (A) and the connecting rod (B) with the arrow (C) and the embossed mark (D) on the same side. Install the piston pin (E).



This illustration shows K20Z2 engine.

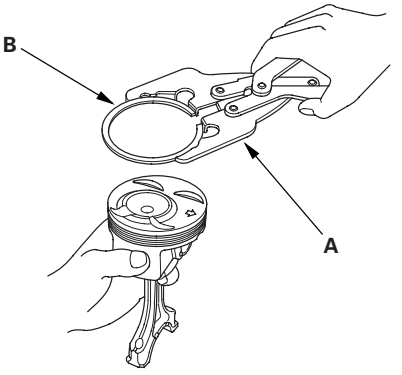
5. Install the remaining snap ring (F).

6. Turn the snap rings in the ring grooves until the end gaps are positioned at the bottom of the piston.

Piston Ring Replacement

1. Remove the piston from the engine block (see page 7-13).

2. Using a ring expander (A), remove the old piston rings (B).

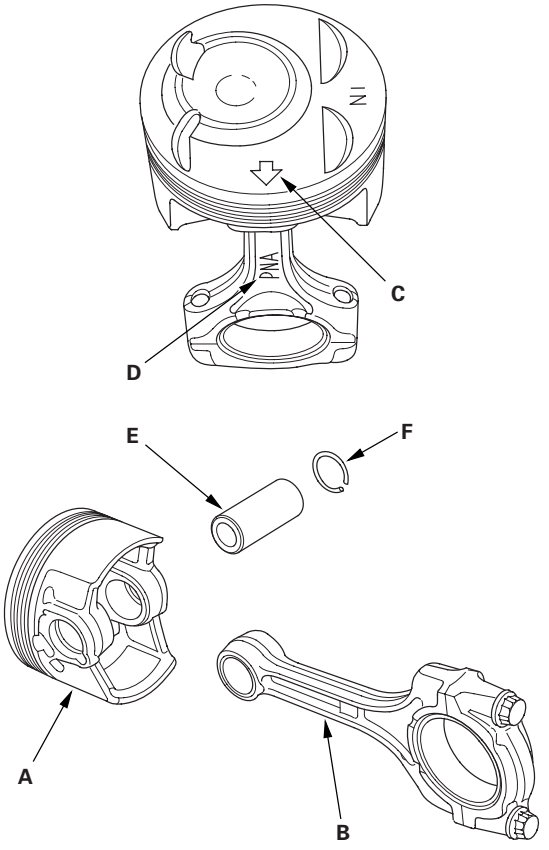


3. Clean all ring grooves thoroughly with a squared-off broken ring or ring groove cleaner with a blade to fit the piston grooves.
   The top and 2nd ring grooves are 1.2 mm (0.05 in.) wide. The oil ring groove is 2.0 mm (0.08 in.) wide. File down a blade if necessary.
   Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tools.

   NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

(cont'd)

4. Assemble the piston (A) and the connecting rod (B) with the arrow (C) and the embossed mark (D) on the same side. Install the piston pin (E).



This illustration shows K20Z2 engine.

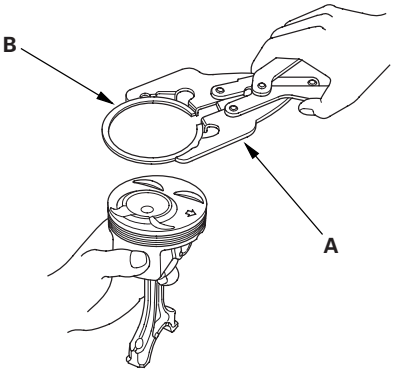
5. Install the remaining snap ring (F).

6. Turn the snap rings in the ring grooves until the end gaps are positioned at the bottom of the piston.

Piston Ring Replacement

1. Remove the piston from the engine block (see page 7-13).

2. Using a ring expander (A), remove the old piston rings (B).



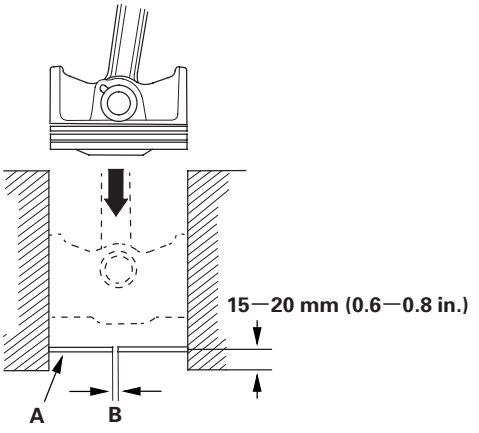
3. Clean all ring grooves thoroughly with a squared-off broken ring or ring groove cleaner with a blade to fit the piston grooves.
   The top and 2nd ring grooves are 1.2 mm (0.05 in.) wide. The oil ring groove is 2.0 mm (0.08 in.) wide. File down a blade if necessary.
   Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tools.

   NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

(cont'd)

Piston Ring Replacement (cont'd)

4. Using a piston that has its rings removed, push a new ring (A) into the cylinder bore 15—20 mm (0.6—0.8 in.) from the bottom.



5. Measure the piston ring end-gap (B) with a feeler gauge:

   - If the gap is too small, check to see if you have the proper rings for your engine.
   - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see page 7-16). If the bore is beyond the service limit, the engine block must be rebored.

Piston Ring End-Gap

Top Ring:
Standard (New): 0.20—0.35 mm (0.008—0.014 in.)
Service Limit: 0.60 mm (0.024 in.)

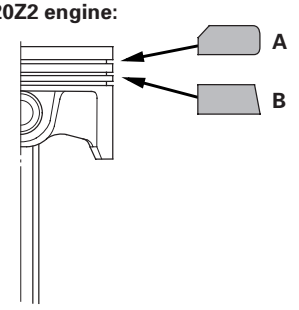
Second Ring:
K20Z2 engine:
Standard (New): 0.40—0.55 mm (0.016—0.022 in.)
Service Limit: 0.70 mm (0.028 in.)

K20Z3 engine:
Standard (New): 0.50—0.65 mm (0.020—0.026 in.)
Service Limit: 0.75 mm (0.030 in.)

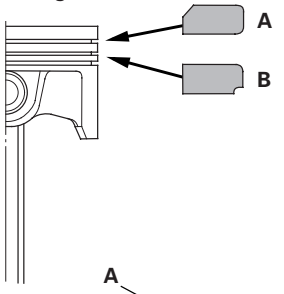
Oil Ring:
Standard (New): 0.20—0.70 mm (0.008—0.028 in.)
Service Limit: 0.80 mm (0.031 in.)

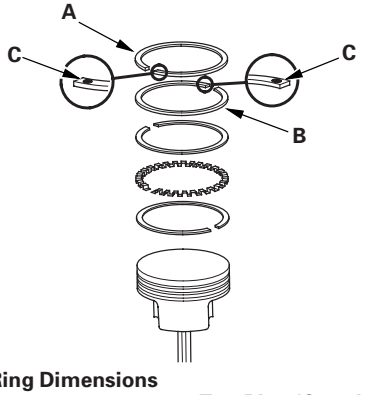
6. Install the top ring and the second ring as shown. The top ring (A) has a 1R mark, and the second ring (B) has a 2R mark. The manufacturing marks (C) must be facing upward.

K20Z2 engine:

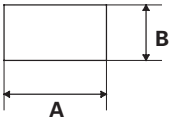


K20Z3 engine:





Piston Ring Dimensions



Top Ring (Standard):
A: 3.1 mm (0.12 in.)
B: 1.2 mm (0.05 in.)

Second Ring (Standard):
A: 3.4 mm (0.13 in.)
B: 1.2 mm (0.05 in.)

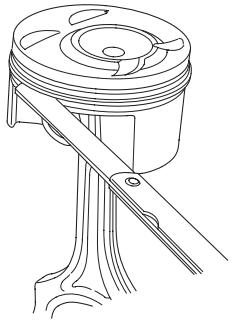
7. After installing a new set of rings, measure the ring-to-groove clearances:

Top Ring Clearance
K20Z2 engine:
Standard (New): 0.035—0.060 mm (0.0014—0.0024 in.)
Service Limit: 0.13 mm (0.005 in.)

K20Z3 engine:
Standard (New): 0.045—0.070 mm (0.0018—0.0028 in.)
Service Limit: 0.13 mm (0.005 in.)

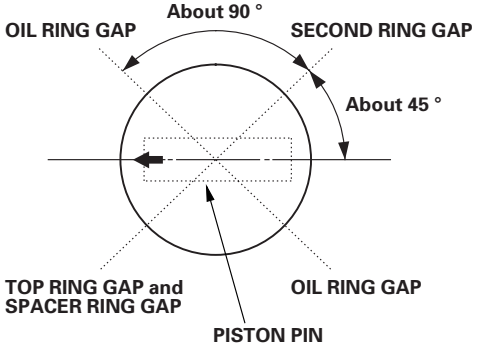
Second Ring Clearance
K20Z2 engine:
Standard (New): 0.030—0.055 mm (0.0012—0.0022 in.)
Service Limit: 0.13 mm (0.005 in.)

K20Z3 engine:
Standard (New): 0.040—0.065 mm (0.0016—0.0026 in.)
Service Limit: 0.13 mm (0.005 in.)



8. Rotate the rings in their grooves to make sure they do not bind.

9. Position the ring end gaps as shown:



Piston Installation

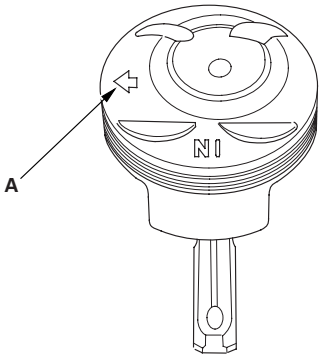
If the Crankshaft is Already Installed

1. Set the crankshaft to bottom dead center (BDC) for each cylinder as its piston is installed.

2. Remove the connecting rod caps, then install the ring compressor. Check that the bearing is securely in place.

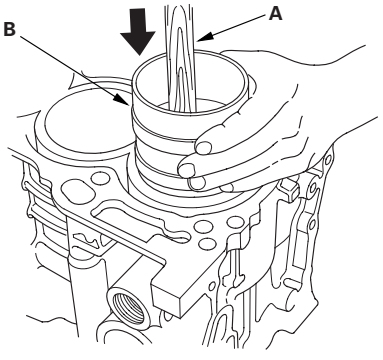
3. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore, then attach the ring compressor to the piston/connecting rod assembly.

4. Position the mark (A) to face the cam chain side of the engine block.



This illustration shows K20Z2 engine.

5. Position the piston/connecting rod assembly in the cylinder, and tap it in using the wooden handle of a hammer (A).
Push down on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



6. Stop after the ring compressor pops free, and check the connecting rod-to-rod journal alignment before pushing the piston into place.

(cont'd)

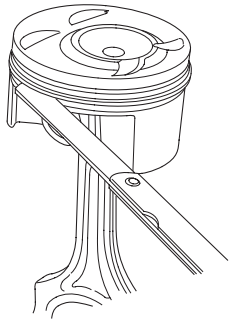
7. After installing a new set of rings, measure the ring-to-groove clearances:

Top Ring Clearance
K20Z2 engine:
Standard (New): 0.035—0.060 mm (0.0014—0.0024 in.)
Service Limit: 0.13 mm (0.005 in.)

K20Z3 engine:
Standard (New): 0.045—0.070 mm (0.0018—0.0028 in.)
Service Limit: 0.13 mm (0.005 in.)

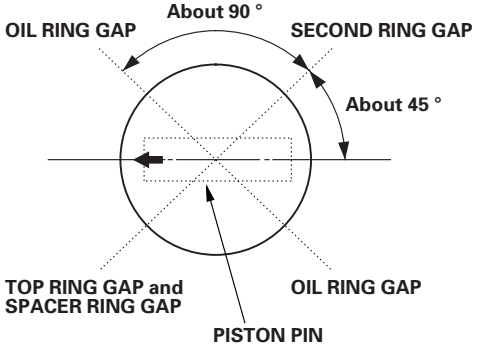
Second Ring Clearance
K20Z2 engine:
Standard (New): 0.030—0.055 mm (0.0012—0.0022 in.)
Service Limit: 0.13 mm (0.005 in.)

K20Z3 engine:
Standard (New): 0.040—0.065 mm (0.0016—0.0026 in.)
Service Limit: 0.13 mm (0.005 in.)



8. Rotate the rings in their grooves to make sure they do not bind.

9. Position the ring end gaps as shown:



Piston Installation

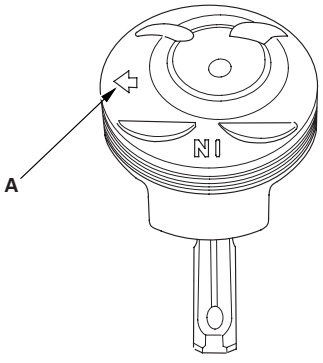
If the Crankshaft is Already Installed

1. Set the crankshaft to bottom dead center (BDC) for each cylinder as its piston is installed.

2. Remove the connecting rod caps, then install the ring compressor. Check that the bearing is securely in place.

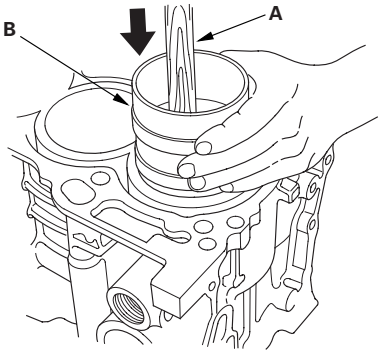
3. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore, then attach the ring compressor to the piston/connecting rod assembly.

4. Position the mark (A) to face the cam chain side of the engine block.



This illustration shows K20Z2 engine.

5. Position the piston/connecting rod assembly in the cylinder, and tap it in using the wooden handle of a hammer (A).
Push down on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



6. Stop after the ring compressor pops free, and check the connecting rod-to-rod journal alignment before pushing the piston into place.

(cont'd)

Piston Installation (cont'd)

7. Check the connecting rod bearing clearance with plastigage (see page 7-8).

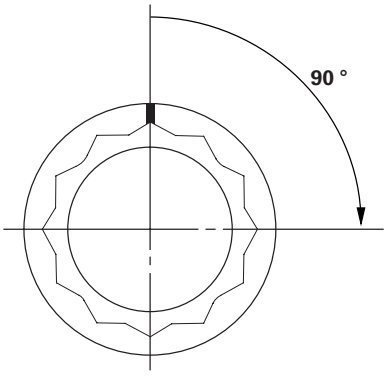
8. Inspect the connecting rod bolts (see page 7-25).

9. Install the rod caps with bearings. Tighten the bolts to 20 N·m (2.0 kgf·m, 14 lbf·ft) (K20Z2 engine) or 29 N·m (3.0 kgf·m, 22 lbf·ft) (K20Z3 engine).

   NOTE: Apply new engine oil to the bolt threads and flanges.

10. Tighten the connecting rod bolts an additional 90 °.

    NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.

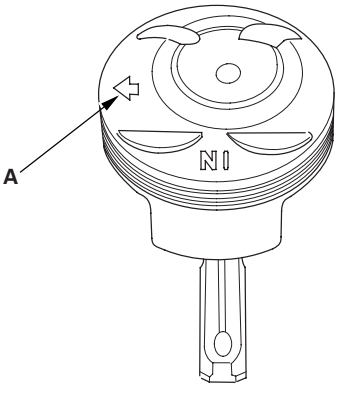


If the Crankshaft is Not Installed

1. Remove the connecting rod caps, then install the ring compressor, and check that the bearing is securely in place.

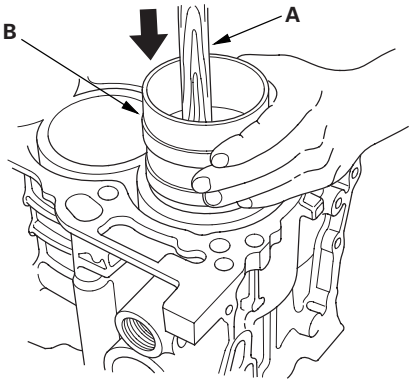
2. Apply new engine oil to the piston, inside of the ring compressor, and the cylinder bore, then attach the ring compressor to the piston/connecting rod assembly.

3. Position the mark (A) to face the cam chain side of the engine block.



This illustration shows K20Z2 engine.

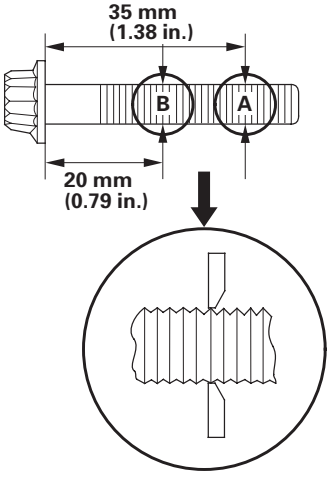
4. Position the piston/connecting rod assembly in the cylinder, and tap it in using the wooden handle of a hammer (A).
   Push down on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



5. Position all pistons at top dead center (TDC).

Connecting Rod Bolt Inspection

1. Measure the diameter of each connecting rod bolt at point A and point B.



2. Calculate the difference in diameter between point A and point B.

   Point A—Point B = Difference in Diameter

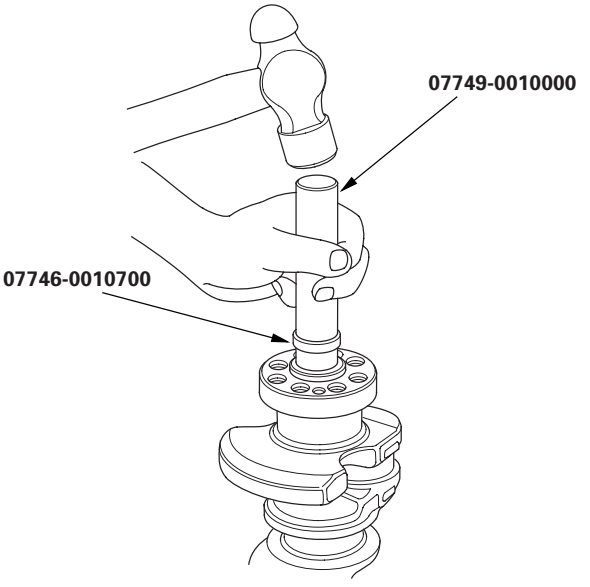
   Difference in Diameter
   Specification: 0—0.1 mm (0—0.004 in.)

3. If the difference in diameter is out of specification, replace the connecting rod bolt.

Crankshaft Installation

Special Tools Required
- Driver 07749-0010000
- Attachment, 24 x 26 mm 07746-0010700
- Oil seal driver attachment 96 07ZAD-PNAA100

1. M/T model: Install the crankshaft end bushing when replacing the crankshaft.
   Using the driver and the attachment, 24 x 26 mm drive in the crankshaft end bushing until the driver and the attachment bottom against the crankshaft.



2. Check the connecting rod bearing clearance with plastigage (see page 7-8).

3. Check the main bearing clearance with plastigage (see page 7-6).

(cont'd)

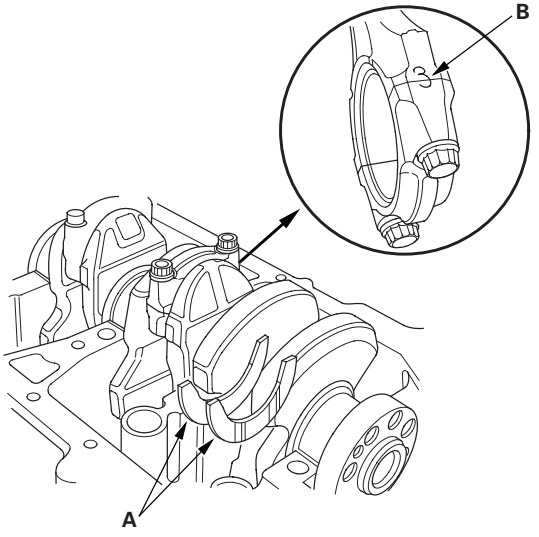
Crankshaft Installation (cont'd)

4. Install the bearing halves in the engine block and the connecting rods.

5. Apply new engine oil to the main bearings and the rod bearings.

6. Hold the crankshaft so rod journal No. 2 and rod journal No. 3 are straight up, then lower the crankshaft into the engine block.

7. Apply new engine oil to the thrust washer surfaces. Install the thrust washers (A) in the No. 4 journal of the engine block.



8. Inspect the connecting rod bolts (see page 7-25).

9. Apply new engine oil to the threads of the connecting rod bolts.

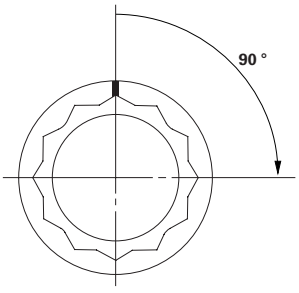
10. Seat the rod journals into connecting rod No. 1 and connecting rod No. 4. Line up the mark (B) on the connecting rod and the cap, then install the caps and the bolts finger-tight.

11. Rotate the crankshaft clockwise, and seat the journals into connecting rod No. 2 and connecting rod No. 3. Line up the mark on the connecting rod and the cap, then install the caps and the bolts finger-tight.

12. Tighten the connecting rod bolts to 20 N·m (2.0 kgf·m, 14 lbf·ft) (K20Z2 engine) or 29 N·m (3.0 kgf·m, 22 lbf·ft) (K20Z3 engine).

13. Tighten the connecting rod bolts an additional 90 °.

    NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 8 of the procedure. Do not loosen it back to the specified angle.

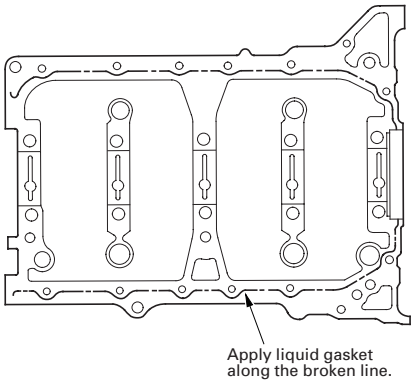


14. Remove all of the old liquid gasket from the lower block mating surfaces, the bolts, and the bolt holes.

15. Clean, and dry the lower block mating surfaces.

16. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the lower block, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

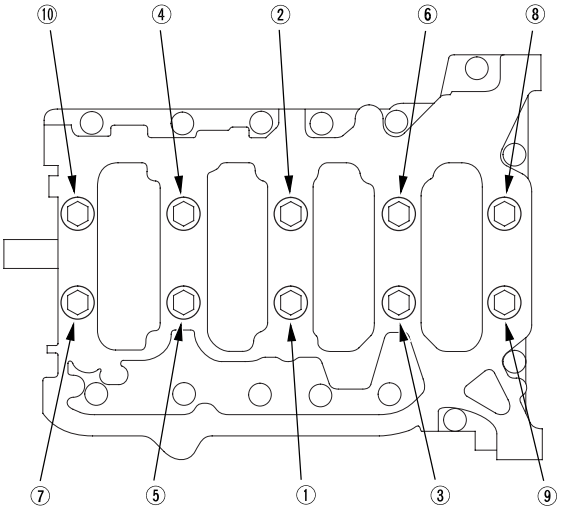
    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



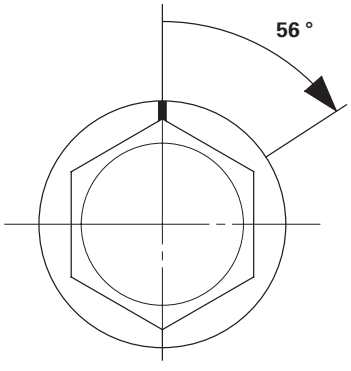
17. Install the main bearings, then put the lower block on the engine block.

18. Apply new engine oil to the threads of the bearing cap bolts.

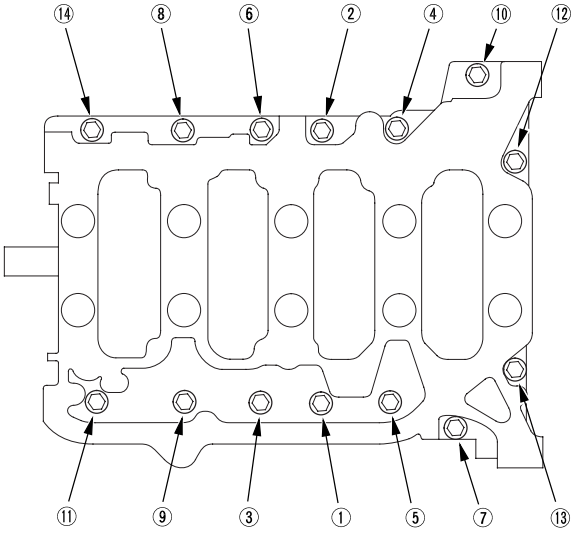
19. Tighten the bearing cap bolts, in sequence, to 29 N·m (3.0 kgf·m, 22 lbf·ft).



20. Tighten the bearing cap bolts an additional 56 °.



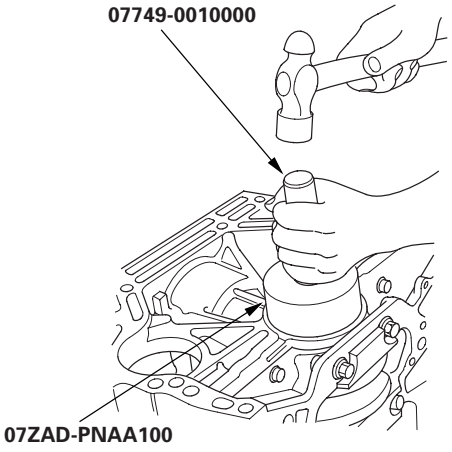
21. Tighten the 8 mm bolts, in sequence, to 22 N·m (2.2 kgf·m, 16 lbf·ft).



22. Apply a light coat of new engine oil around the crankshaft oil seal.

23. Apply a light coat of new engine oil to the crankshaft and the lip of the crankshaft oil seal.

24. Use the driver and the oil seal driver attachment 96 to drive a new oil seal squarely into the engine block to the specified installed height.

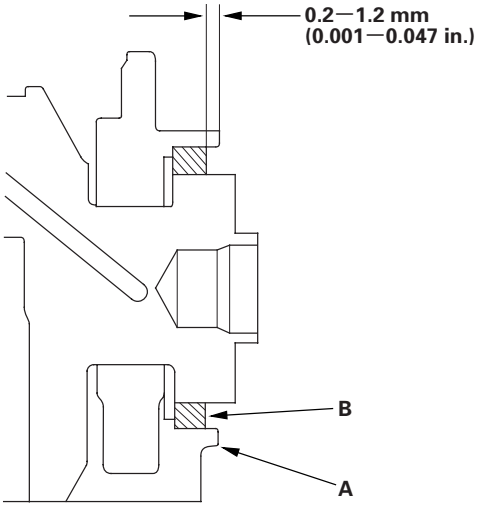


(cont'd)

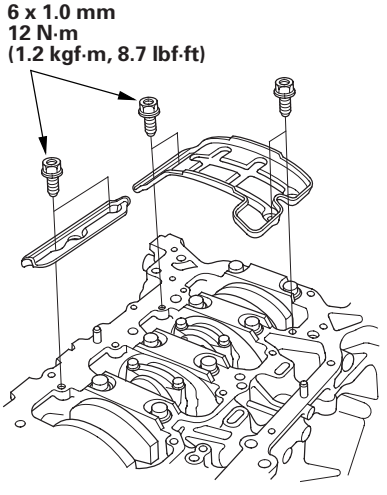
Crankshaft Installation (cont'd)

25. Measure the distance between the engine block (A) and the crankshaft oil seal (B).

    Oil Seal Installed Height: 0.2—1.2 mm (0.001—0.047 in.)



26. Install the baffle plates.



27. Install the oil pump (see page 8-21).

28. Install the oil pan (see page 7-29).

29. Install the cylinder head (see page 6-62).

30. M/T model: Install the flywheel (see page 12-21), the clutch disc (see page 12-23), and the pressure plate (see page 12-23).

31. A/T model: Install the drive plate (see page 14-242).

32. Install the transmission:

    - Manual transmission (see page 13-14)
    - Automatic transmission (see page 14-242)

33. Install the engine assembly (see page 5-13).

    NOTE: Whenever any crankshaft or connecting rod bearing is replaced, it is necessary after reassembly to run the engine at idle speed until it reaches normal operating temperature, then continue to running it for about 15 minutes.

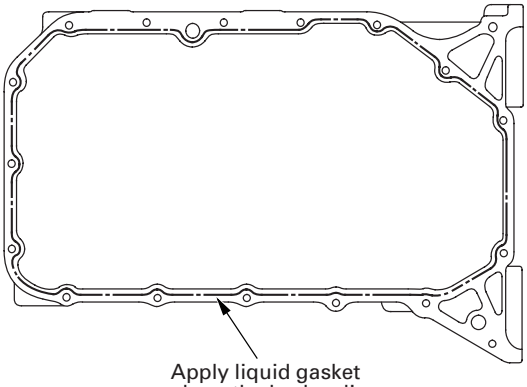
Oil Pan Installation

1. Remove all of the old liquid gasket from the oil pan mating surfaces, the bolts, and the bolt holes.

2. Clean, and dry the oil pan mating surfaces.

3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the lower engine block mating surface, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

   NOTE:
   - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
   - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

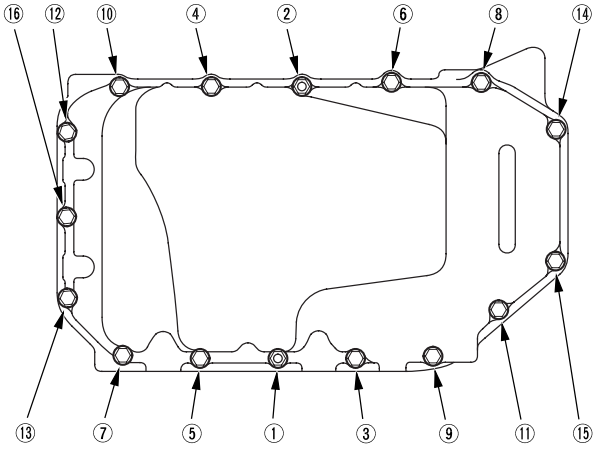


Apply liquid gasket
along the broken line.

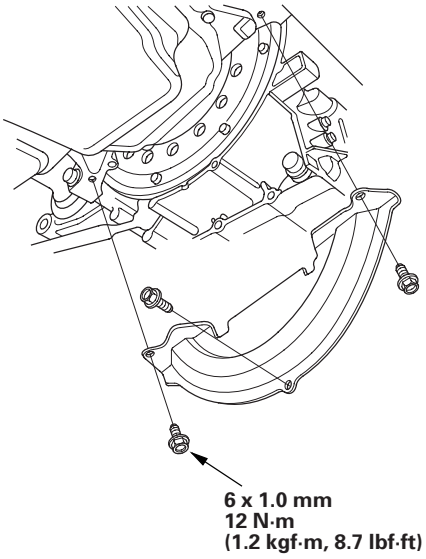
4. Install the oil pan.

5. Tighten the bolts/nuts in three steps. In the final step, tighten all bolts/nuts, in sequence, to 12 N·m (1.2 kgf·m, 8.7 lbf·ft). Wipe off the excess liquid gasket on the each side of crankshaft pulley and the flywheel/drive plate.

   NOTE:
   - Wait at least 30 minutes before filling the engine with oil.
   - Do not run the engine for at least 3 hours after installing the oil pan.



6. K20Z2 engine: Install the torque converter cover/ clutch cover.

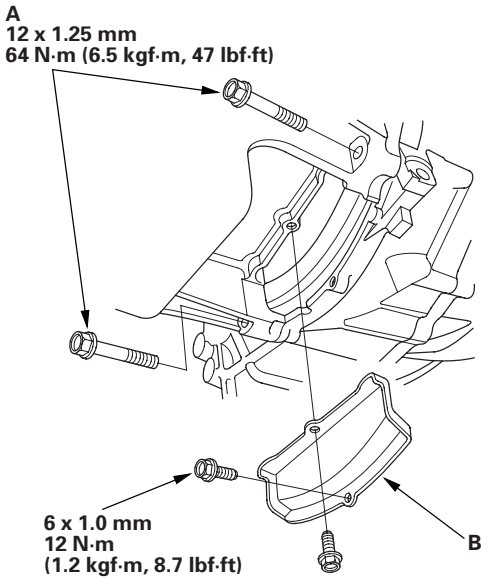


6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)

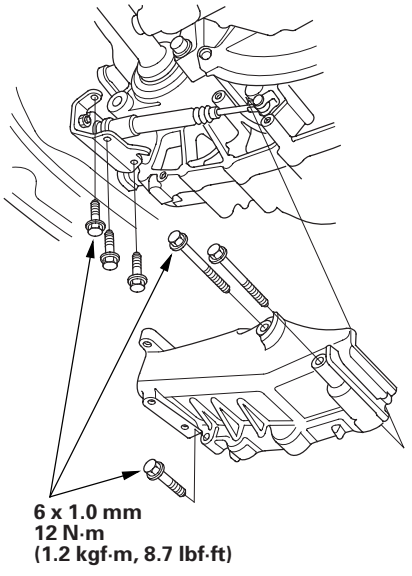
(cont'd)

Oil Pan Installation (cont'd)

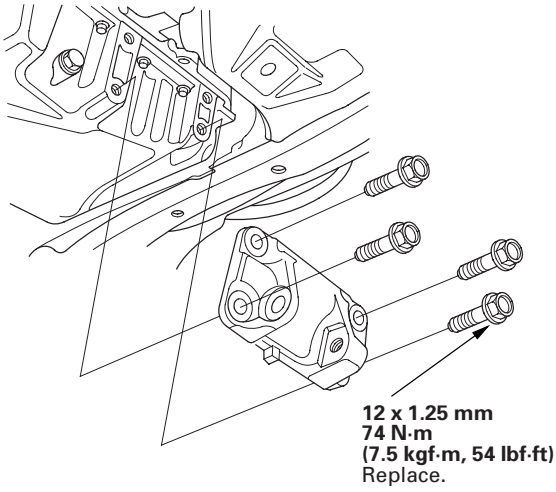
7. K20Z3 engine: Install the transmission mounting bolts (A) and the clutch cover (B).



8. A/T model: Install the shift cable cover.



9. Install the lower torque rod bracket.



10. If the engine is still in the vehicle, do the following steps.

11. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt of the front subframe adapter over the front of the subframe. Secure the belt with its stop, then tighten the wing nut (see step 53 on page 5-9).

12. Line up the slots in the front subframe adapter arms with the bolt holes on the jack base, then securely attach them with four bolts. Lift the front subframe up to the body.

13. Loosely install the new front subframe mounting bolts (see step 17 on page 5-17).

14. Align all reference marks on the front subframe with the edges of the body, then tighten the bolts on the front subframe to the specified torque (see step 18 on page 5-18).

15. Remove the jack and the front subframe adapter.

16. Tighten the new mid-stiffener mounting bolts on both sides (see step 20 on page 5-18).

17. Lower the vehicle on the lift.

18. Loosen the upper torque rod mounting bolt (see step 5 on page 5-15).

19. Raise the vehicle on the lift.

20. Install the lower torque rod, then tighten the new lower torque rod mounting bolts in the numbered sequence shown (see step 21 on page 5-18).

21. M/T model: Loosely tighten the new front mount mounting bolt (see step 22 on page 5-19).

22. Lower the vehicle on the lift.

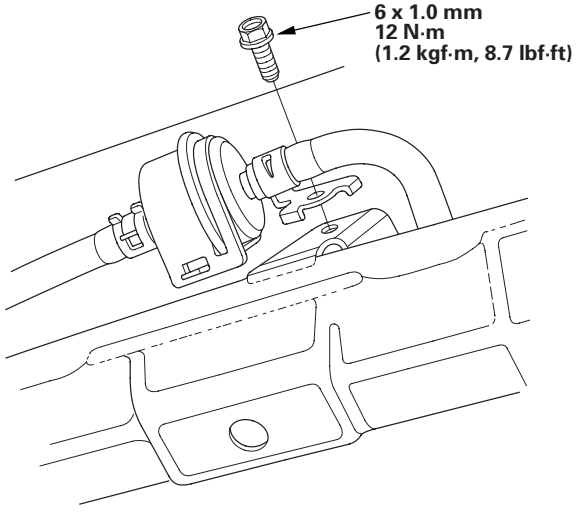
23. Remove the engine support hanger and engine hanger adapter.

24. Tighten the upper torque rod mounting bolt (see step 25 on page 5-19).

25. Raise the vehicle on the lift.

26. M/T model: Tighten the front mount mounting bolt (see step 27 on page 5-19).

27. A/T model: Install the bolt securing the automatic transmission fluid (ATF) filter.



28. Install the stiffener, then tighten the steering gearbox mounting bolt and the stiffener mounting bolt. Install the harness clamp to the front subframe (see step 29 on page 5-20).

29. Install the steering gearbox bracket. Install the stiffener, then tighten the steering gearbox mounting bolt and the stiffener mounting bolt (see step 32 on page 5-20).

30. Connect the lower arms to the knuckles (see step 9 on page 18-16).

31. Connect the stabilizer links (see page 18-25).

32. Install the splash shield (see step 40 on page 5-20).

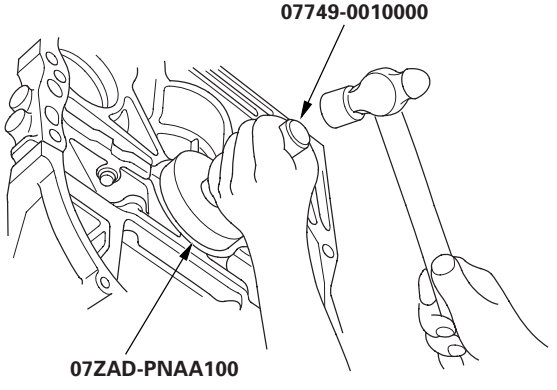
33. Install the front wheels.

34. Refill the engine with engine oil (see step 4 on page 8-10).

Transmission End Crankshaft Oil Seal Installation - In Car

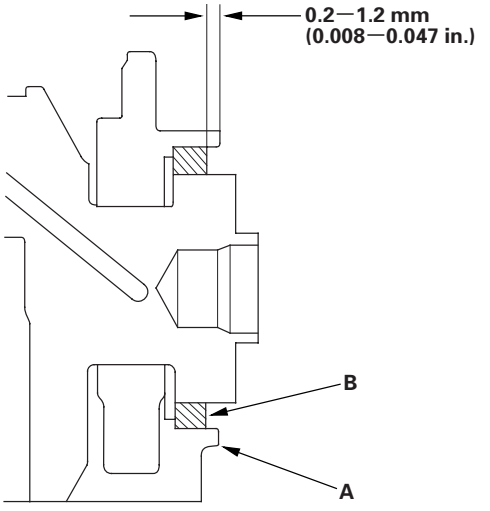
Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 96 07ZAD-PNAA100

1. Remove the transmission:
   - Manual transmission (see page 13-7)
   - Automatic transmission (see page 14-233)
2. M/T model: Remove the pressure plate (see page 12-19), the clutch disc (see page 12-20), and the flywheel (see page 12-21).
3. A/T model: Remove the drive plate (see page 14-242).
4. Clean, and dry the crankshaft oil seal housing.
5. Apply a light coat of new engine oil around the crankshaft oil seal.
6. Apply a light coat of new engine oil to the crankshaft and to the lip of the crankshaft oil seal.
7. Use the driver and the oil seal driver attachment 96 to drive a new oil seal squarely into the engine block to the specified installed height.



8. Measure the distance between the engine block (A) and the crankshaft oil seal (B).

Oil Seal Installed Height: 0.2—1.2 mm (0.008—0.047 in.)

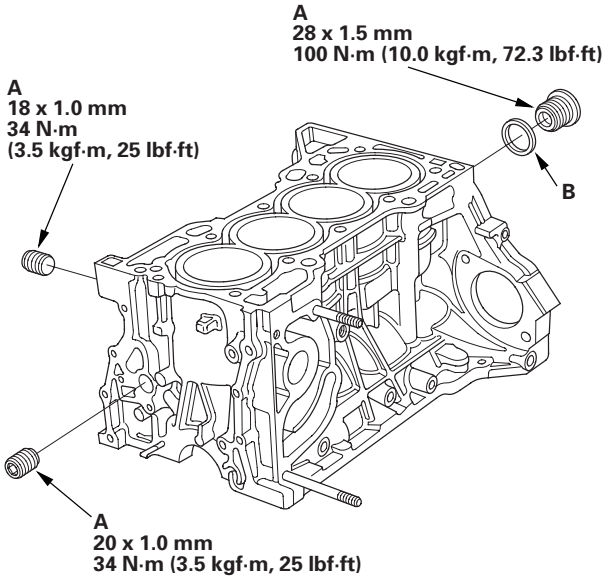


9. M/T model: Install the flywheel (see page 12-21), the clutch disc (see page 12-23), and the pressure plate (see page 12-23).
10. A/T model: Install the drive plate (see page 14-242).
11. Install the transmission:
    - Manual transmission (see page 13-14)
    - Automatic transmission (see page 14-242)

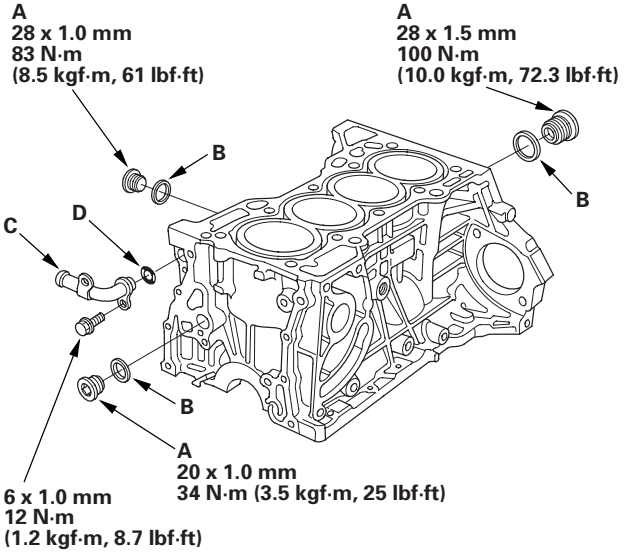
Sealing Bolt Installation

NOTE:
- When installing the sealing bolts (A), always use a new washer (B).
- When installing the joint pipe (C), always use a new O-ring (D).

K20Z2 engine



K20Z3 engine



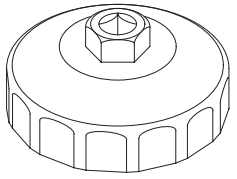
DYNOMITE -2009-

Engine Mechanical

Engine Lubrication

Special Tools

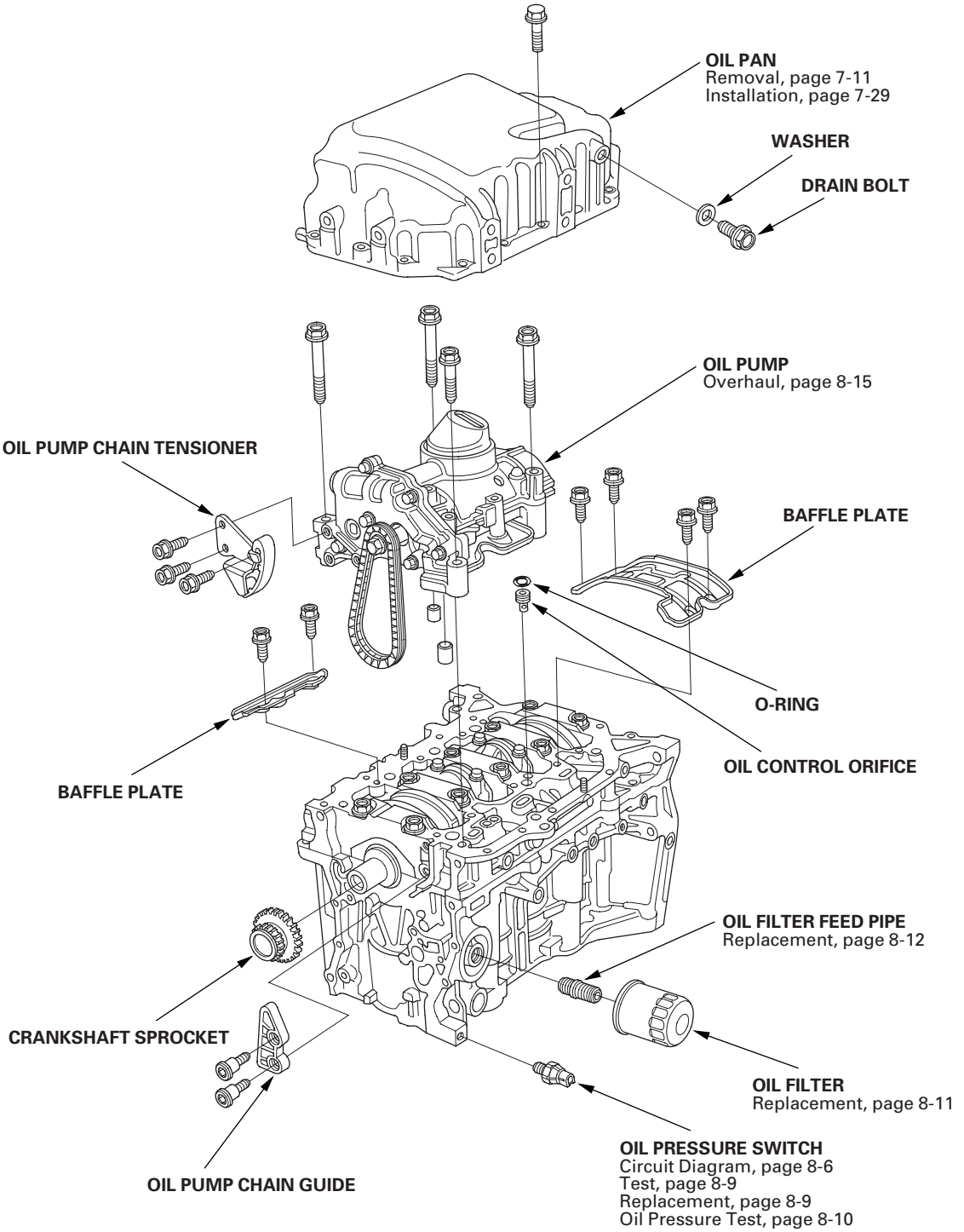
Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70101	Oil Filter Wrench	1



①

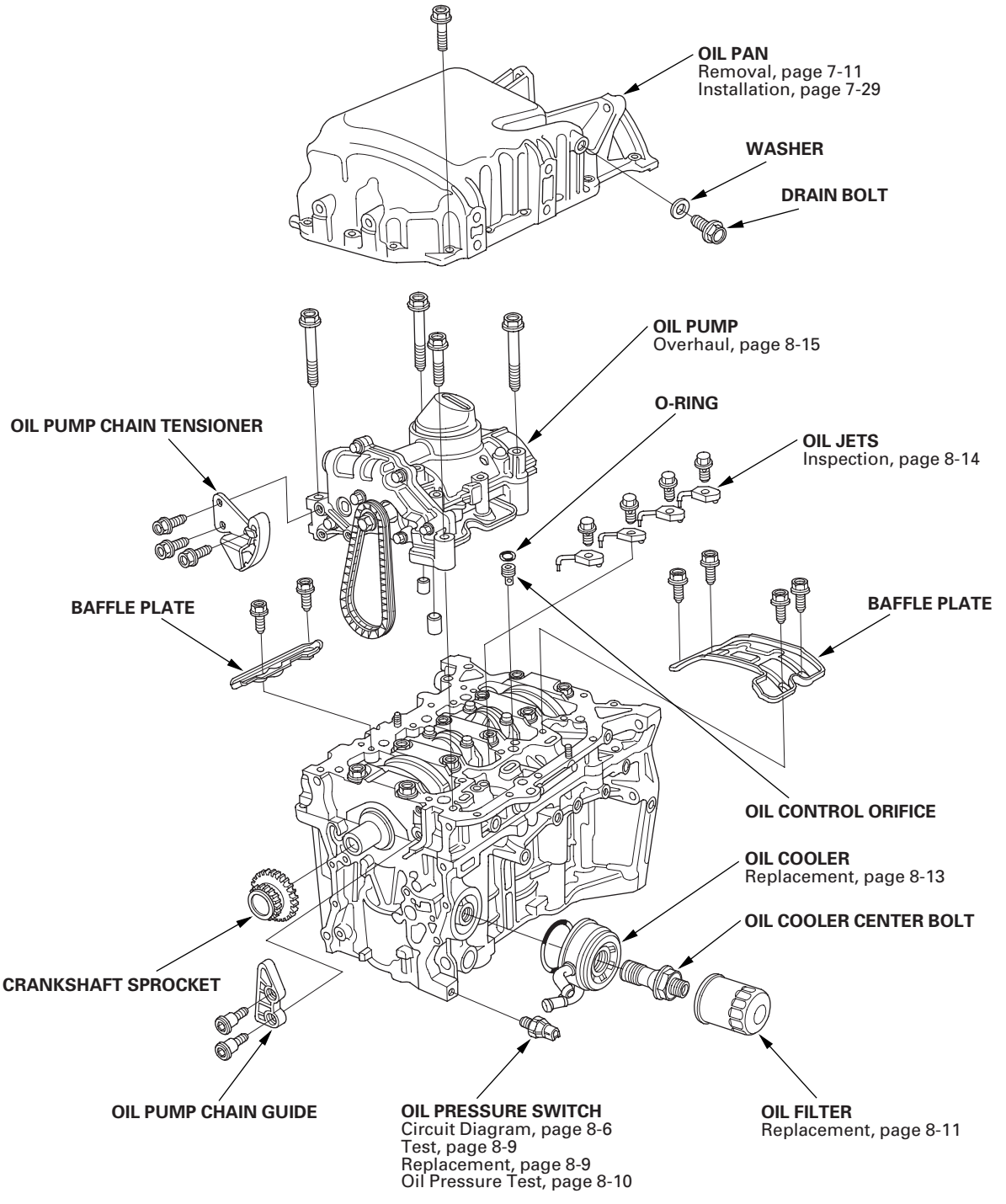
Component Location Index

K20Z2 engine



Component Location Index (cont'd)

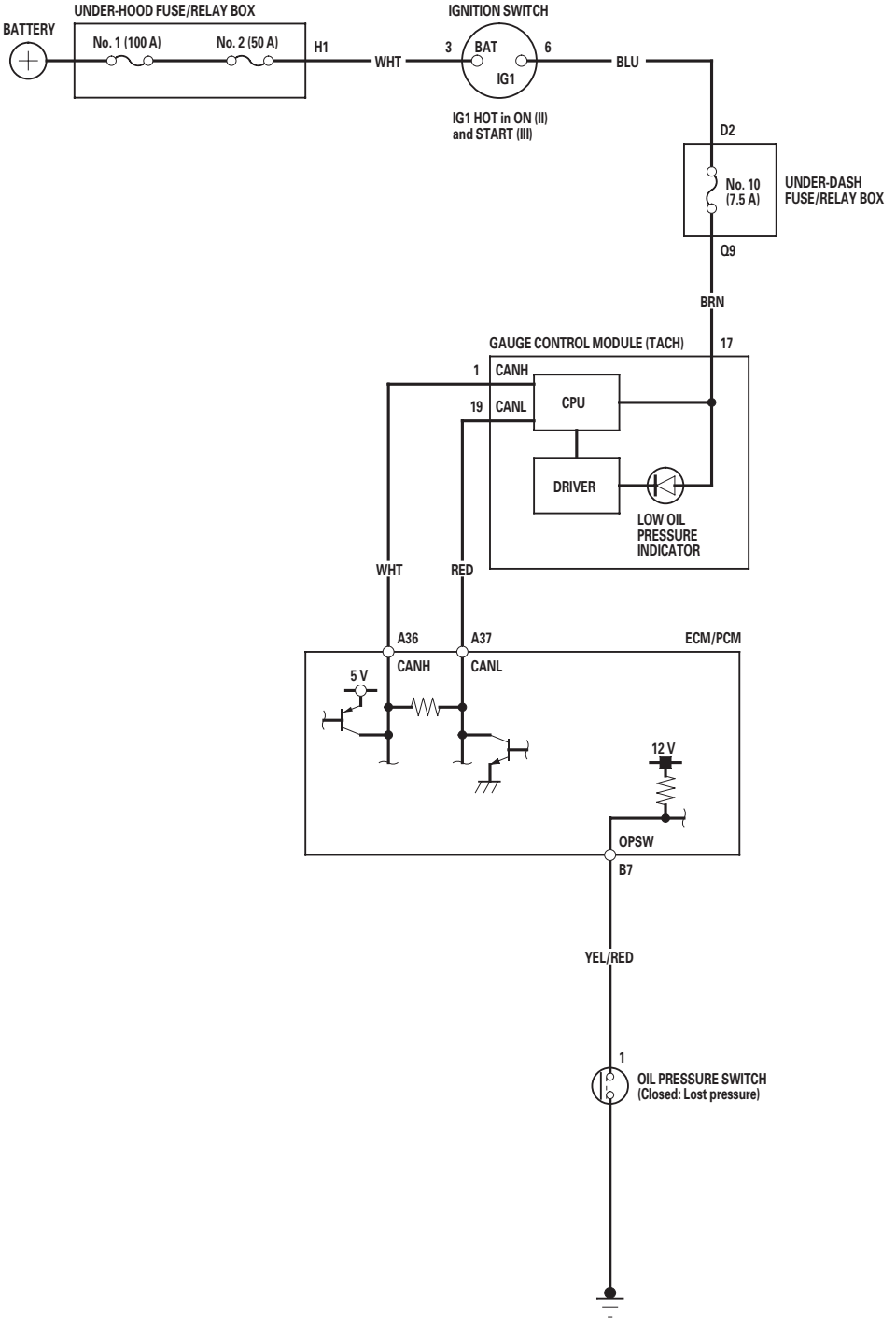
K20Z3 engine



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Excessive engine oil consumption	1. Verify that the engine oil filler cap, the oil drain bolt, and the oil filter are tight. 2. Check for oil leaks. 3. Check for worn valve guide(s) (see page 6-55) or worn valve stem seal(s) (see page 6-54). 4. Check for damaged or worn piston ring(s) (see page 7-21). 5. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.) (see page 7-16).	
Low oil pressure indicator does not come on with the ignition switch in ON (II)	1. Do the low oil pressure indicator circuit troubleshooting (Open) (see page 8-7). 2. Test the oil pressure switch (see page 8-9).	An open in the wire between the engine control module (ECM)/ powertrain control module (PCM) and the oil pressure switch
Low oil pressure indicator stays on	1. Check the engine oil level. 2. Do the low oil pressure indicator circuit troubleshooting (Short) (see page 8-8). 3. Test the oil pressure switch (see page 8-9). 4. Check the engine oil pressure (see page 8-10). 5. Check the oil filter for clogging. 6. Check the oil screen for clogging. 7. Check the relief valve (see page 8-15). 8. Test the oil pump (see page 8-17).	A wire shorted to ground between the ECM/PCM and the oil pressure switch

Low Oil Pressure Indicator Circuit Diagram



Low Oil Pressure Indicator Circuit Troubleshooting (Open)

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

4. Check for DTCs (see page 11-3). If a DTC is present, diagnose, and repair the cause before continuing with this test.

5. Check the OIL PRESSURE SWITCH in the PGM-FI DATA LIST with the HDS.

   Is ON indicated?

   YES—Replace the gauge control module (tach) (see page 22-277). ■

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Check the oil pressure switch (see page 8-9).

   Is the oil pressure switch OK?

   YES—Go to step 8.

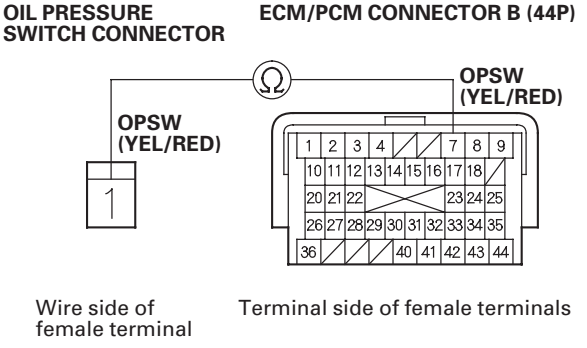
   NO—Replace the oil pressure switch (see page 8-9). ■

8. Turn the ignition switch to ON (II), and jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

   NOTE: This step must be done to protect the ECM/PCM from damage.

9. Disconnect ECM/PCM connector B (44P) and the oil pressure switch connector.

10. Check for continuity between ECM/PCM connector terminal B7 and the oil pressure switch connector.



Is there continuity?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Repair an open in the wire between the oil pressure switch and ECM/PCM connector terminal B7. ■

Low Oil Pressure Indicator Circuit Troubleshooting (Short)

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
4. Check for DTCs (see page 11-3). If a DTC is present, diagnose, and repair the cause before continuing with this test.
5. Start the engine, and check the OIL PRESSURE SWITCH in the PGM-FI DATA LIST with the HDS.

   Is OFF indicated?

   YES—Replace the gauge control module (tach) (see page 22-277).■

   NO—Go to step 6.
6. Turn the ignition switch to LOCK (0).
7. Disconnect the oil pressure switch connector.
8. Start the engine, and check the OIL PRESSURE SWITCH in the PGM-FI DATA LIST with the HDS.

   Is OFF indicated?

   YES—Turn the ignition switch to LOCK (0), then go to step 9.

   NO—Turn the ignition switch to LOCK (0), then go to step 10.
9. Check the oil pressure switch (see page 8-9).

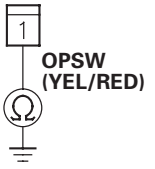
   Is the oil pressure switch OK?

   YES—Do the oil pressure test (see page 8-10).

   NO—Replace the oil pressure switch (see page 8-9). ■
10. Turn the ignition switch to ON (II), and jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

    NOTE: This step must be done to protect the ECM/PCM from damage.
11. Disconnect ECM/PCM connector B (44P).
12. Check for continuity between the oil pressure switch connector and body ground.

OIL PRESSURE SWITCH CONNECTOR



Wire side of female terminal

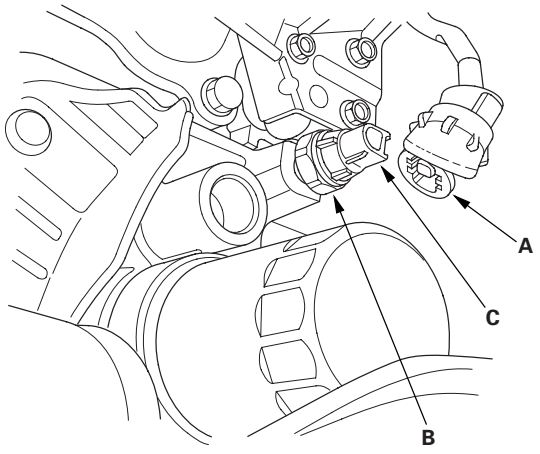
Is there continuity?

YES—Repair a short to ground in the wire between the oil pressure switch and ECM/PCM connector terminal B7.■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228).■

Oil Pressure Switch Test

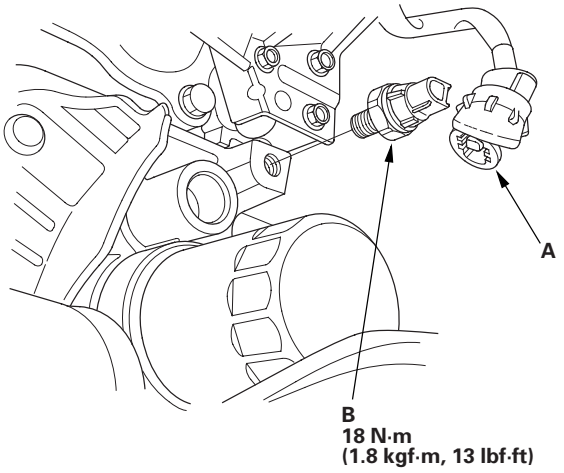
1. Disconnect the oil pressure switch connector (A) from the oil pressure switch (B).



2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

Oil Pressure Switch Replacement

1. Disconnect the oil pressure switch connector (A), then remove the oil pressure switch (B).



2. Remove any old liquid gasket from the switch and the switch mounting hole.

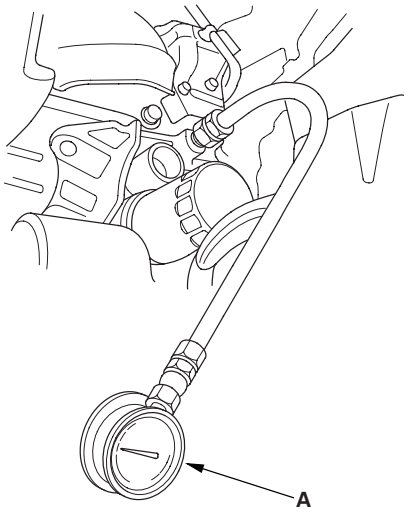
3. Apply a very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

   NOTE: Using too much liquid gasket may cause liquid gasket to enter the oil passage or the end of the new oil pressure switch.

Oil Pressure Test

NOTE: If the oil pressure warning indicator stays on with the engine running, check the engine oil level. If the oil level is correct do the following test:

1. With the engine stopped, remove the oil pressure switch (see page 8-9), then install an oil pressure gauge (A).



2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.

3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

   Engine Oil Temperature: 80 ℃ (176 ℉)
   Engine Oil Pressure:
   At Idle: 70 kPa (0.7 kgf/cm², 10 psi) min.
   At 3,000 rpm: 300 kPa (3.1 kgf/cm², 44 psi) min.

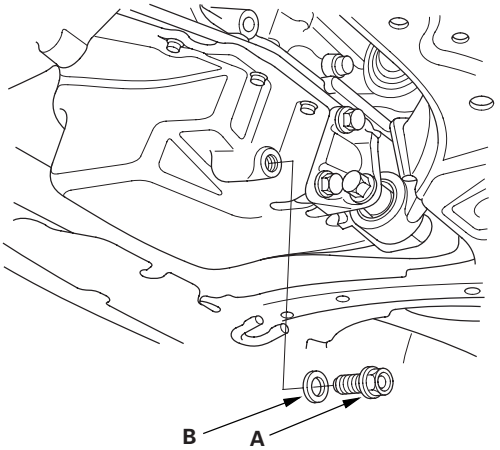
4. If the oil pressure is out of specifications, inspect these items:

   - Blocking of oil filter (see page 8-11).
   - Blocking of oil screen.
   - Inspect the oil pressure relief valve (see page 8-15).
   - Inspect the oil pump (see page 8-17).

Engine Oil Replacement

1. Warm up the engine.

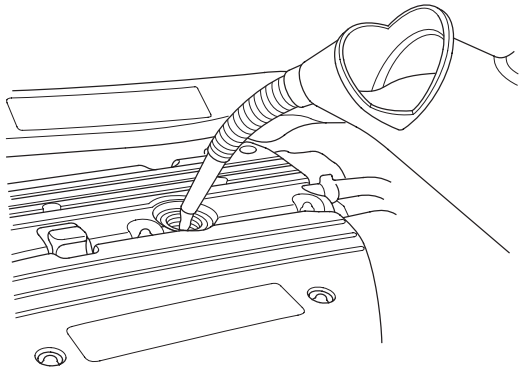
2. Remove the drain bolt (A), and drain the engine oil.



3. Reinstall the drain bolt with a new washer (B).

4. Refill the engine with the recommended oil (see page 3-2).

   K20Z2 engine
   Capacity
   At Oil Change: 4.0 L (4.2 US qt)
   At Oil Change including Filter: 4.2 L (4.4 US qt)
   After Engine Overhaul: 5.3 L (5.6 US qt)
   K20Z3 engine
   Capacity
   At Oil Change: 4.2 L (4.4 US qt)
   At Oil Change including Filter: 4.4 L (4.6 US qt)
   After Engine Overhaul: 5.5 L (5.8 US qt)



5. Run the engine for more than 3 minutes, then check for oil leakage.

6. Turn the ignition switch to LOCK (0).

7. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

8. Turn the ignition switch to ON (II).

9. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

10. Select GAUGES in the BODY ELECTRICAL menu with the HDS.

11. Select ADJUSTMENT in the GAUGES menu with the HDS.

12. Select SERVICE REMINDER in the ADJUSTMENT menu with the HDS.

13. Select RESET in the SERVICE REMINDER menu with the HDS.

14. Select RESETTING THE ENGINE OIL LIFE with the HDS.

    NOTE: If you changed the automatic transmission fluid (ATF) at the same time with the engine oil, select RESETTING THE ENGINE OIL LIFE AND ATF with the HDS instead.

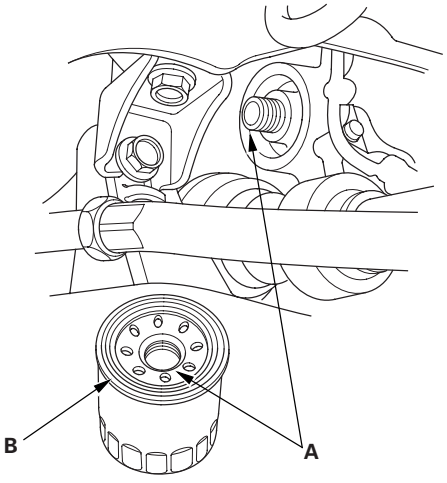
Engine Oil Filter Replacement

Special Tools Required
Oil filter wrench 07HAA-PJ70101

1. Remove the oil filter with the oil filter wrench.

2. Inspect the filter to make sure the rubber seal is not stuck to the oil filter seating surface of the engine.

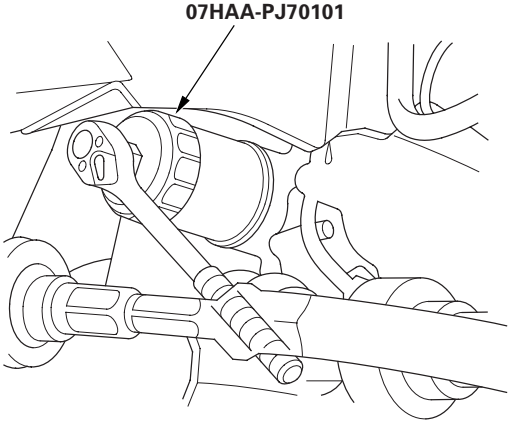
3. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the engine block, then apply a light coat of new engine oil to the filter rubber seal. Use only filters with a built-in bypass system.



4. Install the oil filter by hand.

5. After the rubber seal seats, tighten the oil filter clockwise with the oil filter wrench.

Tighten: **3/4 Turn Clockwise**
Tightening Torque: **12 N·m (1.2 kgf·m, 8.7 lbf·ft)**



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5. Run the engine for more than 3 minutes, then check for oil leakage.

6. Turn the ignition switch to LOCK (0).

7. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

8. Turn the ignition switch to ON (II).

9. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

10. Select GAUGES in the BODY ELECTRICAL menu with the HDS.

11. Select ADJUSTMENT in the GAUGES menu with the HDS.

12. Select SERVICE REMINDER in the ADJUSTMENT menu with the HDS.

13. Select RESET in the SERVICE REMINDER menu with the HDS.

14. Select RESETTING THE ENGINE OIL LIFE with the HDS.

    NOTE: If you changed the automatic transmission fluid (ATF) at the same time with the engine oil, select RESETTING THE ENGINE OIL LIFE AND ATF with the HDS instead.

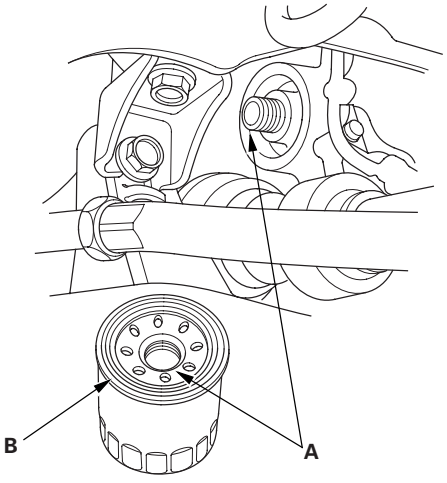
Engine Oil Filter Replacement

Special Tools Required
Oil filter wrench 07HAA-PJ70101

1. Remove the oil filter with the oil filter wrench.

2. Inspect the filter to make sure the rubber seal is not stuck to the oil filter seating surface of the engine.

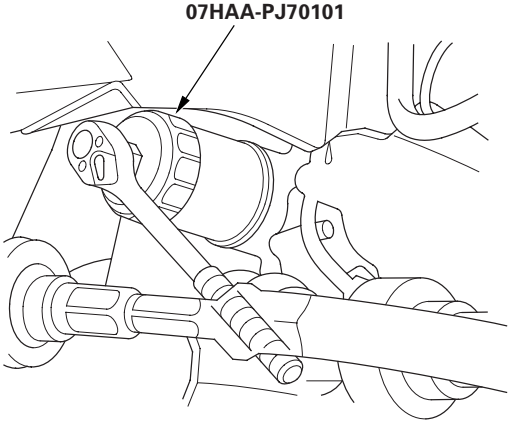
3. Inspect the threads (A) and rubber seal (B) on the new filter. Clean the seat on the engine block, then apply a light coat of new engine oil to the filter rubber seal. Use only filters with a built-in bypass system.



4. Install the oil filter by hand.

5. After the rubber seal seats, tighten the oil filter clockwise with the oil filter wrench.

Tighten: **3/4 Turn Clockwise**
Tightening Torque: **12 N·m (1.2 kgf·m, 8.7 lbf·ft)**



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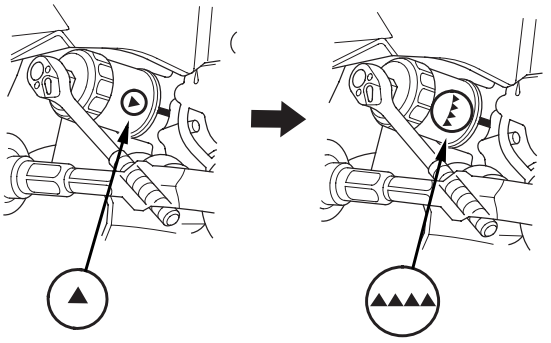
Engine Oil Filter Replacement (cont'd)

6. If four numbers or marks (1 to 4 or ▼ to ▼▼▼▼) are printed around the outside of the filter, use the following procedure to tighten the filter.

   - Spin the filter on until its seal lightly seats against the engine block, and note which number or mark is at the bottom.
   - Tighten the filter by turning it clockwise three numbers or marks from the one you noted. For example, if number 2 is at the bottom when the seal is seated, tighten the filter until the number 1 comes around the bottom.



Mark when rubber seal is seated.

Mark after tightening.

Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

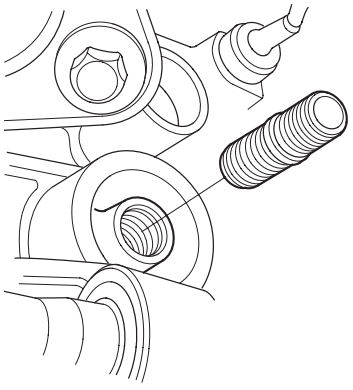
7. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.

Oil Filter Feed Pipe Replacement

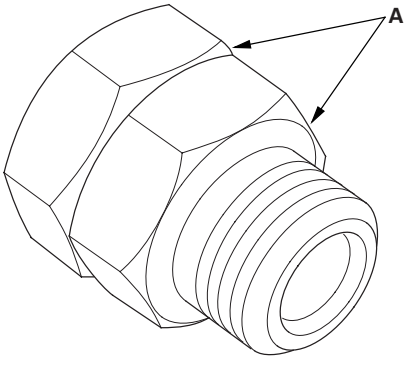
K20Z2 engine

1. Remove the oil filter (see page 8-11).

2. Remove the oil filter feed pipe.



3. Install the two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe. Hold one nut with a wrench, then use a second wrench to tighten the other nut.



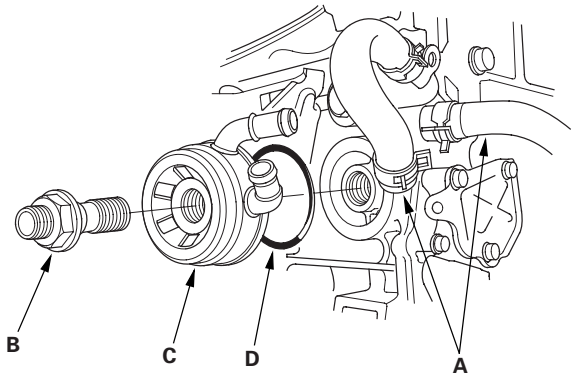
4. Tighten the oil filter feed pipe to the block to 49 N·m (5.0 kgf·m, 36 lbf·ft), then remove the nuts from the oil filter feed pipe.

5. Install the oil filter (see page 8-11).

Oil Cooler Replacement

K20Z3 engine

1. Remove the oil filter (see page 8-11).
2. Disconnect the oil cooler bypass hoses (A) and remove the oil cooler center bolt (B), then remove the oil cooler (C).

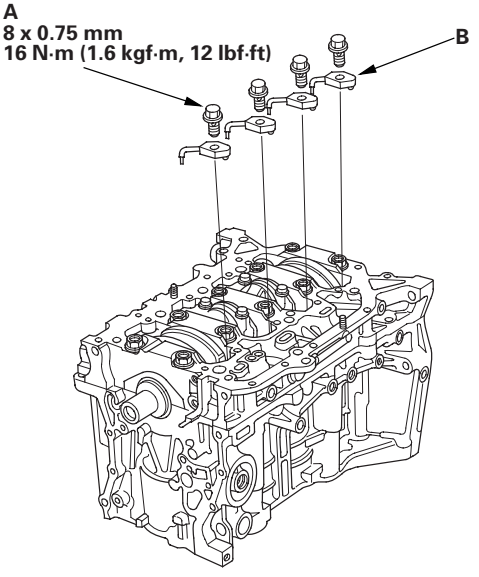


3. Install the oil cooler using a new O-ring (D). Tighten the oil cooler center bolt to 74 N·m (7.5 kgf·m, 54 lbf·ft).
4. Connect the oil cooler bypass hoses.
5. Install the oil filter (see page 8-11).

Oil Jet Replacement

K20Z3 engine

1. Remove the oil pump (see page 8-16).
2. Remove the baffle plate (see step 8 on page 7-13).
3. Remove the oil jet bolt (A), then remove the oil jet (B).



4. Carefully install the oil jet, and tighten the oil jet bolt.
5. Install the baffle plate (see step 26 on page 7-28).
6. Install the oil pump (see page 8-21).

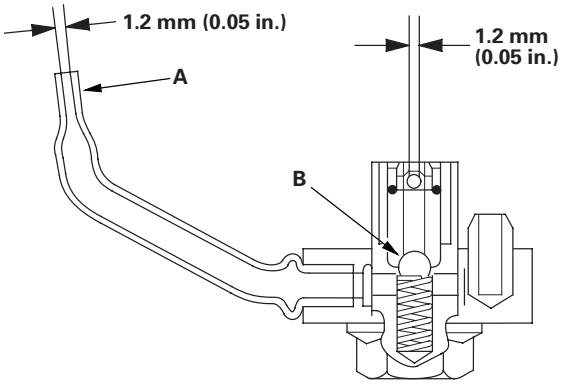
Oil Jet Inspection

K20Z3 engine

1. Remove the oil jet, and inspect it as follows.

   - Make sure that a 1.1 mm (0.04 in.) diameter drill will go through the nozzle hole (A) (1.2 mm (0.05 in.) diameter).
   - Insert the other end of a 1.1 mm (0.04 in.) drill into the oil intake (1.2 mm (0.05 in.) diameter). Make sure the check ball (B) moves smoothly and has a stroke of approximately 4.0 mm (0.16 in.).
   - Check the oil jet operation with an air nozzle. It should take at least 200 kPa (2.0 kgf/cm^2, 28 psi) to unseat the check ball.

   NOTE: Replace the oil jet assembly if the nozzle is damaged or bent.

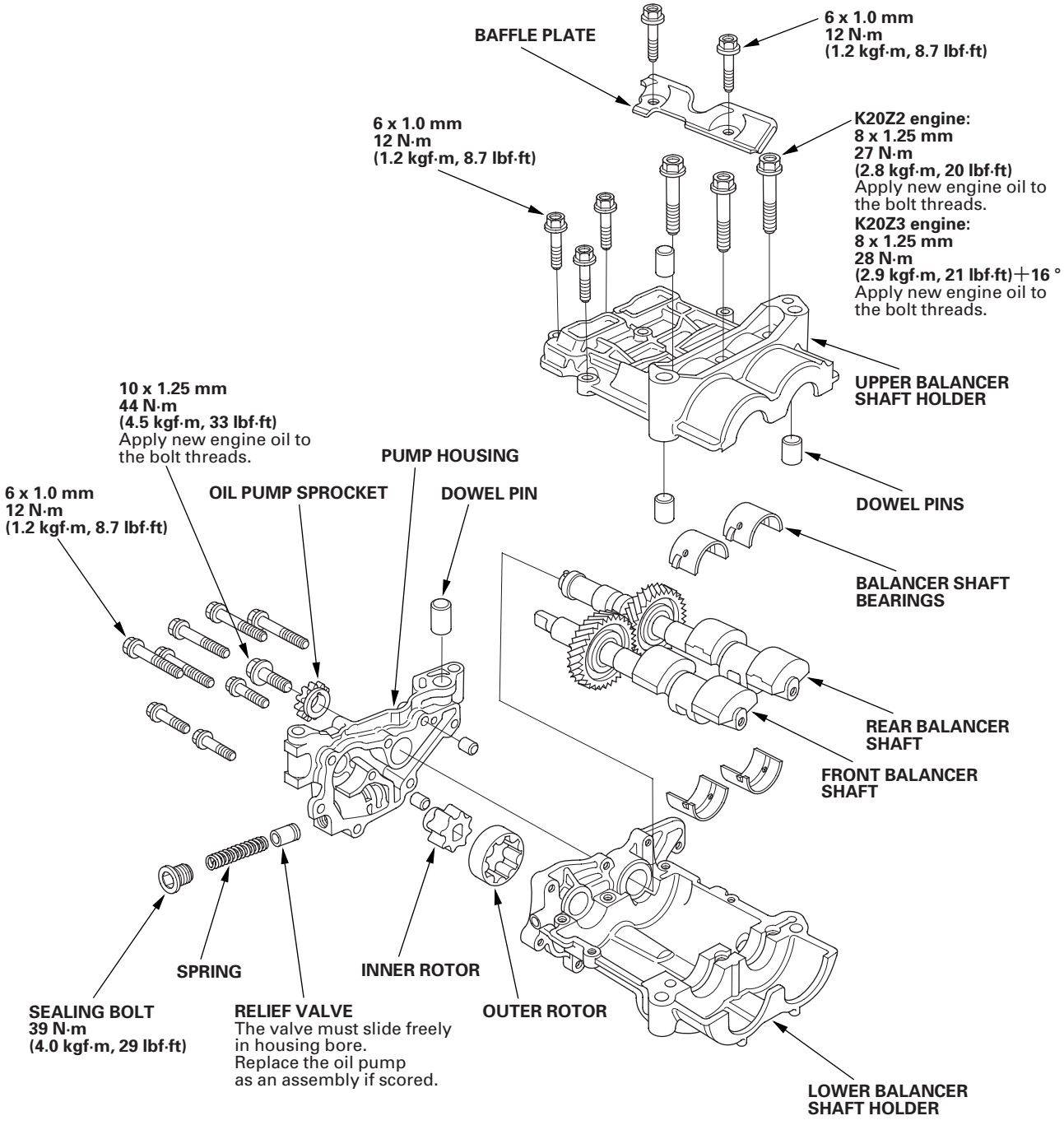


2. Carefully install the oil jet. The mounting torque is critical.

   Torque: 16 N·m (1.6 kgf·m, 12 lbf·ft)

Oil Pump Overhaul

Exploded View



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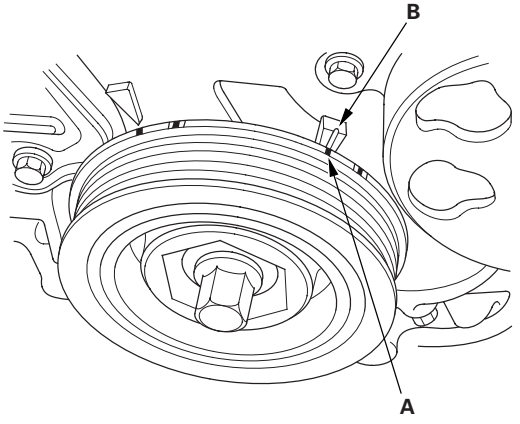
Oil Pump Overhaul (cont'd)

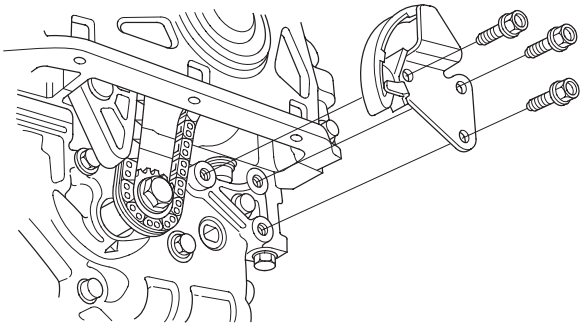
Oil Pump Removal

1. Turn the crankshaft pulley so its top dead center (TDC) mark (A) lines up with the pointer (B).

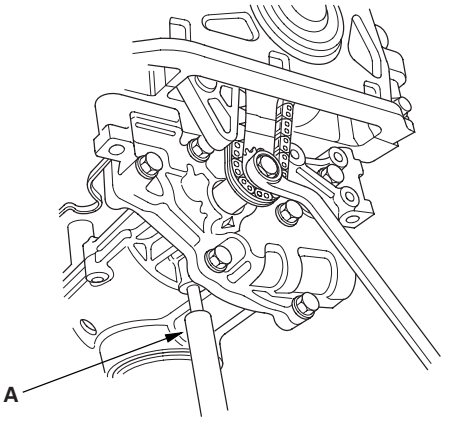


2. Remove the oil pan (see page 7-11).

3. Remove and discard the oil pump chain tensioner.

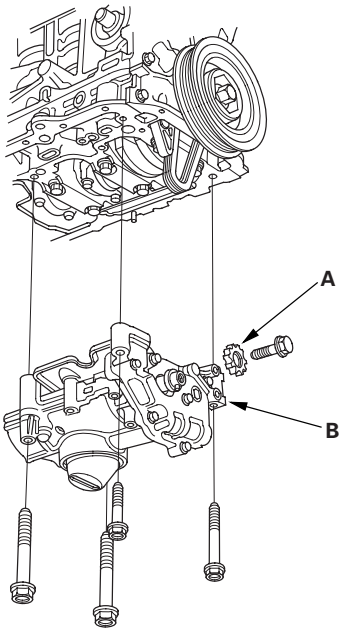


4. To hold the rear balancer shaft, insert a 6 mm long pin punch (Snap-on PPC108LA or equivalent) (A) into the maintenance hole in the lower balancer shaft holder and through the rear balancer shaft.



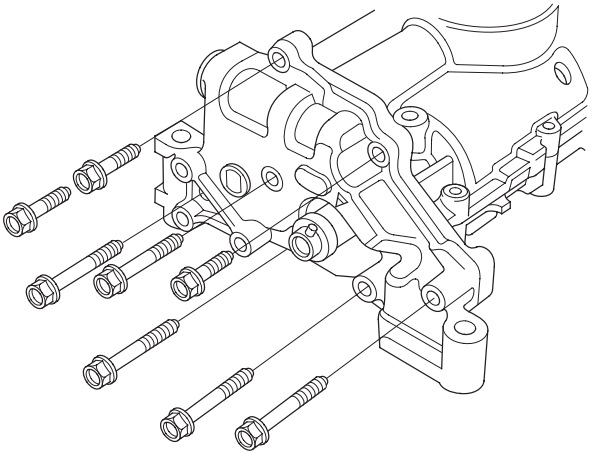
5. Loosen the oil pump sprocket mounting bolt.

6. Remove the oil pump sprocket (A), then remove the oil pump (B).



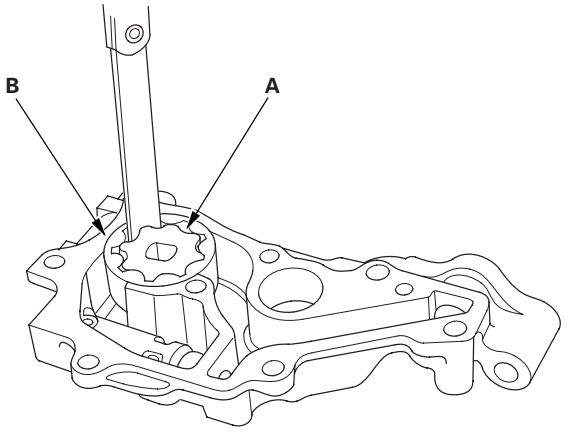
Oil Pump Inspection

1. Remove the pump housing.



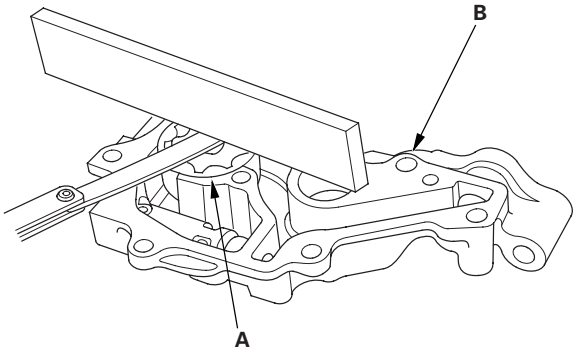
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and the outer rotor (B). If the inner-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

   Inner Rotor-to-Outer Rotor Radial Clearance
   Standard (New): 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.20 mm (0.008 in.)



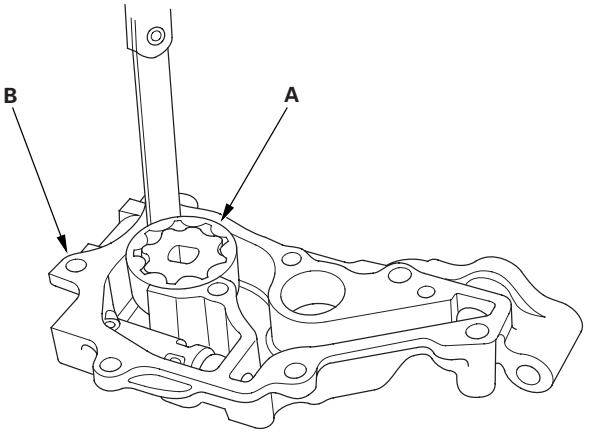
3. Check the pump housing-to-rotor axial clearance between the rotor (A) and the pump housing (B). If the pump housing-to-rotor axial clearance exceeds the service limit, replace the oil pump.

   Pump Housing-to-Rotor Axial Clearance
   Standard (New): 0.035—0.070 mm (0.0014—0.0028 in.)
   Service Limit: 0.12 mm (0.005 in.)



4. Check the pump housing-to-outer rotor radial clearance between the outer rotor (A) and the pump housing (B). If the pump housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump.

   Pump Housing-to-Outer Rotor Radial Clearance
   Standard (New): 0.15—0.21 mm (0.006—0.008 in.)
   Service Limit: 0.23 mm (0.009 in.)



5. Inspect both rotors and the pump housing for scoring or other damage. Replace parts if necessary.

(cont'd)

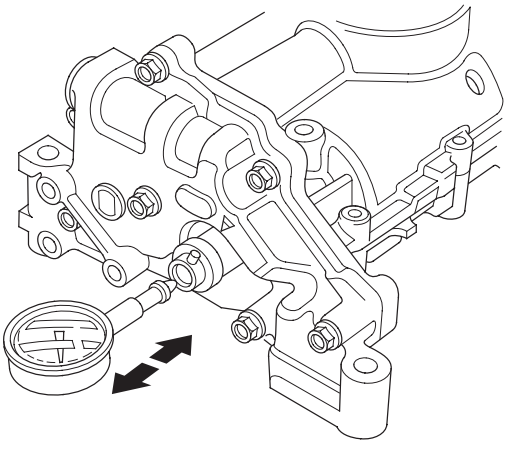
Oil Pump Overhaul (cont'd)

Balancer Shaft Inspection

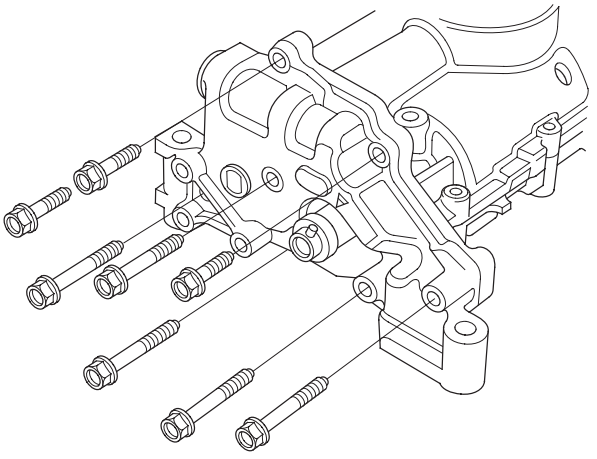
1. Seat the balancer shaft by pushing it away from the oil pump sprocket end of the oil pump.

2. Zero the dial indicator against the end of the balancer shaft, then push the balancer shaft back and forth and read the end play.

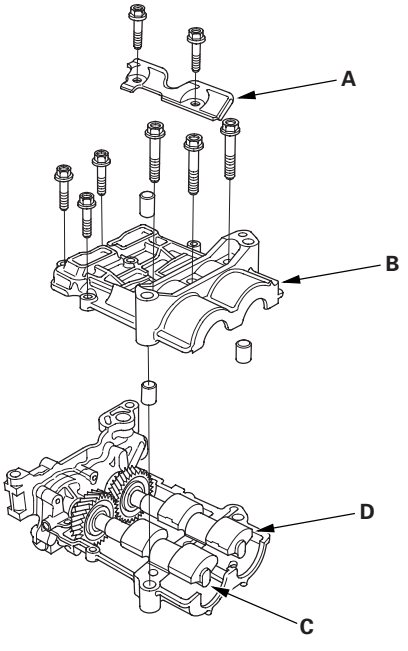
Balancer Shaft End Play
Front Balancer Shaft:
Standard (New): 0.063—0.108 mm (0.0025—0.0043 in.)
Service Limit: 0.14 mm (0.0055 in.)
Rear Balancer Shaft:
Standard (New): 0.063—0.108 mm (0.0025—0.0043 in.)
Service Limit: 0.14 mm (0.0055 in.)



3. Remove the pump housing.



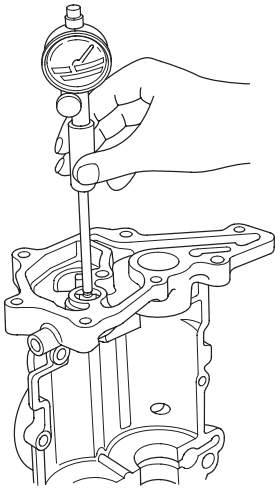
4. Remove the baffle plate (A) and the upper balancer shaft holder (with bearings) (B), then remove the front balancer shaft (C) and the rear balancer shaft (D).



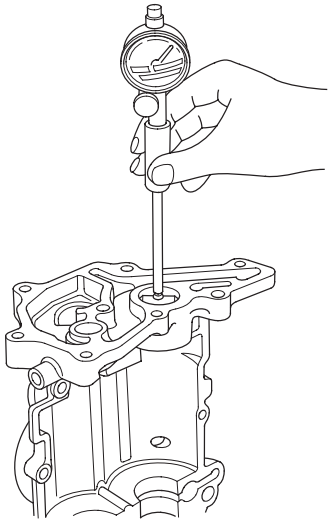
5. Measure the inner diameter of the No. 1 bearing for the front balancer shaft hole and the rear balancer shaft hole.

Bearing Inner Diameter
Front:
Standard (New): 20.000—20.020 mm (0.7874—0.7882 in.)
Service Limit: 20.03 mm (0.789 in.)
Rear:
Standard (New): 24.000—24.020 mm (0.9449—0.9457 in.)
Service Limit: 24.03 mm (0.946 in.)

Front



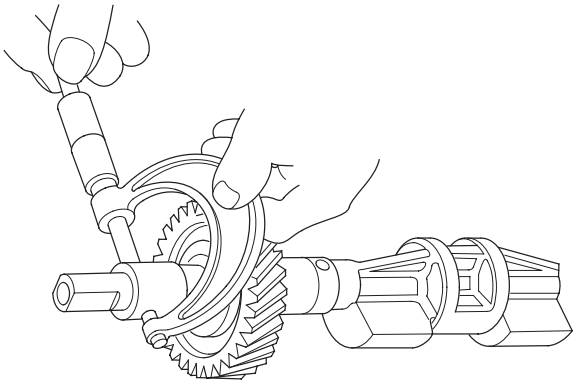
Rear



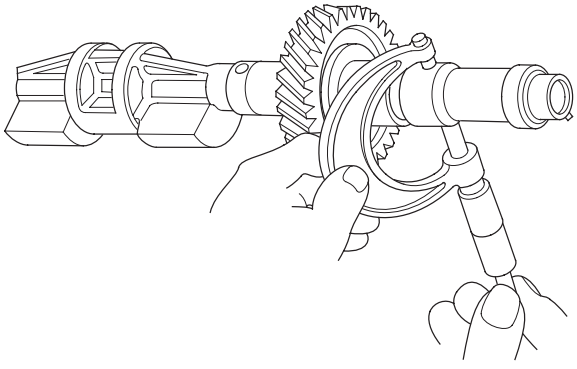
6. Measure the diameters of the No. 1 journals on the front balancer shaft and the rear balancer shaft.

Journal Diameter
Front:
Standard (New): 19.938—19.950 mm (0.7850—0.7854 in.)
Service Limit: 19.92 mm (0.784 in.)
Rear:
Standard (New): 23.938—23.950 mm (0.9424—0.9429 in.)
Service Limit: 23.92 mm (0.942 in.)

Front



Rear



(cont'd)

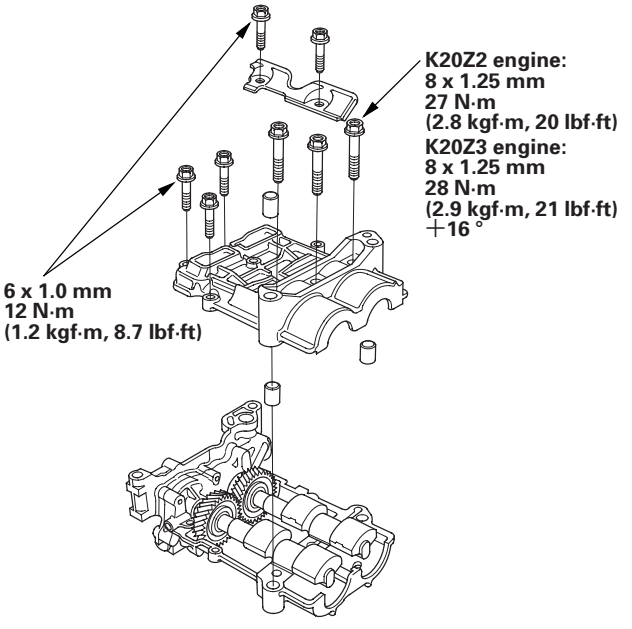
Oil Pump Overhaul (cont'd)

7. Clean both balancer shaft No. 2 journals and the bearing halves with a clean shop towel, then install the balancer shafts into the lower balancer shaft holder.

8. Place one strip of plastigage across each No. 2 journal.

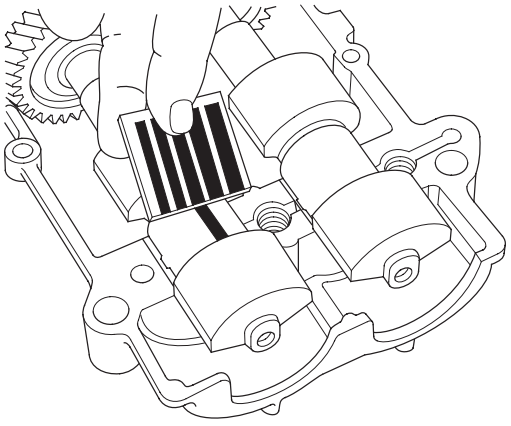
9. Reinstall the bearings and the upper balancer shaft holder, then tighten the bolts.

   NOTE:
   - Do not rotate the balancer shafts during inspection.
   - After torquing, tighten the three 8 mm bolts extra 16 ° (K20Z3 engine).

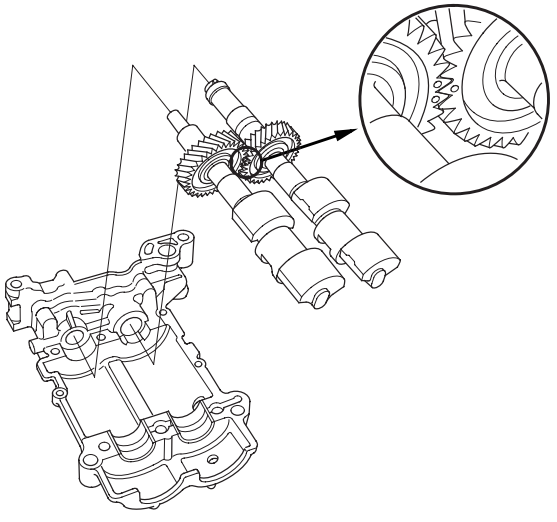


10. Remove the upper balancer shaft holder and the bearings again, and measure the widest part with the plastigage. If the balancer shaft No. 2 journal oil clearance is out-of-tolerance, install new bearings, and recheck. If it is still out-of-tolerance, replace the balancer shafts.

No. 2 Journal Oil Clearance
Standard (New): 0.060—0.120 mm (0.0024—0.0047 in.)
Service Limit: 0.15 mm (0.006 in.)

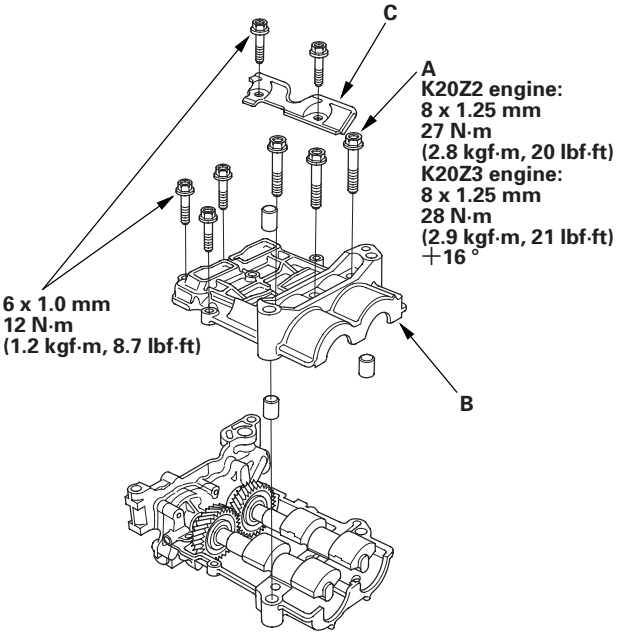


11. Align the punch mark on the rear balancer shaft in the center of the two punch marks on the front balancer shaft, then install the balancer shafts on the lower balancer shaft holder.



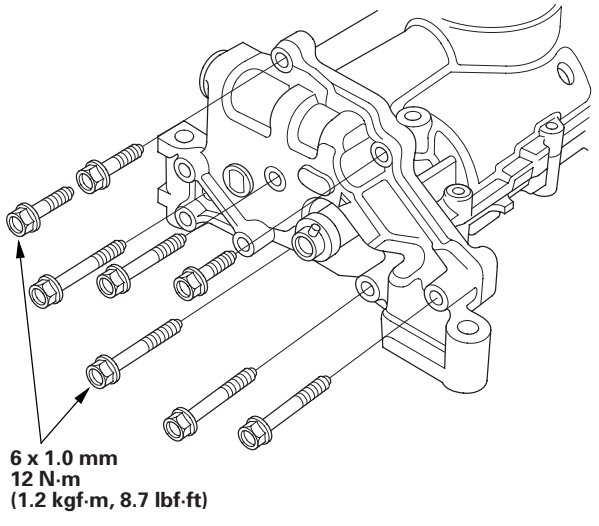
12. Apply new engine oil to the threads of the 8 mm bolts (A).

    NOTE: After torquing, tighten the three 8 mm bolts extra 16 ° (K20Z3 engine).



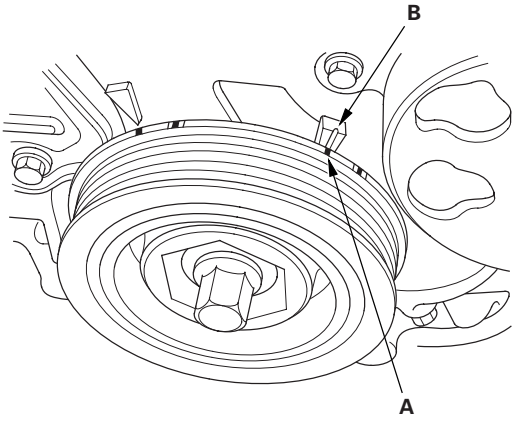
13. Install the upper balancer shaft holder (B) and the baffle plate (C).

14. Install the pump housing.

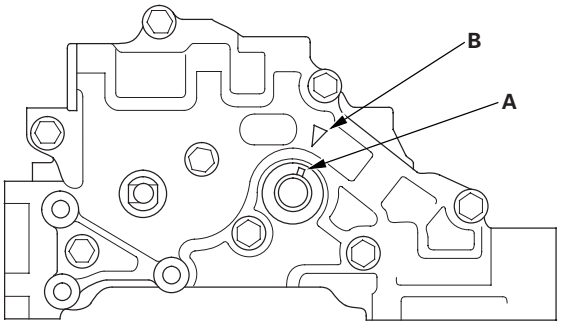


Oil Pump Installation

1. Make sure the No. 1 piston top dead center (TDC) mark (A) lines up with the pointer (B).



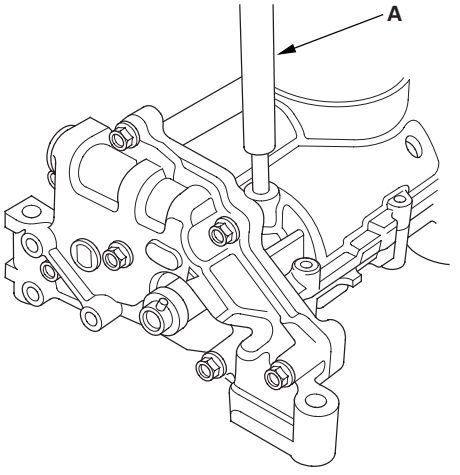
2. Align the dowel pin (A) on the rear balancer shaft with the mark (B) on the oil pump.



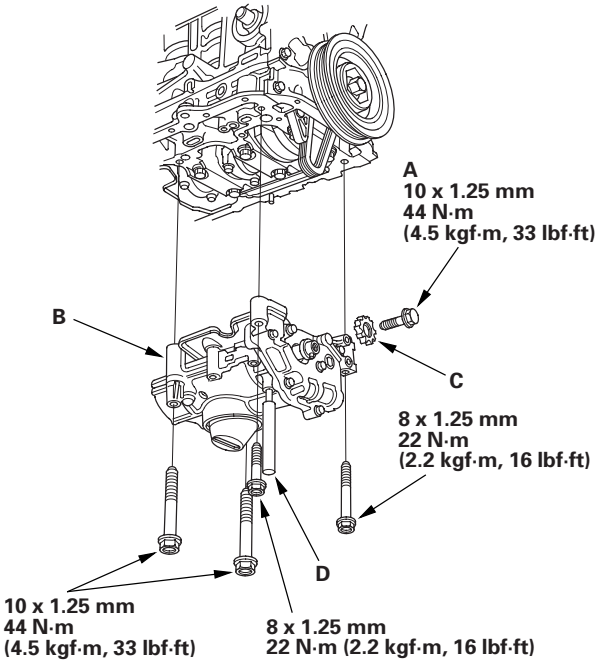
(cont'd)

Oil Pump Overhaul (cont'd)

3. To hold the rear balancer shaft, insert a 6 mm long pin punch (Snap-on PPC108LA or equivalent) (A) into the maintenance hole in the lower balancer shaft holder and through the rear balancer shaft.



4. Apply new engine oil to the threads of the oil pump sprocket mounting bolt (A).



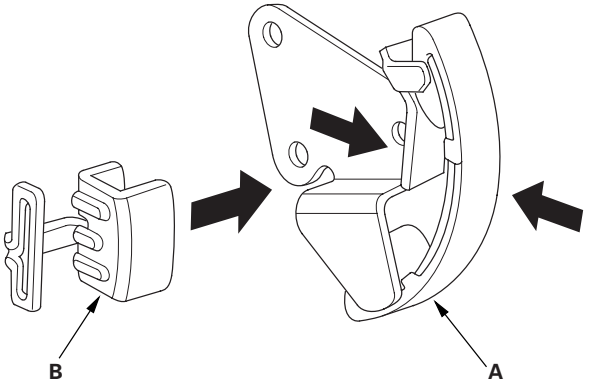
5. Loosely install the oil pump (B), then install the oil pump sprocket (C).

6. Tighten the oil pump mounting bolts and the oil pump sprocket mounting bolt.

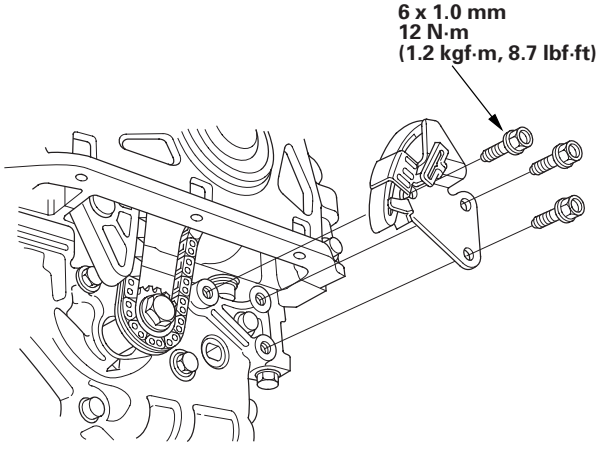
7. Remove the 6 mm long pin punch (D).

8. Squeeze the new oil pump chain tensioner (A), then install the set clip (B) on it as shown.

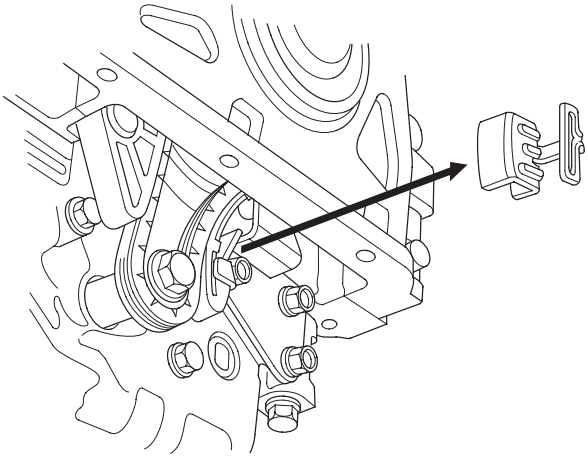
   NOTE: The set clip is supplied with the oil pump chain tensioner.



9. Install the new oil pump chain tensioner.



10. Remove the set clip from the oil pump chain tensioner.



11. Install the oil pan (see page 7-29).

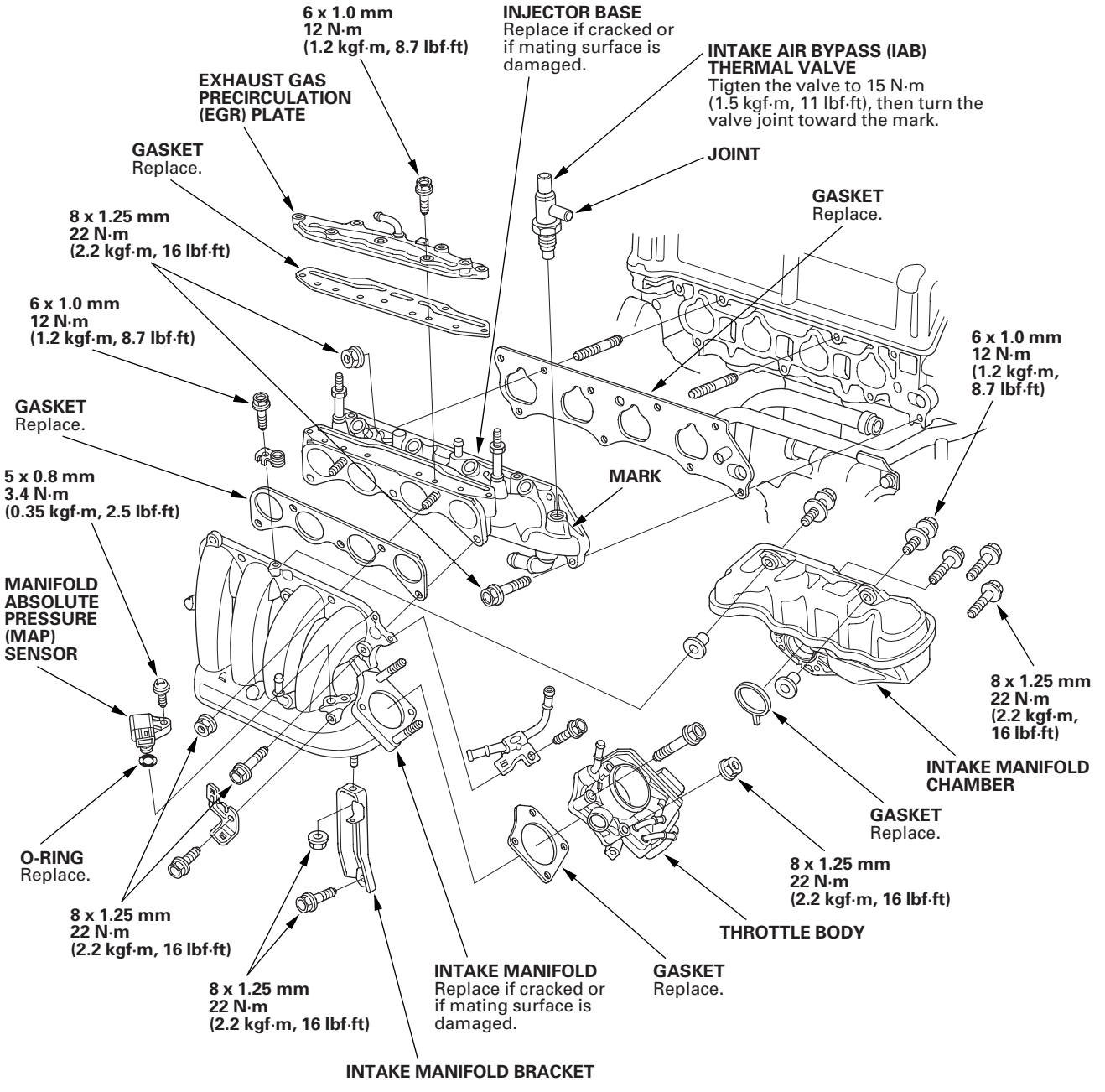
DYNOMITE -2009-

Engine Mechanical

Intake Manifold and Exhaust System

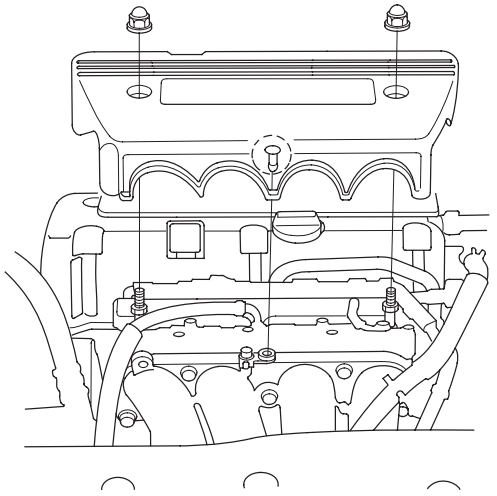
Intake Manifold Removal and Installation

Exploded View - K20Z2 engine

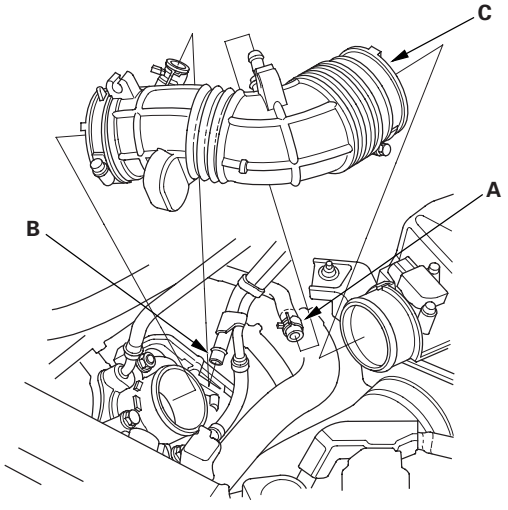


Removal - K20Z2 engine

1. Remove the engine cover.



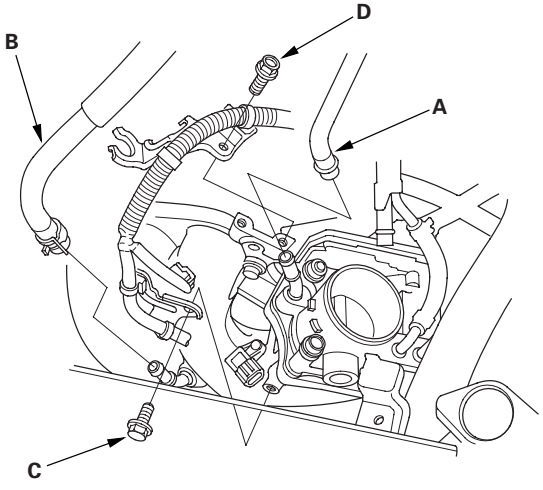
2. Disconnect the vacuum hose (A) and the breather pipe (B), then remove the intake air duct (C).



3. Disconnect the engine wire harness connectors, and remove the wire harness clamps from the intake manifold:

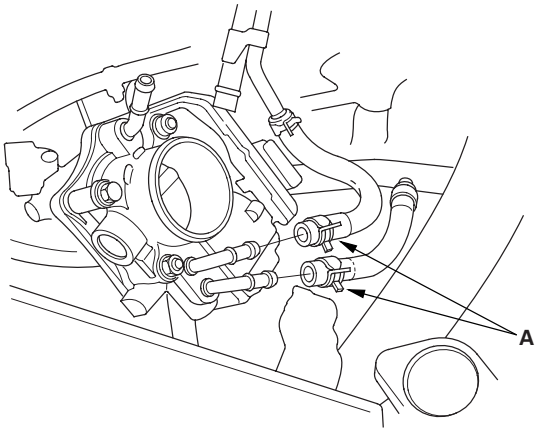
   - Manifold absolute pressure (MAP) sensor connector
   - Throttle actuator connector

4. Disconnect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).



5. Remove the harness bracket mounting bolt (C) and the brake booster vacuum line bracket mounting bolt (D).

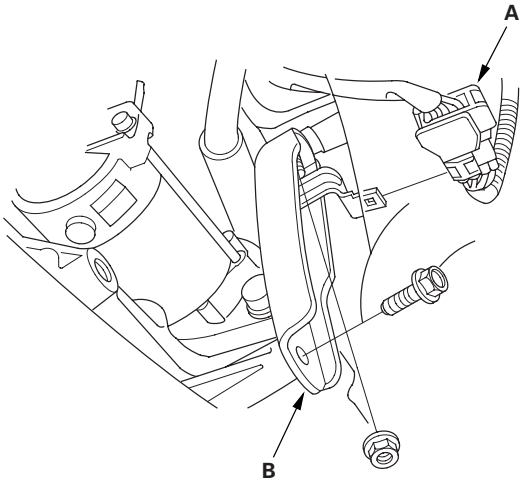
6. Disconnect the water bypass hoses (A), then plug the water bypass hoses.



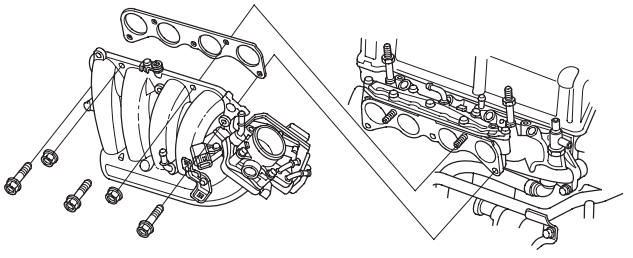
(cont'd)

Intake Manifold Removal and Installation (cont'd)

7. Raise the vehicle on the lift to full height.
8. Remove the splash shield (see step 25 on page 5-5).
9. Remove the connector (A) from the intake manifold bracket (B), then remove the intake manifold bracket.

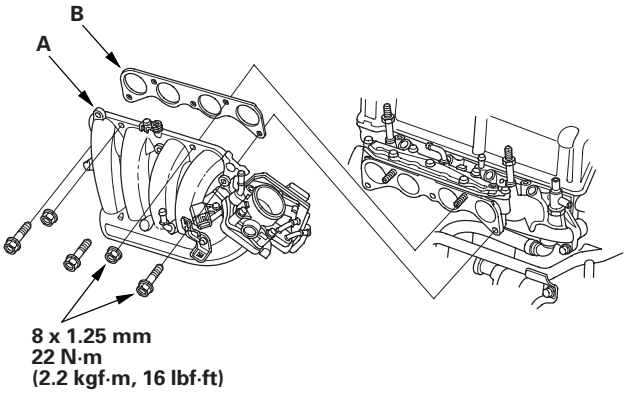


10. Lower the vehicle on the lift.
11. Remove the intake manifold.

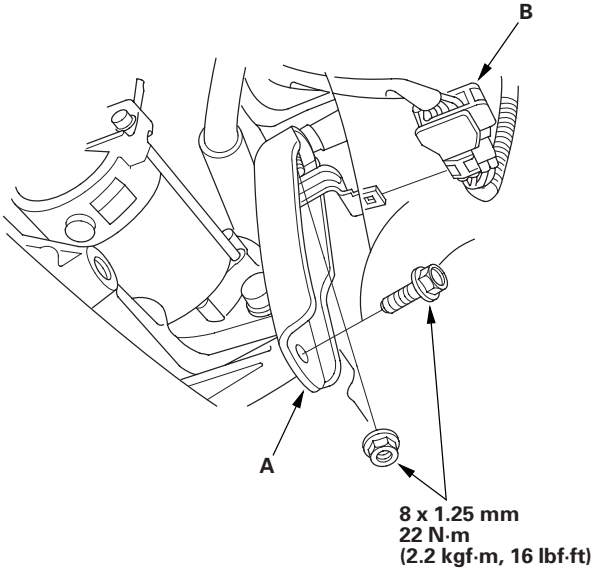


Installation - K20Z2 engine

1. Install the intake manifold (A) with a new gasket (B), and tighten the bolts and the nuts in a crisscross pattern in three steps, beginning with the inner bolt.

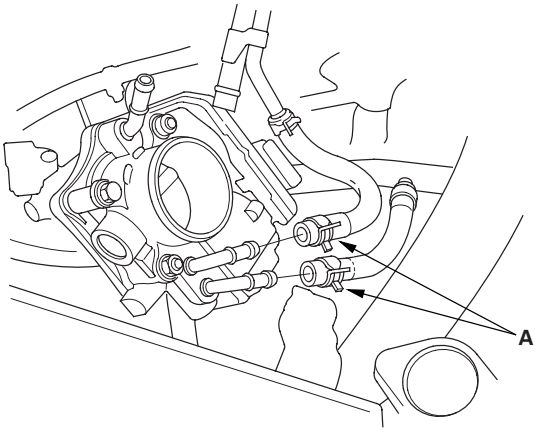


2. Raise the vehicle on the lift.
3. Install the intake manifold bracket (A), then install the connector (B) to the intake manifold bracket.

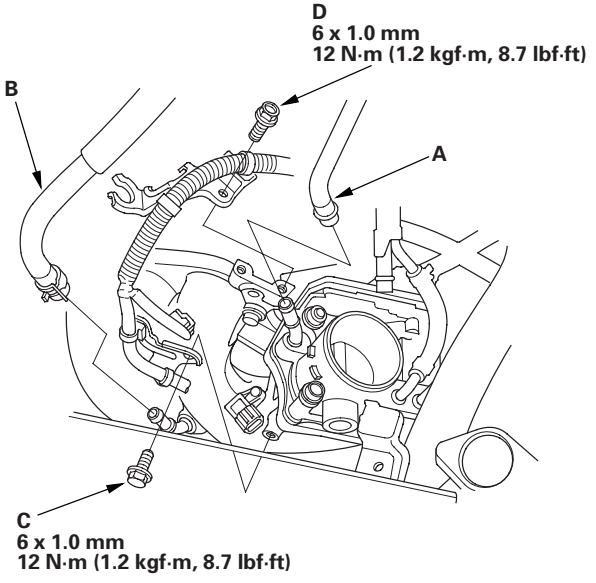


4. Install the splash shield (see step 40 on page 5-20).
5. Lower the vehicle on the lift.

6. Connect the water bypass hoses (A).



7. Connect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).

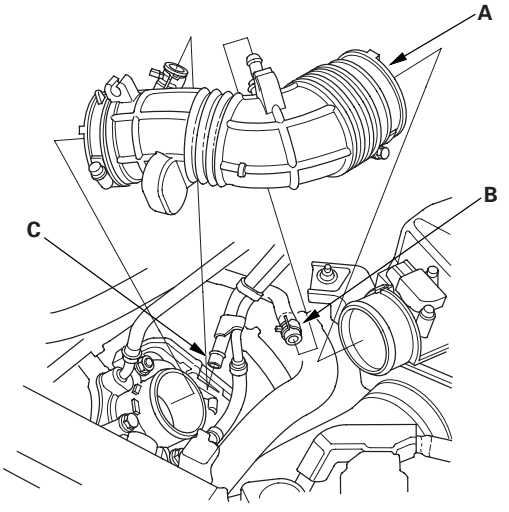


8. Install the harness bracket mounting bolt (C) and the brake booster vacuum line bracket mounting bolt (D).

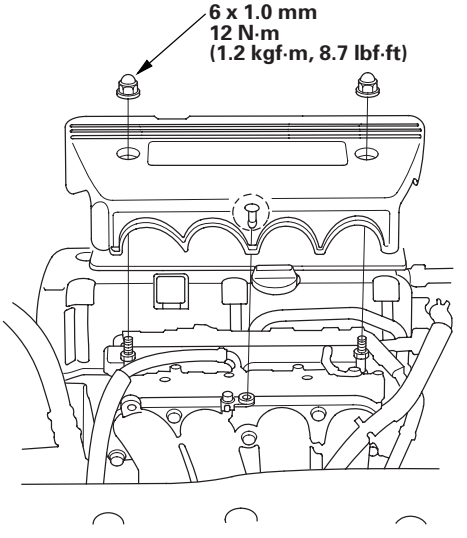
9. Connect the engine wire harness connectors, and install the wire harness clamps to the intake manifold.

   - Manifold absolute pressure (MAP) sensor connector
   - Throttle actuator connector

10. Install the intake air duct (A), then connect the vacuum hose (B) and the breather pipe (C).



11. Install the engine cover.



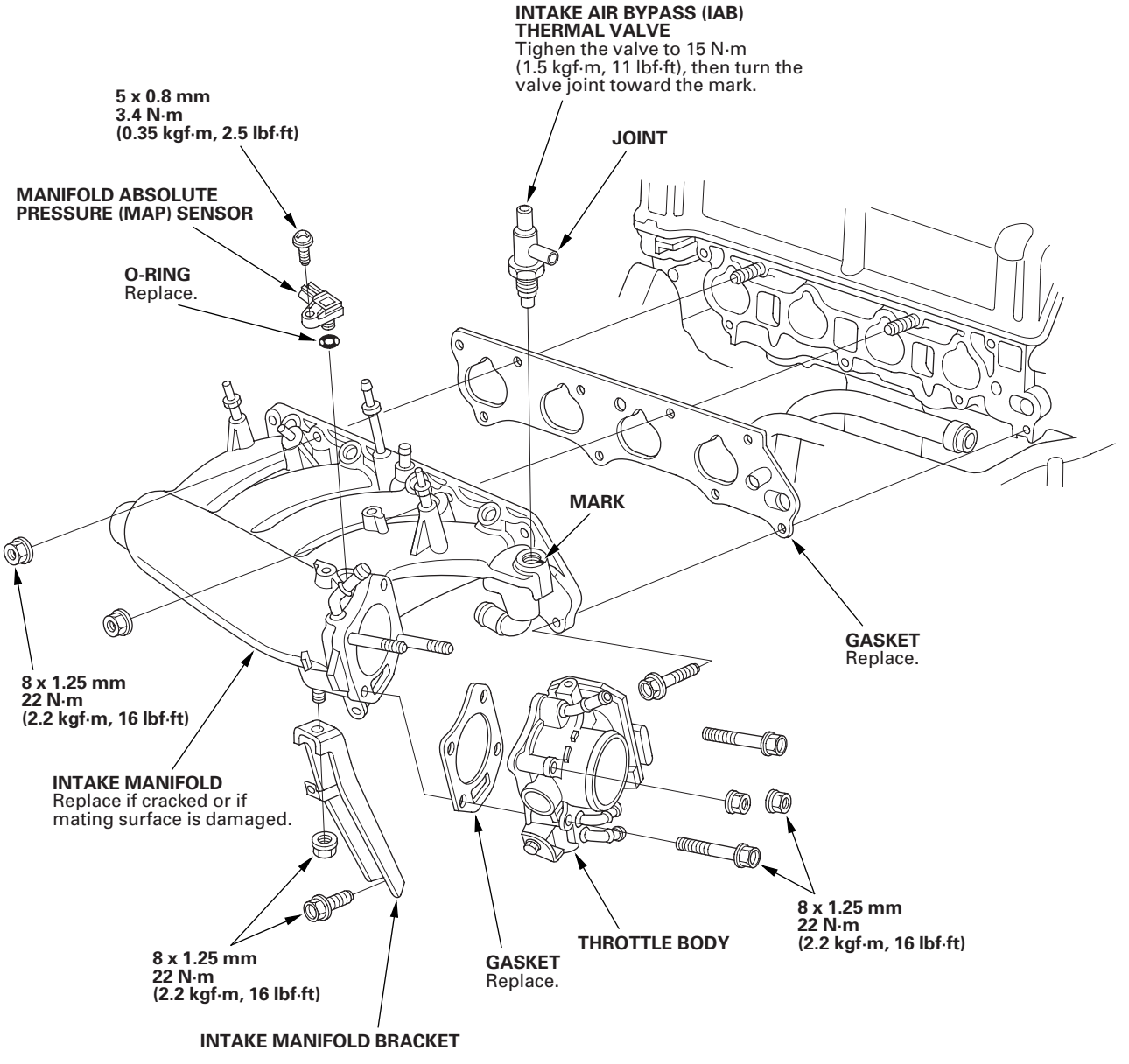
12. After installation, check that all tubes, hoses and connectors are installed correctly.

13. Clean up any spilled engine coolant.

14. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

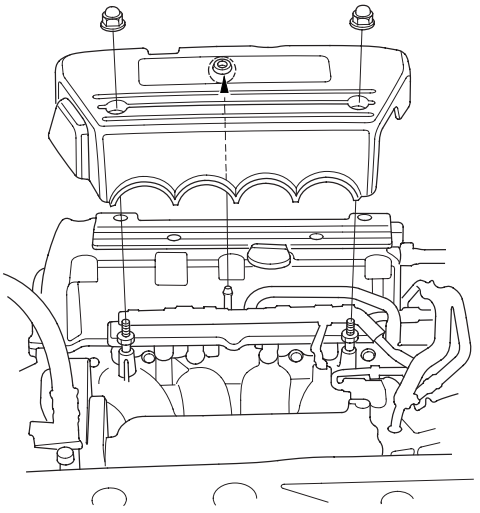
Intake Manifold Removal and Installation (cont'd)

Exploded View - K20Z3 engine



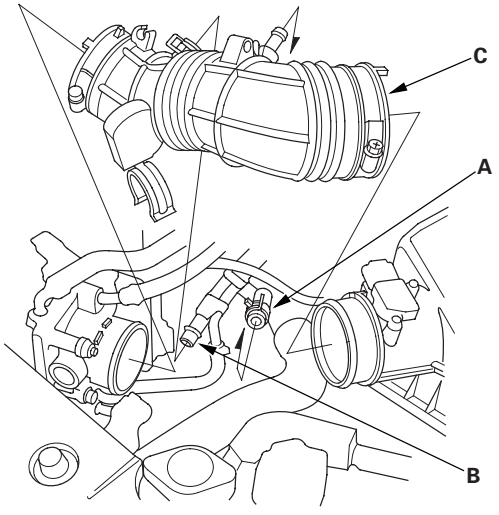
Removal - K20Z3 engine

1. Remove the engine cover.



2. Relieve the fuel pressure (see page 11-322).

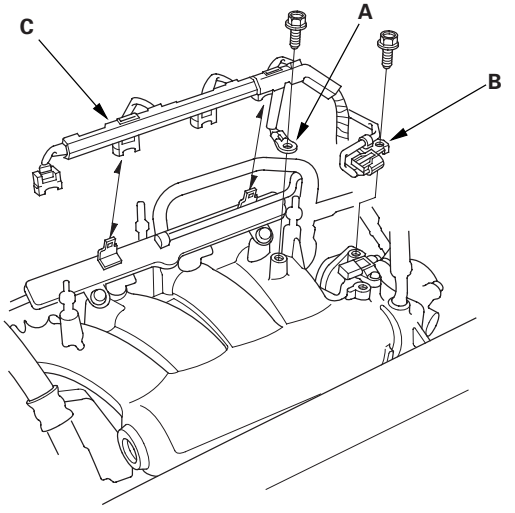
3. Disconnect the vacuum hose (A) and the breather pipe (B), then remove the intake air duct (C).



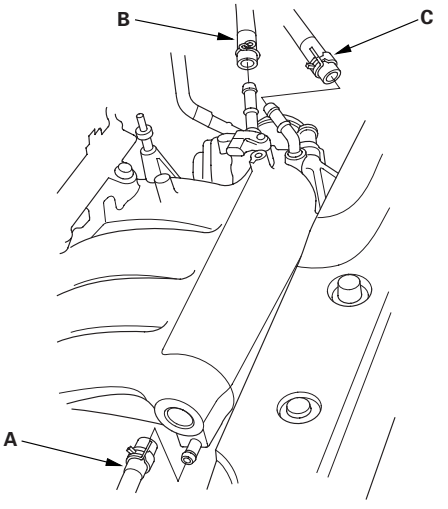
4. Disconnect the following engine wire harness connectors, and remove the wire harness clamps from the intake manifold:

   - Four fuel injector connectors
   - Manifold absolute pressure (MAP) sensor connector
   - Throttle actuator connector

5. Remove the ground cable (A) and the harness clamp bracket (B), then remove the harness holder (C) from the bracket.



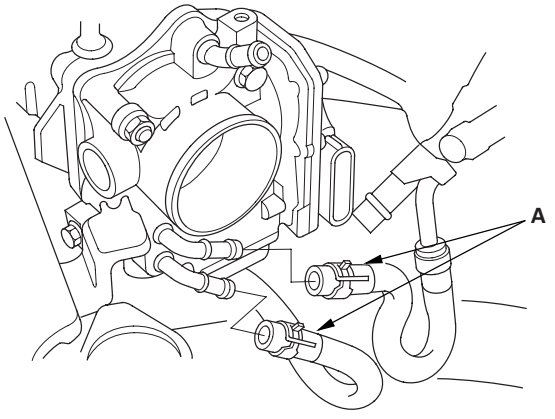
6. Disconnect the positive crankcase ventilation (PCV) hose (A), the evaporative emission (EVAP) canister hose (B) and the brake booster vacuum hose (C).



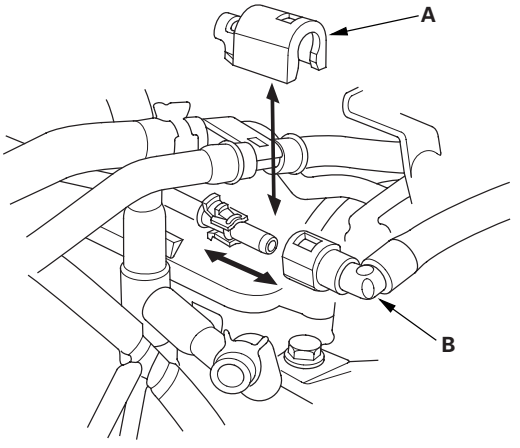
(cont'd)

Intake Manifold Removal and Installation (cont'd)

7. Disconnect the water bypass hoses (A), then plug the water bypass hoses.



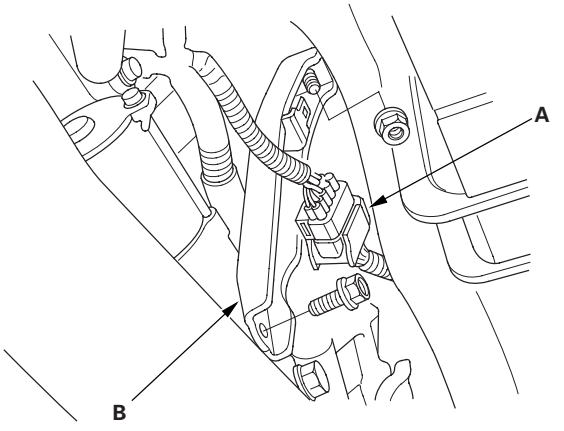
8. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-329).



9. Raise the vehicle on the lift.

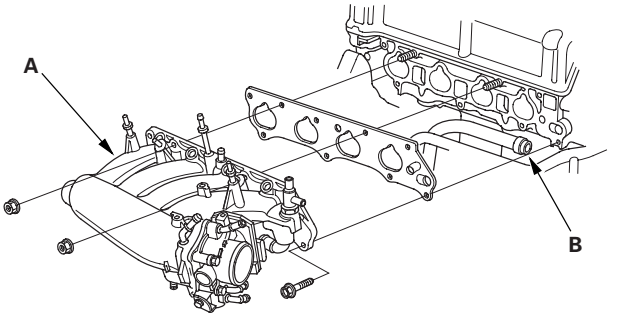
10. Remove the splash shield (see step 25 on page 5-5).

11. Remove the connector (A) from the intake manifold bracket (B), then remove the intake manifold bracket.



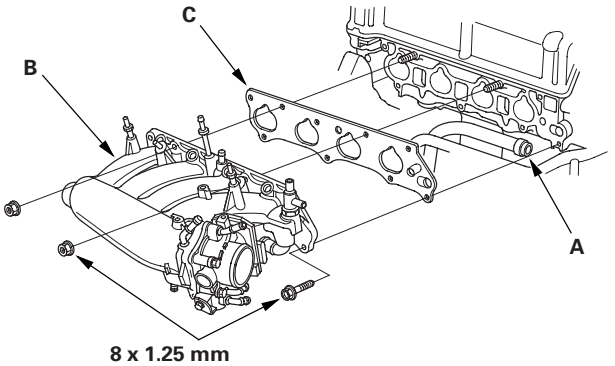
12. Lower the vehicle on the lift.

13. Remove the intake manifold (A) from the cylinder head, then disconnect the water bypass hose (B).



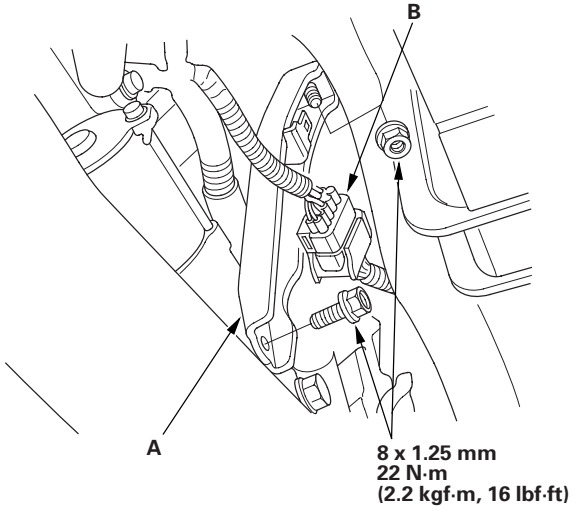
Installation - K20Z3 engine

1. Connect the water bypass hose (A) to the intake manifold (B), then install the intake manifold with a new gasket (C), and tighten the bolts and the nuts in a crisscross pattern in three steps, beginning with the inner bolt.



2. Raise the vehicle on the lift.

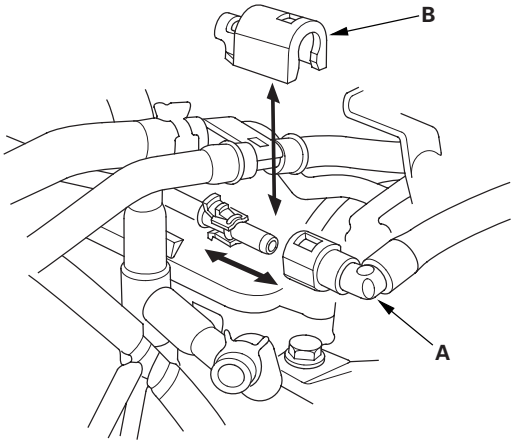
3. Install the intake manifold bracket (A), then install the connector (B) to the intake manifold bracket.



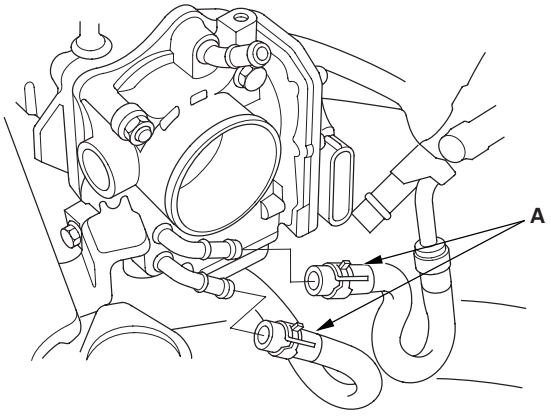
4. Install the splash shield (see step 40 on page 5-20).

5. Lower the vehicle on the lift.

6. Connect the fuel feed hose (A) (see page 11-331), then install the quick-connect fitting cover (B).



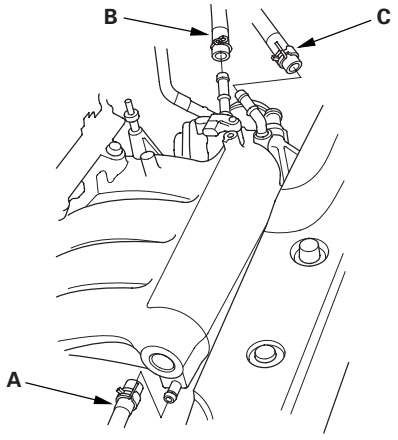
7. Connect the water bypass hoses (A).



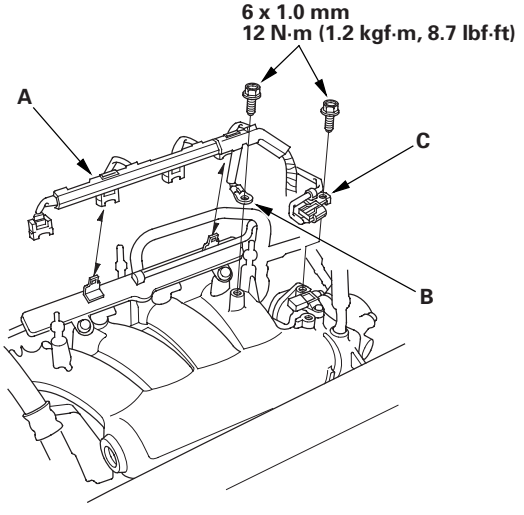
(cont'd)

Intake Manifold Removal and Installation (cont'd)

8. Connect the positive crankcase ventilation (PCV) hose (A), the evaporative emission (EVAP) canister hose (B) and the brake booster vacuum hose (C).



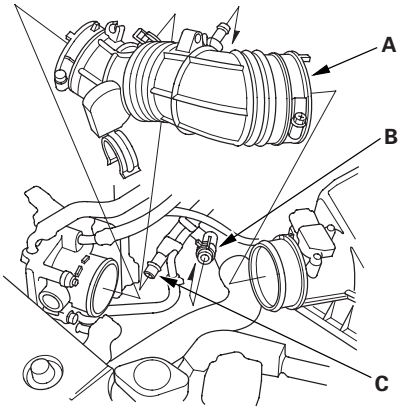
9. Install the harness holder (A) to the bracket, then install the ground cable (B) and the harness clamp bracket (C).



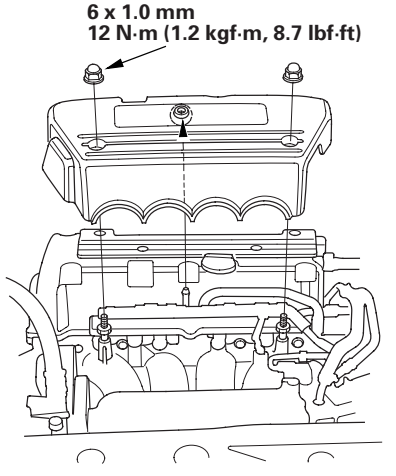
10. Connect the engine wire harness connectors, and install the wire harness clamps to the intake manifold:

    - Four fuel injector connectors
    - Manifold absolute pressure (MAP) sensor connector
    - Throttle actuator connector

11. Install the intake air duct (A), then connect the vacuum hose (B) and breather pipe (C).



12. Install the engine cover.



13. Inspect for fuel leaks. Turn the ignition switch to ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.

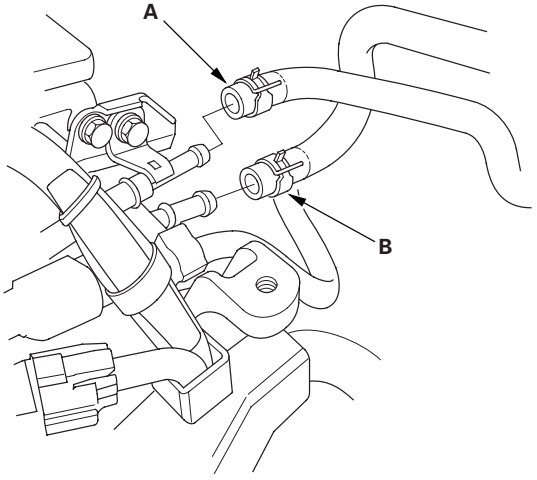
14. Clean up any spilled engine coolant.

15. After installation, check that all tubes, hoses and connectors are installed correctly.

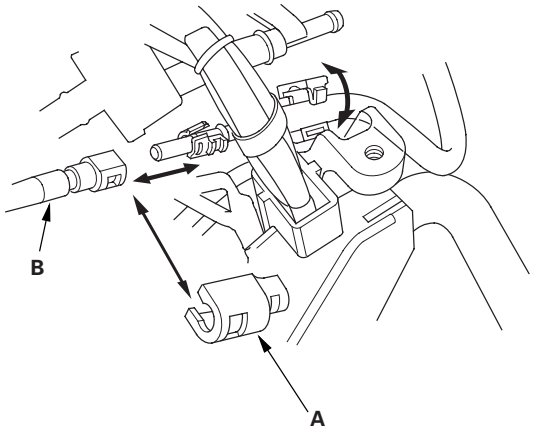
16. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

Exhaust Manifold Removal and Installation

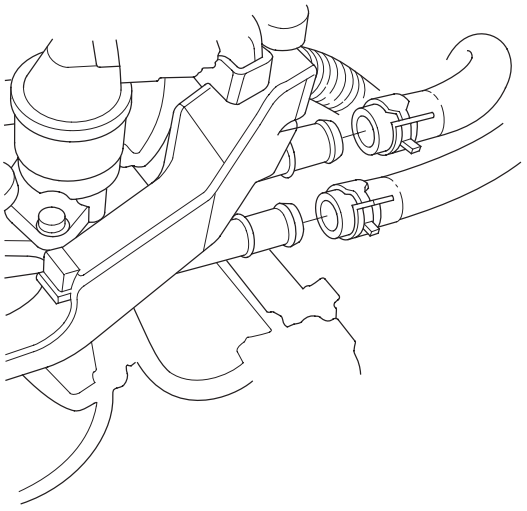
1. Relieve the fuel pressure (see page 11-322).
2. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-8).
3. Remove the under-cowl panel (see step 4 on page 20-164).
4. Disconnect the evaporative emission (EVAP) canister hose (A) and the brake booster vacuum hose (B).



5. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (B) (see page 11-329).



6. Disconnect the heater hoses.

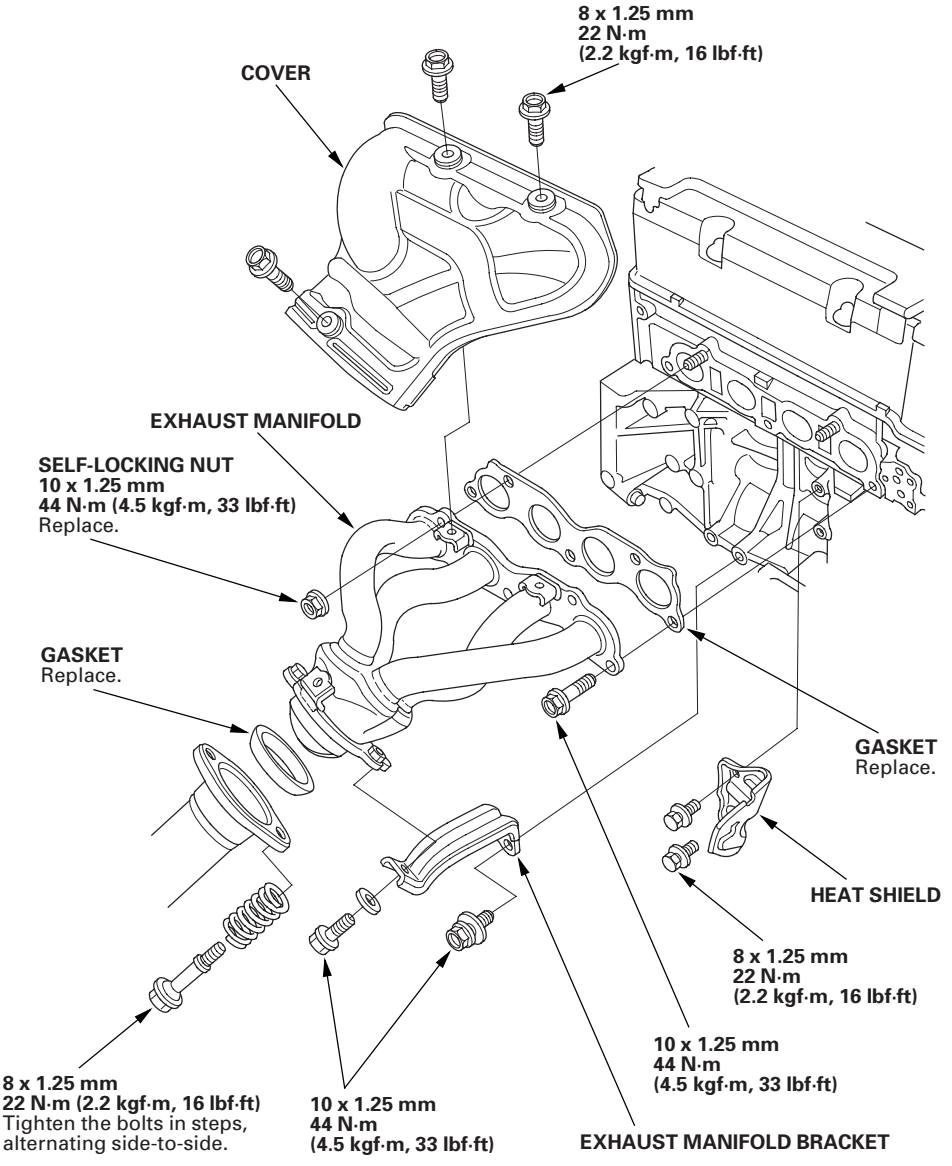


7. Remove the rocker arm oil control valve (see page 11-296).
8. Remove the intermediate shaft heat shield (see step 3 on page 16-23).

(cont'd)

Exhaust Manifold Removal and Installation (cont'd)

9. Remove the cover and the exhaust manifold bracket, then remove the exhaust manifold.



10. Install the exhaust manifold, and tighten the bolts and nuts in a crisscross pattern in three steps, beginning with the inner bolt.

11. Install the other parts in the reverse order of removal.

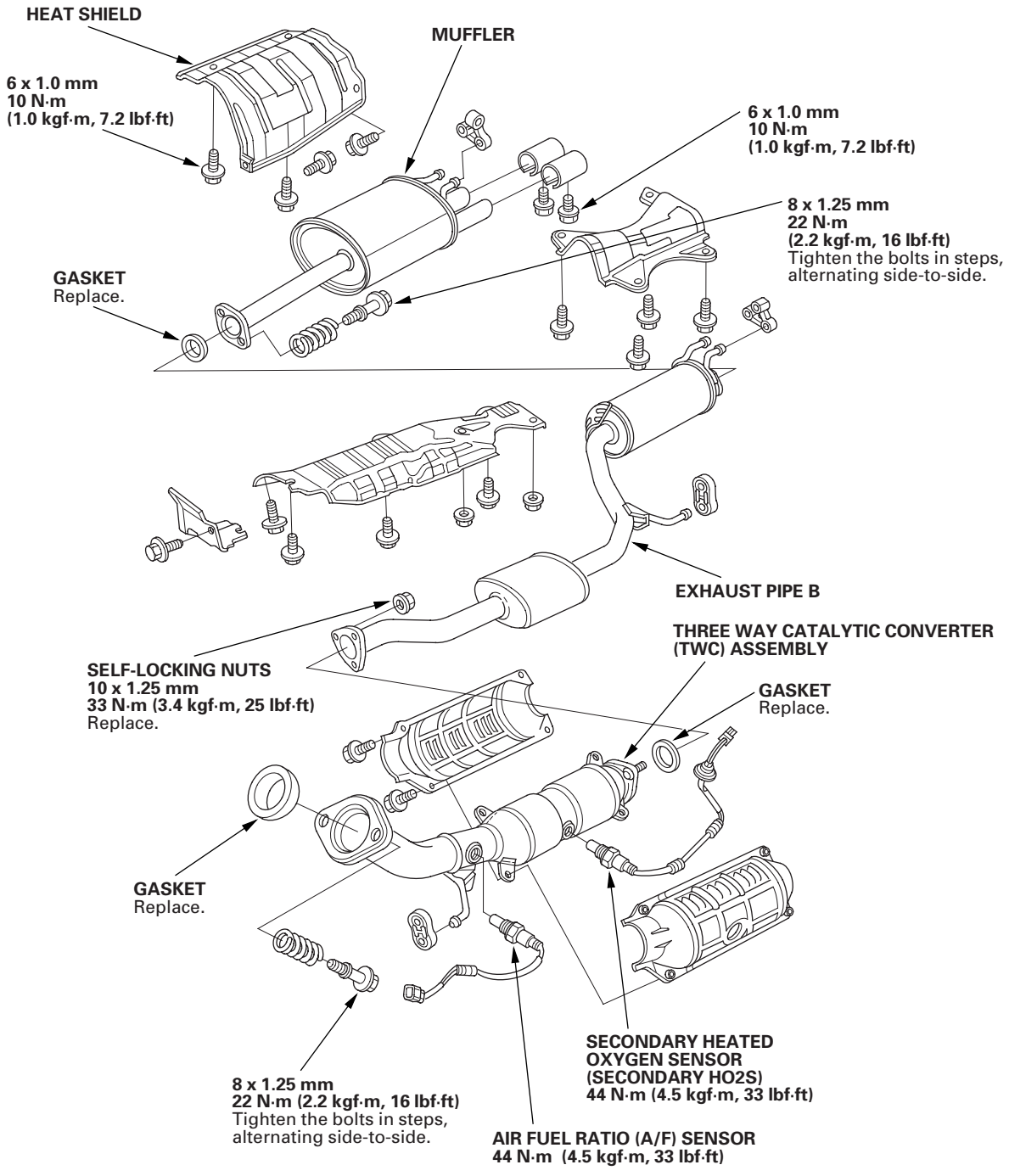
12. Inspect for leaks. Turn the ignition switch to ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation three times, then check for fuel leakage at any point in the fuel line.

13. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

Exhaust Pipe and Muffler Replacement

K20Z2 engine

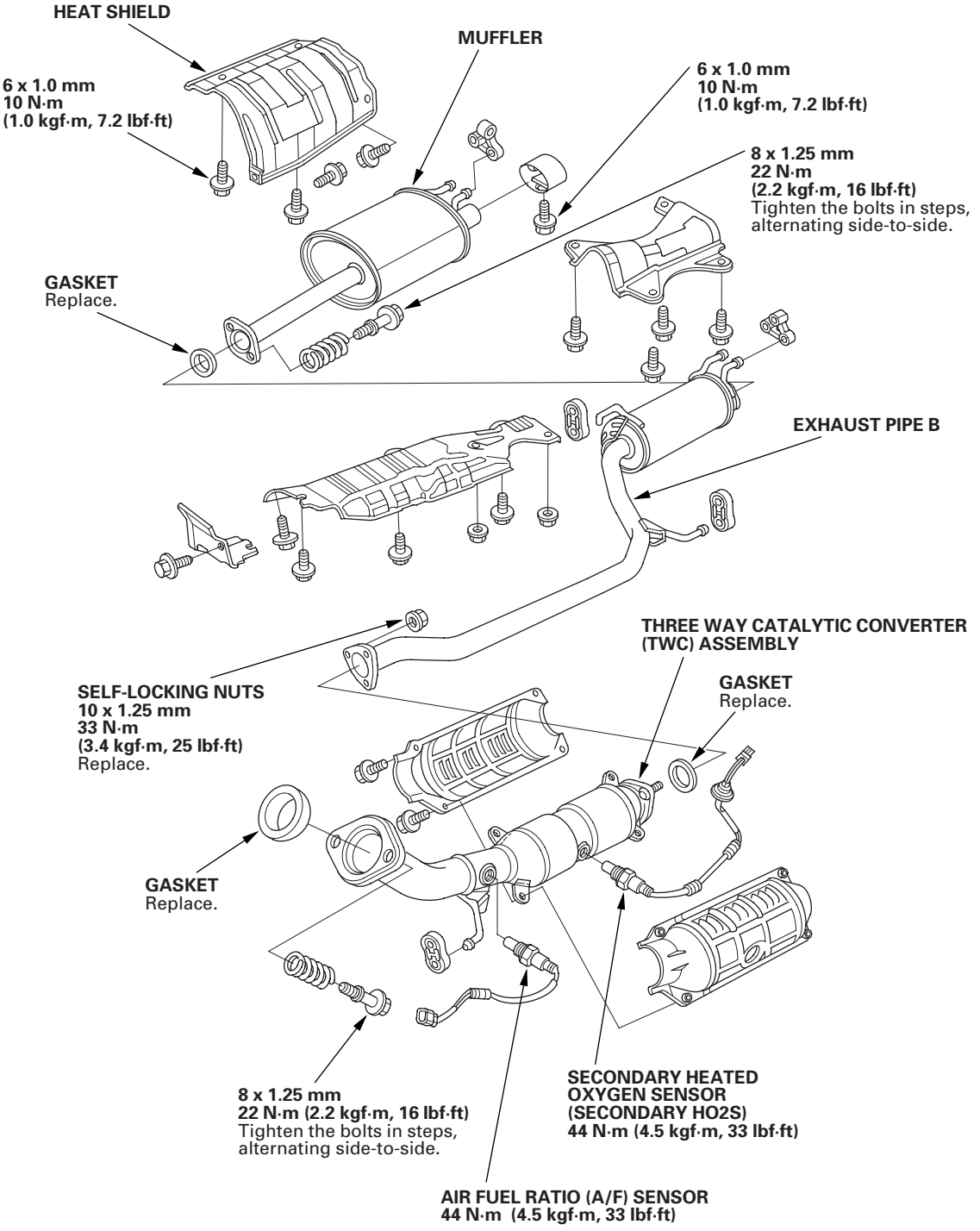
NOTE: Use new gaskets and self-locking nuts when reassembling.



Exhaust Pipe and Muffler Replacement (cont'd)

K20Z3 engine

NOTE: Use new gaskets and self-locking nuts when reassembling.



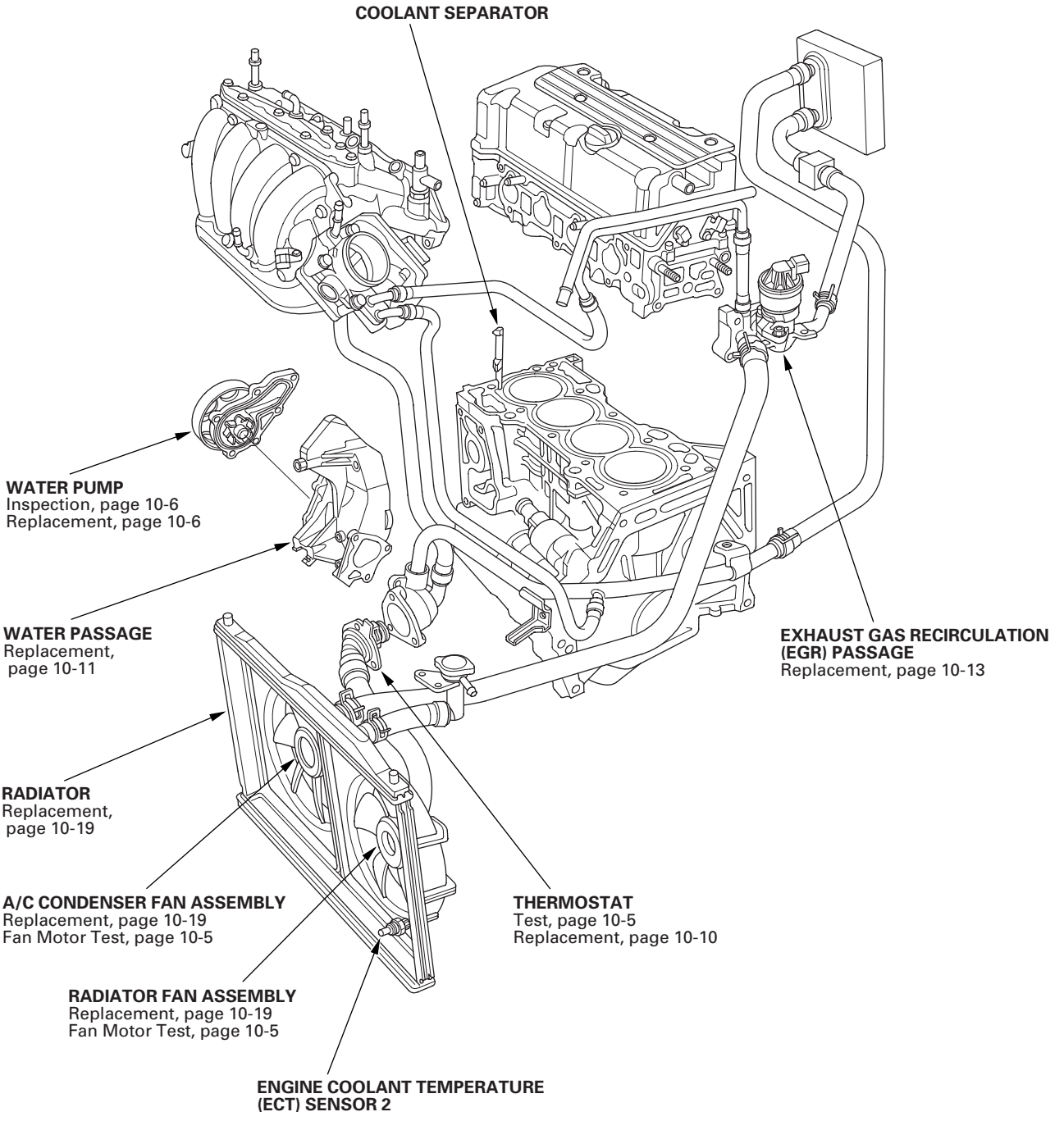
Engine Cooling

Cooling System

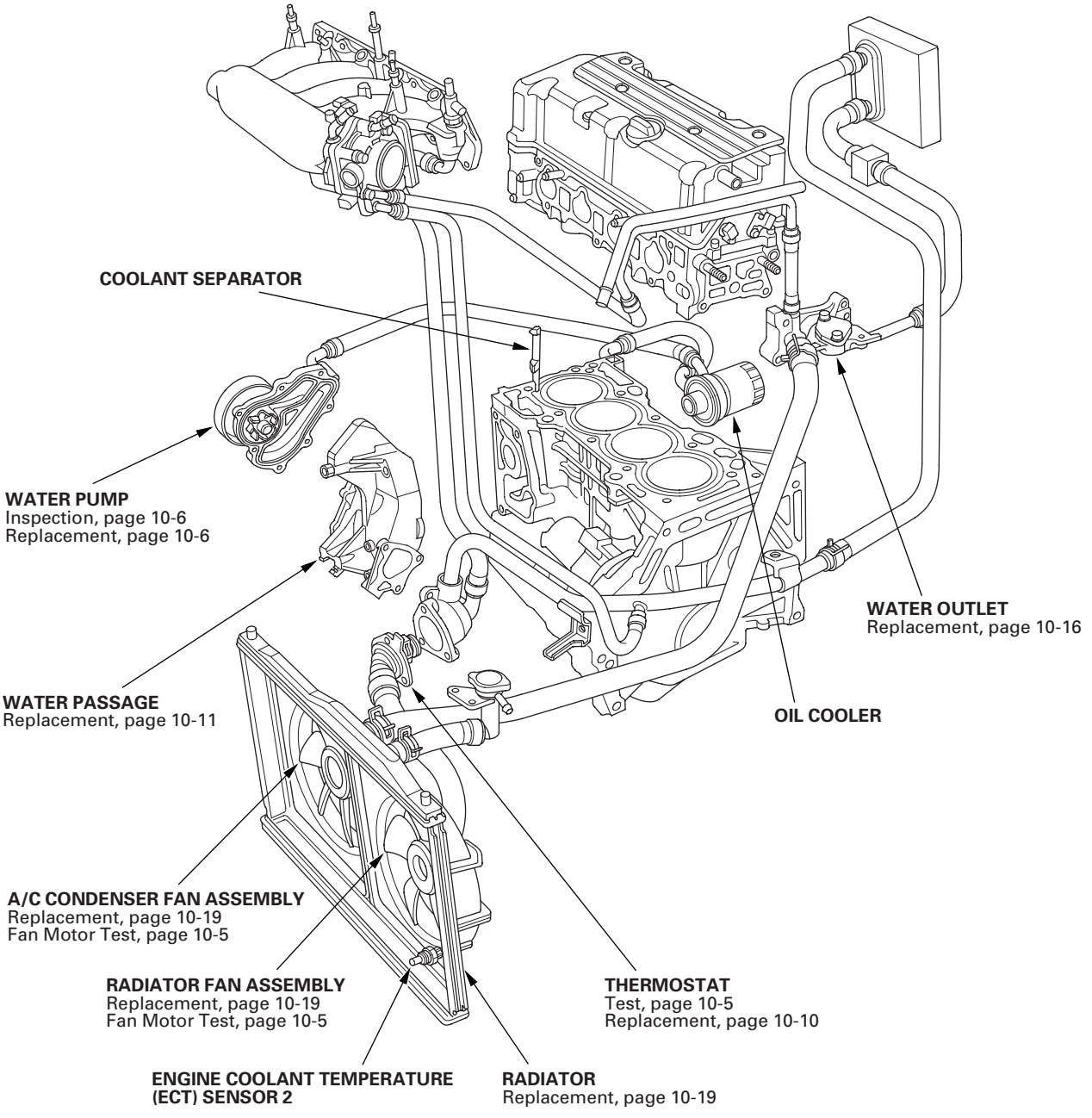
Fan Controls

Component Location Index

K20Z2 engine

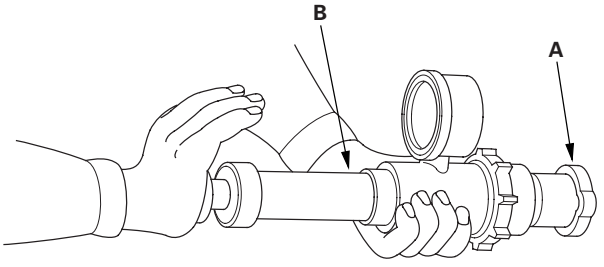


K20Z3 engine



Radiator Cap Test

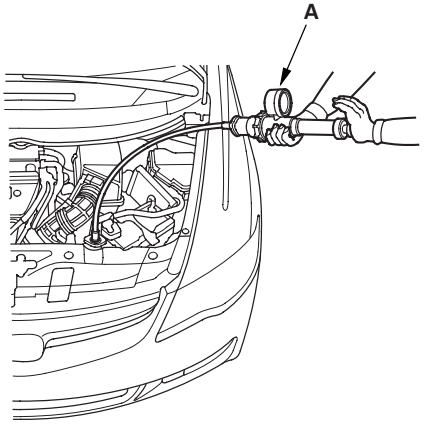
1. Wait until the engine is cool, then carefully remove the radiator cap (A). Wet the radiator cap seal with engine coolant, then install it on a commercially available pressure tester (B).



2. Apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm^2, 14—18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

Radiator Test

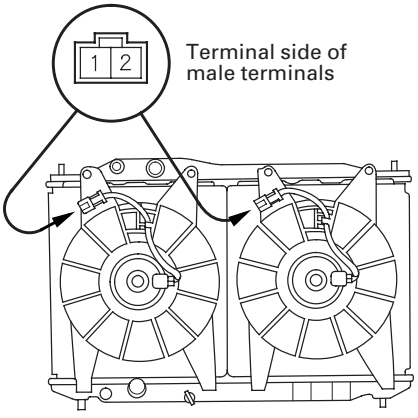
1. Wait until the engine is cool, then carefully remove the radiator cap and fill the radiator with engine coolant to the base of the filler neck.
2. Attach a commercially available pressure tester (A) to the radiator, and apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm^2, 14—18 psi).



3. Inspect for engine coolant leaks and a drop in pressure.
4. Check for engine oil in the coolant and/or coolant in the engine oil.
5. Remove the tester, and reinstall the radiator cap.

Fan Motor Test

1. Disconnect the 2P connectors from the radiator fan motor and the A/C condenser fan motor.



2. Test the motor by connecting battery power to terminal No. 2 and ground to terminal No. 1.

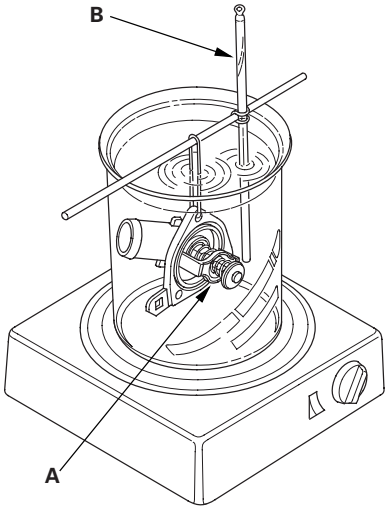
3. If the motor fails to run or does not run smoothly, replace it (see page 10-19).

Thermostat Test

Replace the thermostat if it is stuck in the open position at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermostat and the thermometer (B) touch the bottom of the hot container.



2. Heat the water, and check the temperature with a thermometer. Check the temperature when the thermostat first opens, then check the temperature again when the thermostat is fully open.

3. Measure the lift height of the thermostat when it is fully open. If it thermostat is not within the specification, replace it.

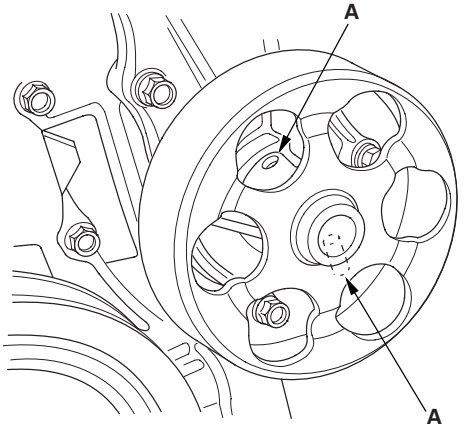
Standard Thermostat

Lift Height:	**Above 8.0 mm (0.31 in.)**
Starts Opening:	**76—80 ℃ (169 —176 ℉)**
Fully Open:	**90 ℃ (194 ℉)**

Water Pump Inspection

1. Remove the drive belt (see page 4-31).
2. Turn the water pump pulley counterclockwise, and check that it turns freely and smoothly. If it does not turn smoothly, replace the water pump (see page 10-6).

   NOTE: When you check the water pump, you may see a small amount of ''weeping'' from the bleed holes (A). This is normal.

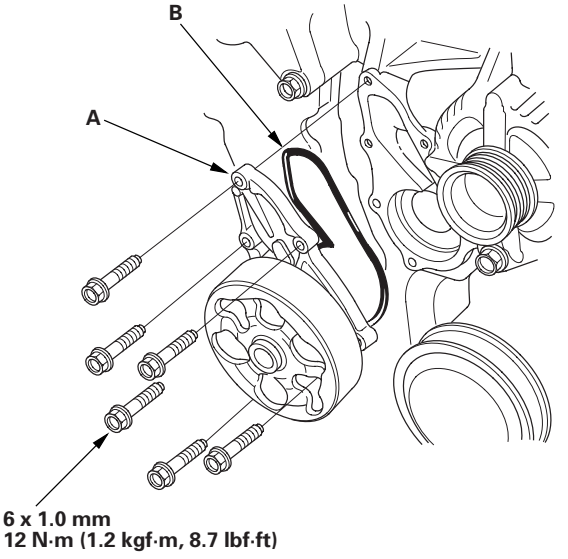


3. Install the drive belt (see page 4-31).

Water Pump Replacement

K20Z2 engine

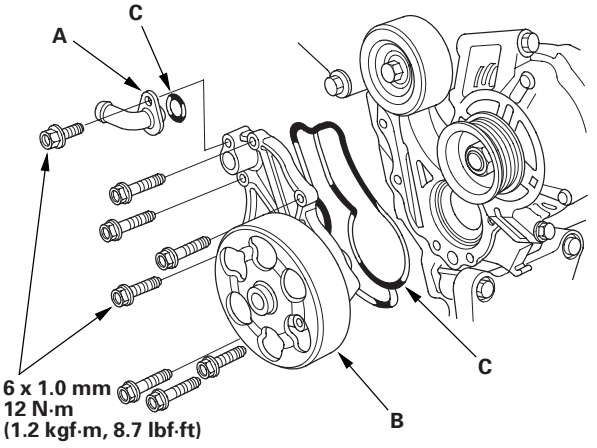
1. Remove the drive belt (see page 4-31).
2. Drain the engine coolant (see page 10-8).
3. Remove the drive belt auto-tensioner pulley (see page 4-33).
4. Remove the crankshaft pulley (see page 6-16).
5. Remove the six bolts securing the water pump, then remove the water pump (A).



6. Inspect, and clean the O-ring groove and mating surface of the water passage.
7. Install the water pump with a new O-ring (B).
8. Clean up any spilled engine coolant.
9. Install the crankshaft pulley (see page 6-17).
10. Install the drive belt auto-tensioner pulley (see page 4-33).
11. Install the drive belt (see page 4-31).
12. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

K20Z3 engine

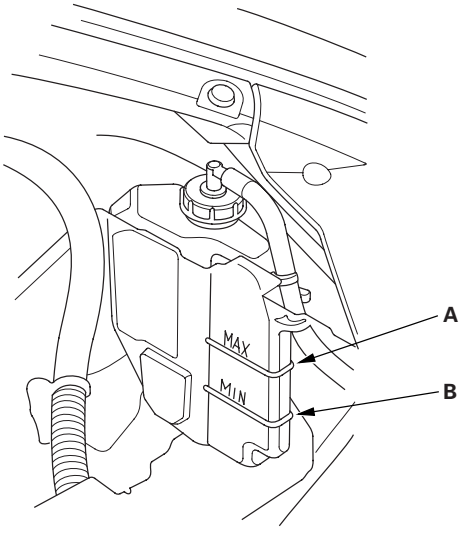
1. Remove the drive belt (see page 4-31).
2. Drain the engine coolant (see page 10-8).
3. Remove the drive belt auto-tensioner pulley (see page 4-33).
4. Remove the crankshaft pulley (see page 6-16).
5. Remove the oil cooler joint pipe (A), then remove the seven bolts securing the water pump. Remove the water pump (B).



6. Inspect, and clean the O-ring groove and mating surface of the water passage.
7. Install the water pump with new O-rings (C) and the oil cooler joint pipe.
8. Clean up any spilled engine coolant.
9. Install the crankshaft pulley (see page 6-17).
10. Install the drive belt auto-tensioner pulley (see page 4-33).
11. Install the drive belt (see page 4-31).
12. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

Coolant Check

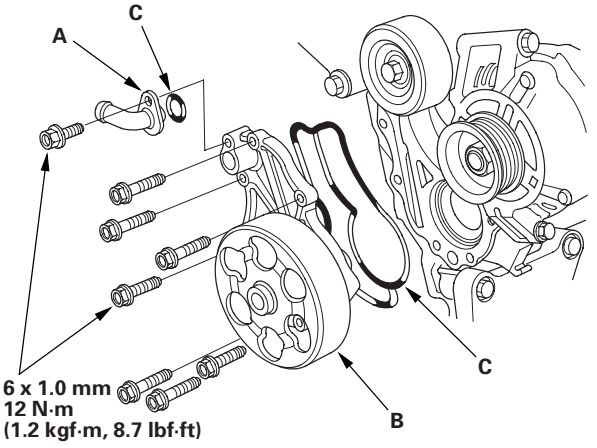
1. Check the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).



2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it up to the MAX mark, then inspect the cooling system for leaks.

K20Z3 engine

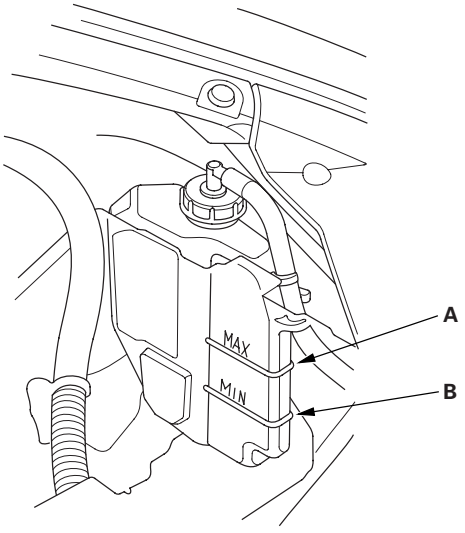
1. Remove the drive belt (see page 4-31).
2. Drain the engine coolant (see page 10-8).
3. Remove the drive belt auto-tensioner pulley (see page 4-33).
4. Remove the crankshaft pulley (see page 6-16).
5. Remove the oil cooler joint pipe (A), then remove the seven bolts securing the water pump. Remove the water pump (B).



6. Inspect, and clean the O-ring groove and mating surface of the water passage.
7. Install the water pump with new O-rings (C) and the oil cooler joint pipe.
8. Clean up any spilled engine coolant.
9. Install the crankshaft pulley (see page 6-17).
10. Install the drive belt auto-tensioner pulley (see page 4-33).
11. Install the drive belt (see page 4-31).
12. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

Coolant Check

1. Check the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).



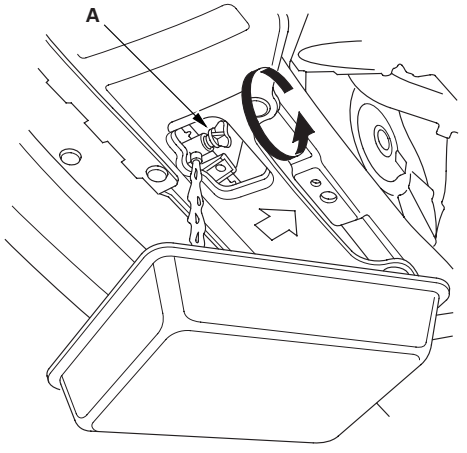
2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it up to the MAX mark, then inspect the cooling system for leaks.

Coolant Replacement

1. Wait until the engine is cool, then carefully remove the radiator cap.

2. Start the engine. Set the heater temperature control dial to maximum heat, then turn the ignition switch to LOCK (0). Make sure the engine and the radiator are cool to the touch.

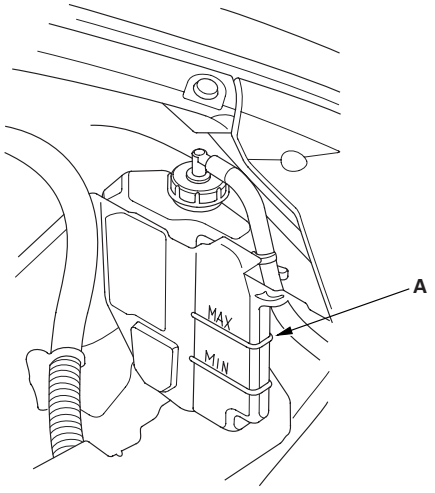
3. Loosen the drain plug (A), and drain the coolant.



4. After the coolant has drained, tighten the radiator drain plug securely.

5. Remove, drain, and reinstall the coolant reservoir.

6. Fill the coolant reservoir to the MAX mark (A) with Honda Long Life Antifreeze/Coolant Type 2 (P/N CA66688).

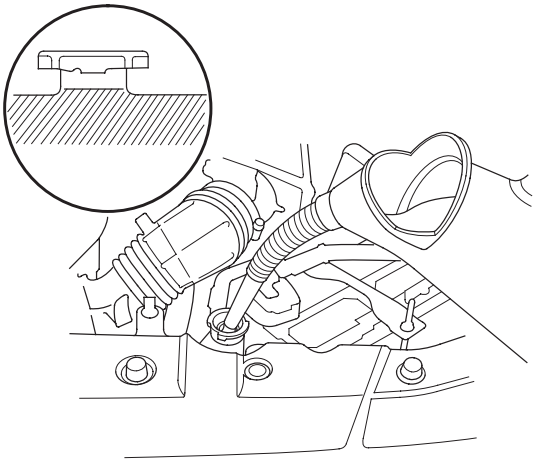


7. Pour Honda Long Life Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

NOTE:
- Always use Honda Long Life Antifreeze/Coolant Type 2. Using a non-Acura coolant can result in corrosion, causing the cooling system to malfunction or fail.
- Honda Long Life Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.

K20Z2 engine
Engine Coolant Capacities (Including the coolant reservoir capacity of 0.4 L (0.11 US gal))
M/T model:
After Coolant Change: 4.3 L (1.14 US gal)
After Engine Overhaul: 6.6 L (1.74 US gal)
A/T model:
After Coolant Change: 4.2 L (1.11 US gal)
After Engine Overhaul: 6.5 L (1.72 US gal)

K20Z3 engine
Engine Coolant Capacities (Including the coolant reservoir capacity of 0.4 L (0.11 US gal))
After Coolant Change: 4.5 L (1.19 US gal)
After Engine Overhaul: 6.8 L (1.80 US gal)



8. Loosely install the radiator cap.

9. Set the heater temperature control dial to maximum heat.

10. Start the engine, and let it run until it warms up (the radiator fan comes on at least twice).

11. Turn off the engine. Check the level in the radiator, and add Honda Long Life Coolant/Antifreeze Type 2, if needed.

12. Install the radiator cap securely, then start the engine again, and check for leaks.

13. Clean up any spilled engine coolant.

14. If the maintenance minder required engine coolant replacement, reset the maintenance minder (see page 3-6), and this procedure is complete. If the maintenance minder did not require engine coolant replacement, go to step 15.

15. Turn the ignition switch to LOCK (0).

16. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

17. Turn the ignition switch to ON (II).

18. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

19. Select GAUGES in the BODY ELECTRICAL menu with the HDS.

20. Select ADJUSTMENT in the GAUGES with the HDS.

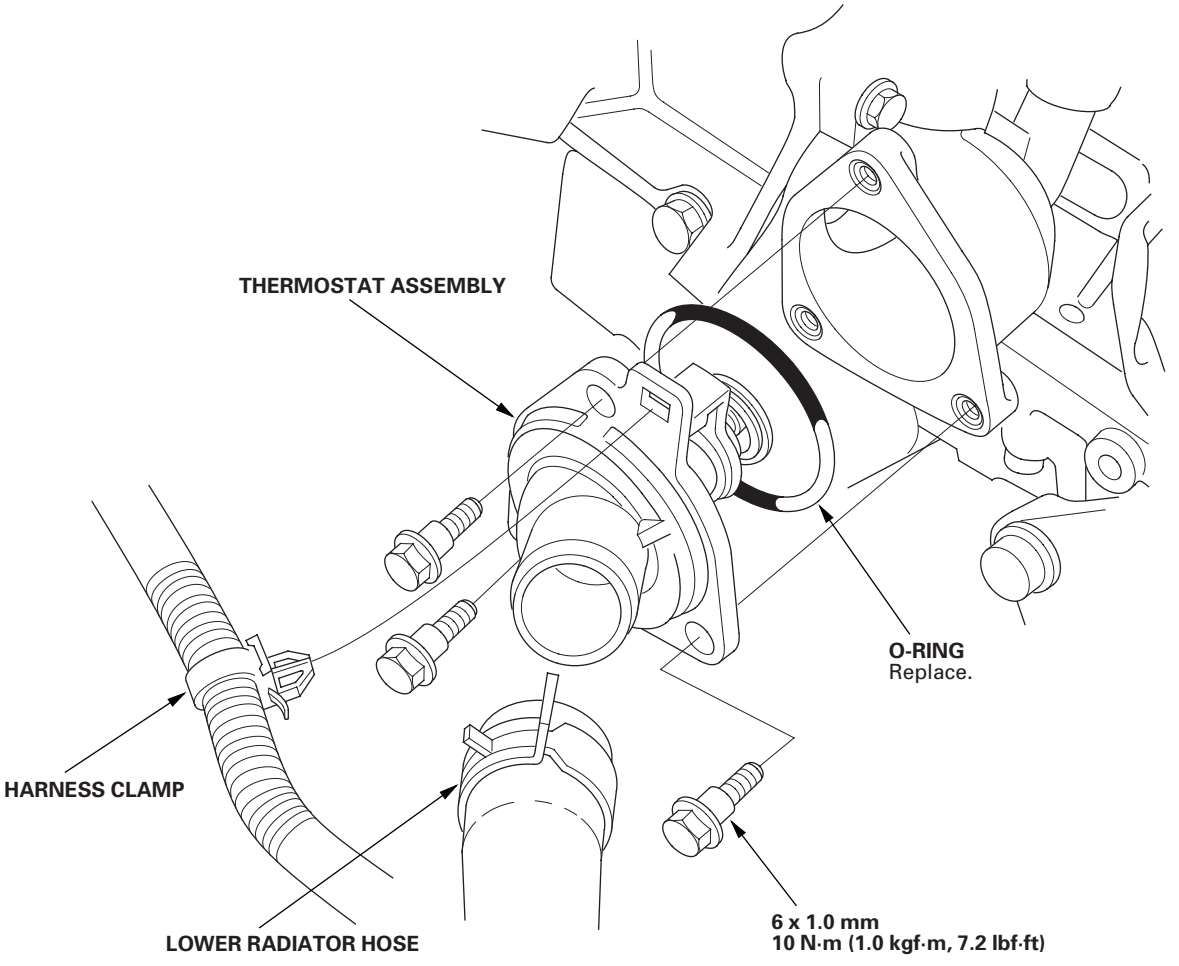
21. Select SERVICE REMINDER in the ADJUSTMENT menu with the HDS.

22. Select RESET in the SERVICE REMINDER menu with the HDS.

23. Select MAINTENACE SUB ITEM 5 RESET menu with the HDS.

Thermostat Replacement

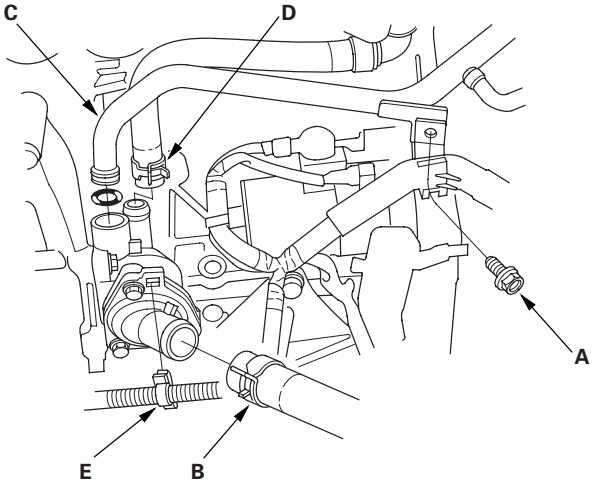
1. Drain the engine coolant (see page 10-8).
2. Remove the splash shield (see step 25 on page 5-5).
3. Remove the lower radiator hose, then remove the thermostat.



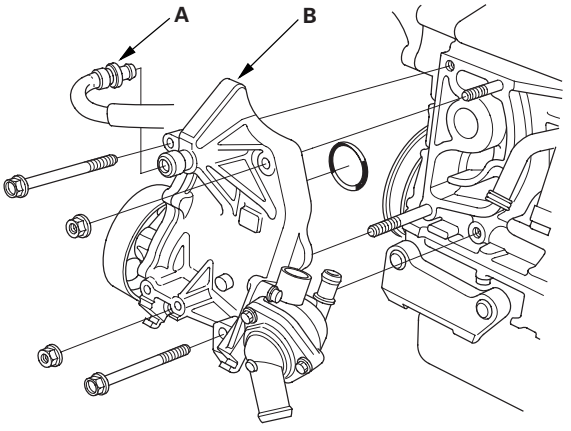
4. Install the new thermostat assembly with a new O-ring, then install the lower radiator hose.
5. Install the splash shield (see step 40 on page 5-20).
6. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).
7. Clean up any spilled engine coolant.

Water Passage Replacement

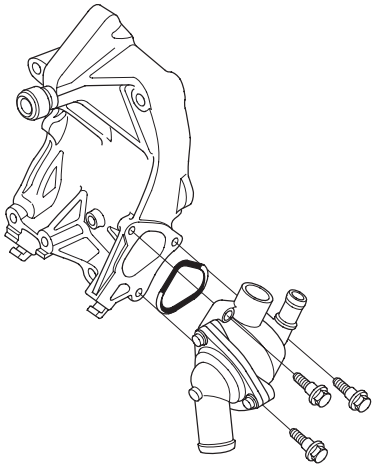
1. Drain the engine coolant (see page 10-8).
2. Remove the alternator (see page 4-34).
3. Remove the A/C condenser fan shroud assembly.
4. Remove the A/C compressor without disconnecting the A/C hoses (see step 40 on page 5-7).
5. Remove the intake manifold:
   - K20Z2 engine (see page 9-3)
   - K20Z3 engine (see page 9-7)
6. Remove the bolt (A) securing the connecting pipe.



7. Disconnect the lower radiator hose (B), the connecting pipe (C), and the water bypass hose (D), and remove the harness clamp (E).
8. Disconnect the positive crankcase ventilation (PCV) hose (A), then remove the water passage (B).



9. Remove the thermostat housing.



10. Remove the water pump:
    - K20Z2 engine (see page 10-6)
    - K20Z3 engine (see page 10-7)

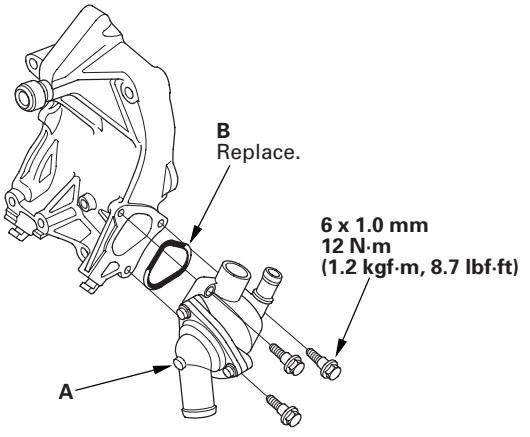
(cont'd)

Water Passage Replacement (cont'd)

11. Install the water pump:

    - K20Z2 engine (see page 10-6)
    - K20Z3 engine (see page 10-7)

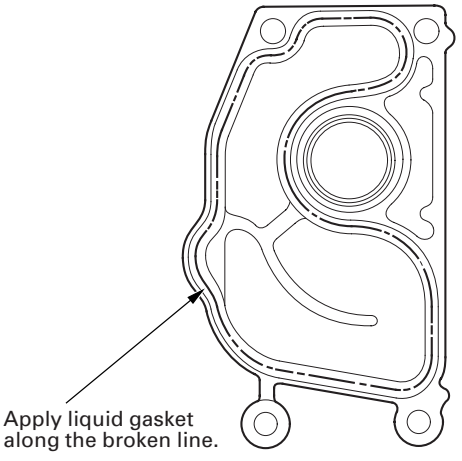
12. Install the thermostat housing (A) with a new O-ring (B).



13. Clean and dry the water passage mating surfaces.

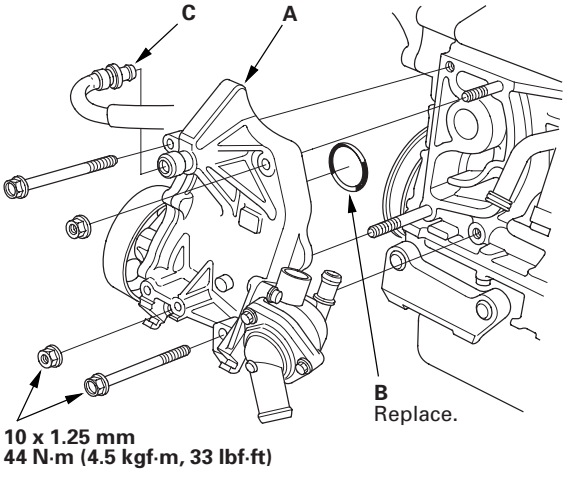
14. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the water passage, and to the inside edge of the threaded bolt holes. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be install within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



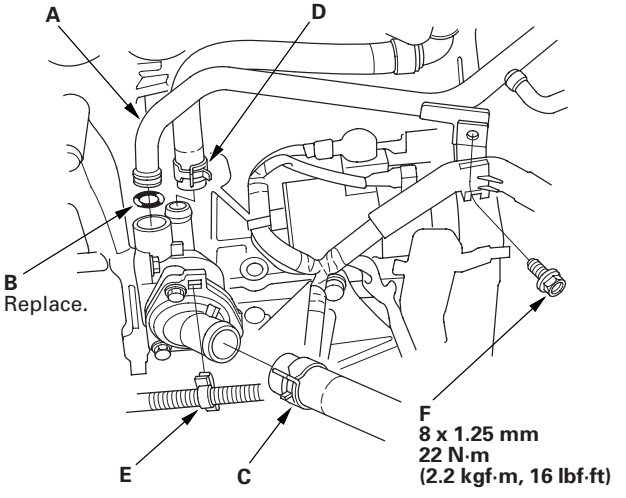
15. Install the water passage (A) with a new O-ring (B).

    NOTE:
    - Wait at least 30 minutes before filling the engine with coolant.
    - Do not run the engine for at least 3 hours after installing the water passage.



16. Connect the PCV hose (C).

17. Install the connecting pipe (A) with a new O-ring (B).



18. Connect the lower radiator hose (C) and the water bypass hose (D), and install the harness clamp (E).

19. Tighten the bolt (F) securing the connecting pipe.

20. Install the intake manifold:

    - K20Z2 engine (see page 9-4)
    - K20Z3 engine (see page 9-9)

21. Install the A/C compressor (see step 28 on page 5-19).

22. Install the A/C condenser fan shroud assembly.

23. Install the alternator (see page 4-36).

24. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

25. Clean up any spilled engine coolant.

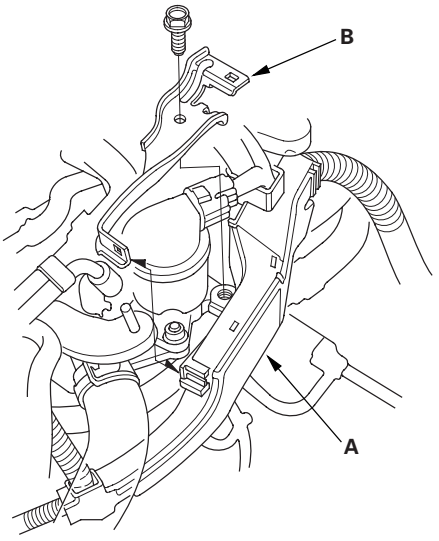
EGR Passage Removal and Installation

Removal - K20Z2 engine

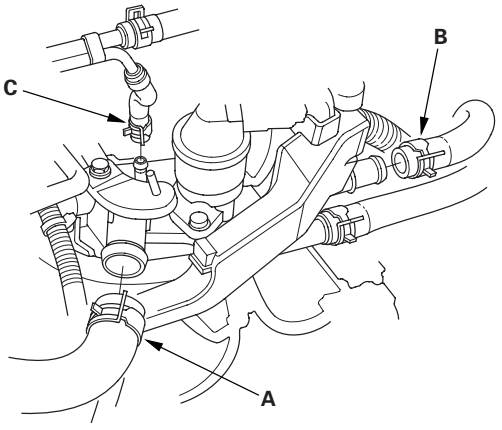
1. Drain the engine coolant (see page 10-8).

2. Remove the air cleaner assembly (see page 11-345).

3. Remove the harness holder (A) from the bracket, then remove the harness holder bracket (B).



4. Disconnect the upper radiator hose (A), the heater hose (B), and the water bypass hose (C).



(cont'd)

20. Install the intake manifold:

    - K20Z2 engine (see page 9-4)
    - K20Z3 engine (see page 9-9)

21. Install the A/C compressor (see step 28 on page 5-19).

22. Install the A/C condenser fan shroud assembly.

23. Install the alternator (see page 4-36).

24. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

25. Clean up any spilled engine coolant.

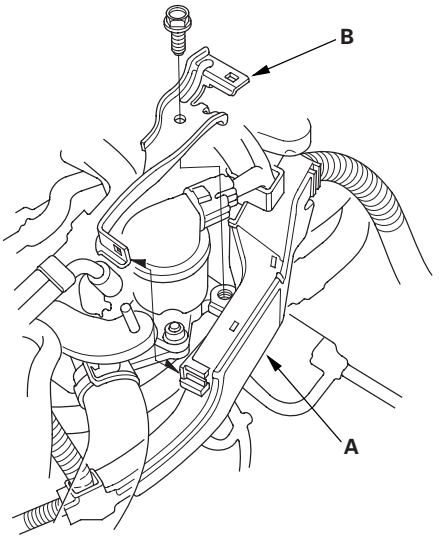
EGR Passage Removal and Installation

Removal - K20Z2 engine

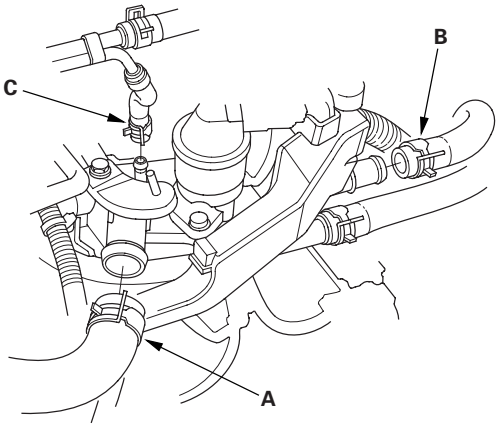
1. Drain the engine coolant (see page 10-8).

2. Remove the air cleaner assembly (see page 11-345).

3. Remove the harness holder (A) from the bracket, then remove the harness holder bracket (B).



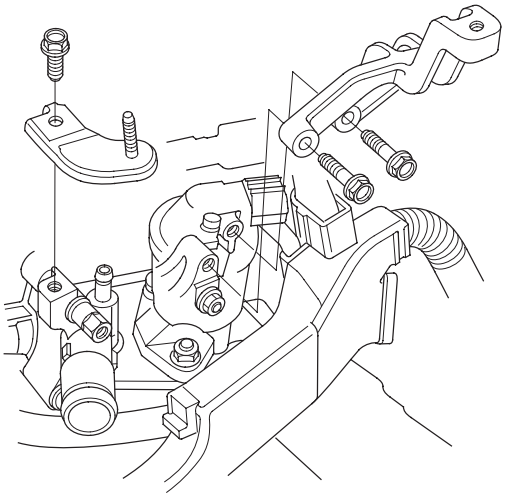
4. Disconnect the upper radiator hose (A), the heater hose (B), and the water bypass hose (C).



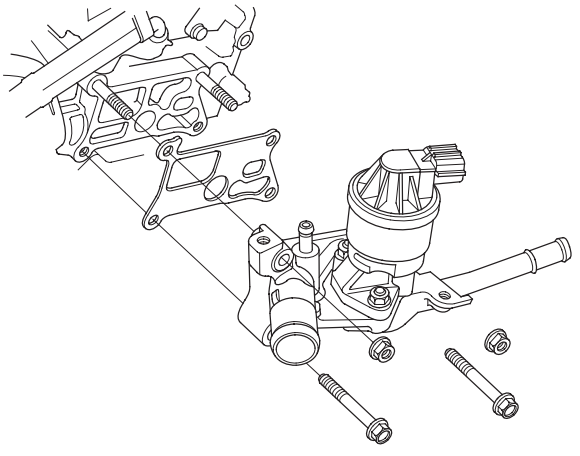
(cont'd)

EGR Passage Removal and Installation (cont'd)

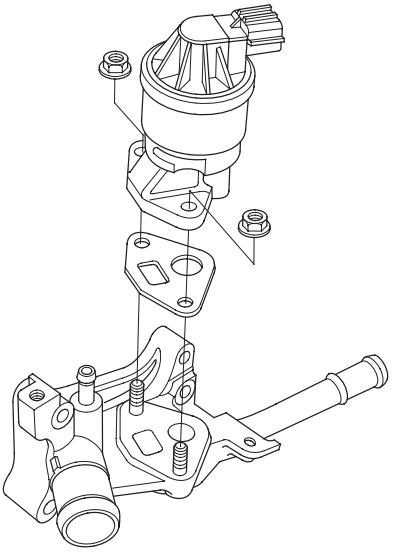
5. Remove the air cleaner brackets.



6. Remove the EGR passage.

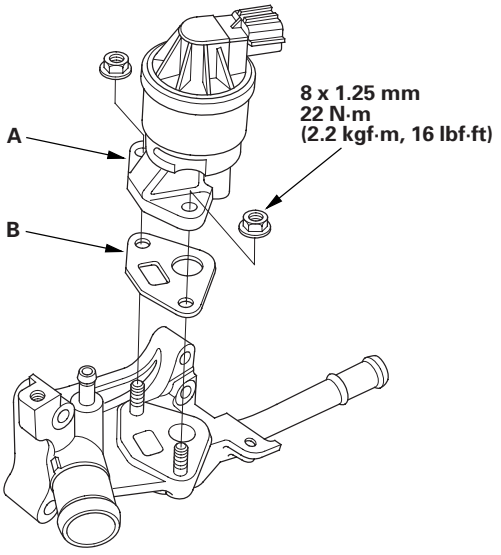


7. Remove the exhaust gas recirculation (EGR) valve.

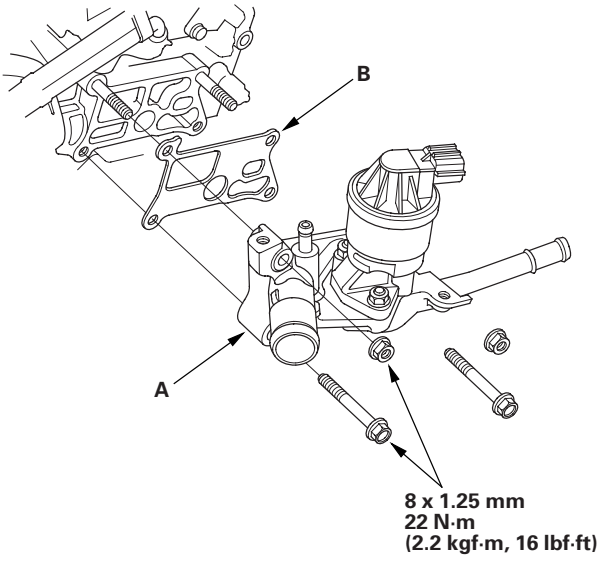


Installation - K20Z2 engine

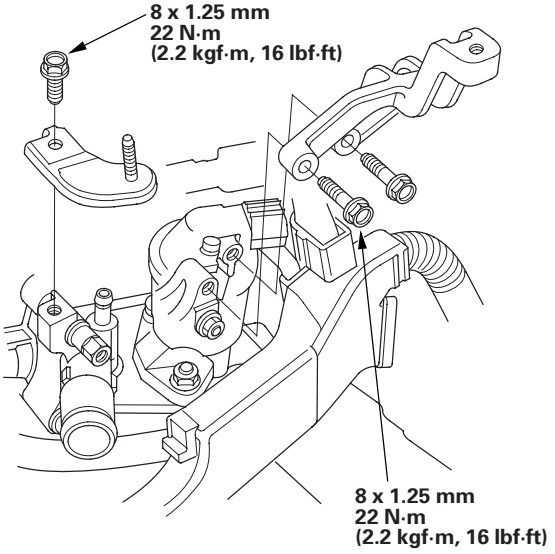
1. Install the EGR valve (A), with a new gasket (B).



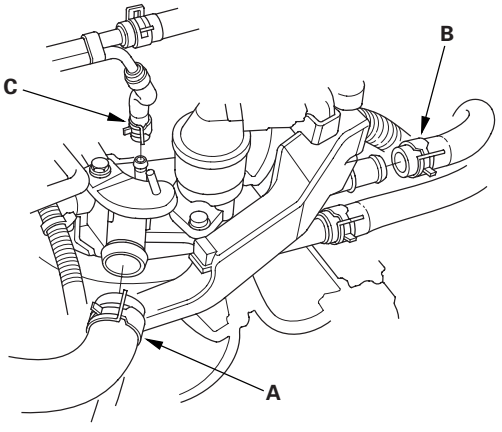
2. Install the EGR passage (A) with a new gasket (B).



3. Install the air cleaner brackets.



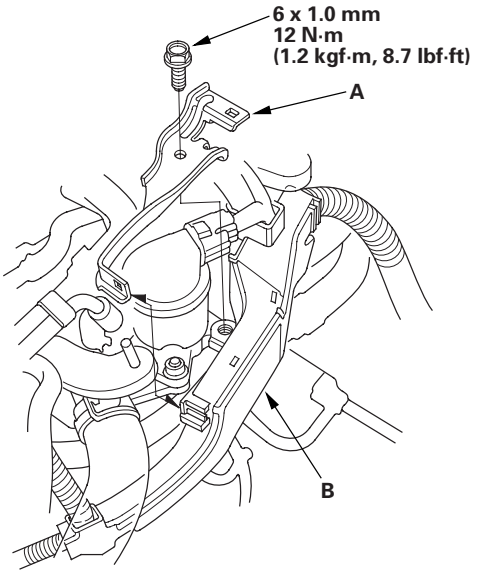
4. Connect the upper radiator hose (A), the heater hose (B), and the water bypass hose (C).



(cont'd)

EGR Passage Removal and Installation (cont'd)

5. Install the harness holder bracket (A), then install the harness holder (B).



6. Install the air cleaner assembly (see page 11-345).

7. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

8. Clean up any spilled engine coolant.

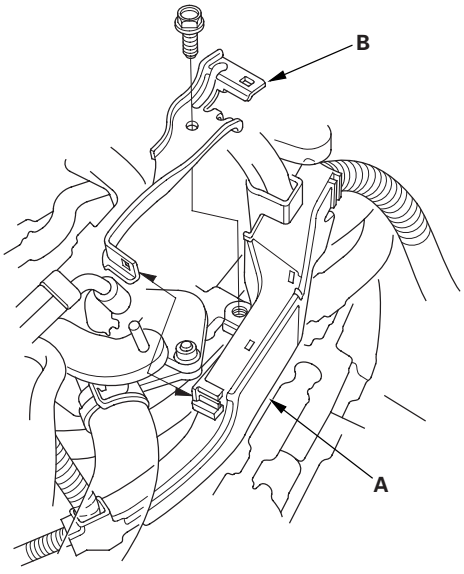
Water Outlet Removal and Installation

Removal - K20Z3 engine

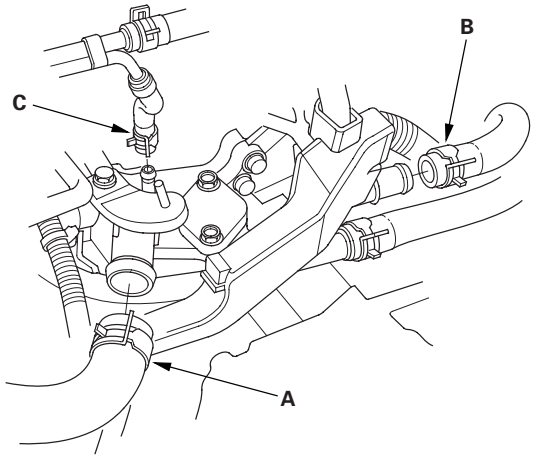
1. Drain the engine coolant (see page 10-8).

2. Remove the air cleaner assembly (see page 11-345).

3. Remove the harness holder (A) from the bracket, then remove the harness holder bracket (B).

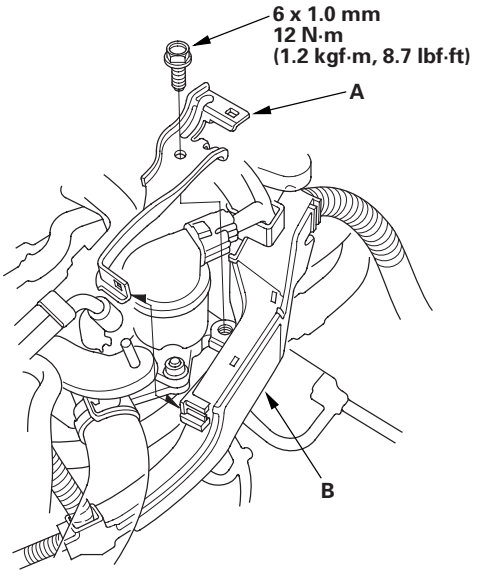


4. Disconnect the upper radiator hose (A), the heater hose (B), and the water bypass hose (C).



EGR Passage Removal and Installation (cont'd)

5. Install the harness holder bracket (A), then install the harness holder (B).



6. Install the air cleaner assembly (see page 11-345).

7. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

8. Clean up any spilled engine coolant.

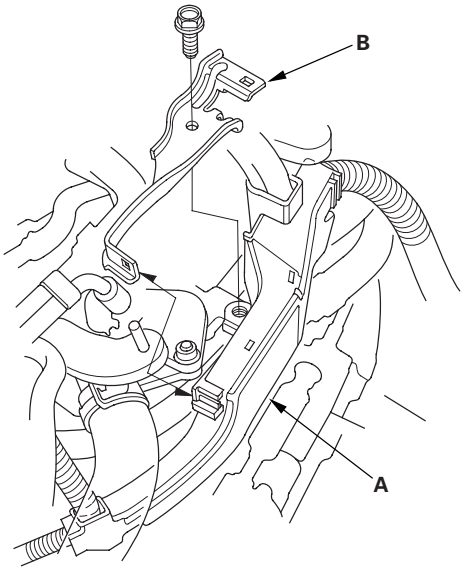
Water Outlet Removal and Installation

Removal - K20Z3 engine

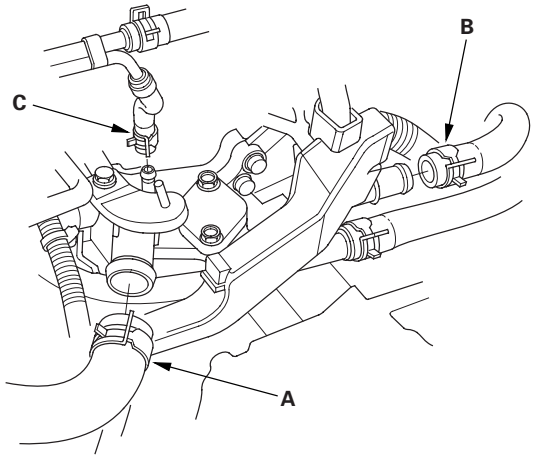
1. Drain the engine coolant (see page 10-8).

2. Remove the air cleaner assembly (see page 11-345).

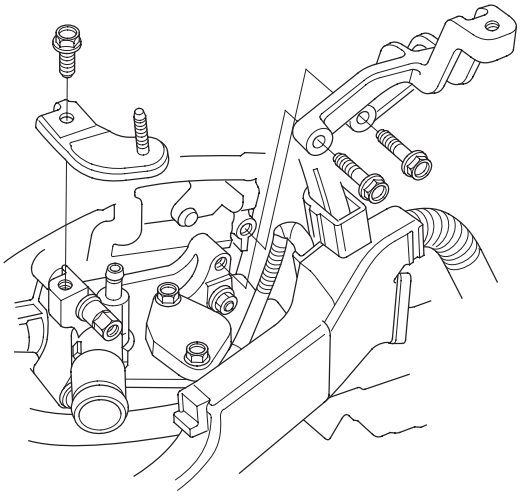
3. Remove the harness holder (A) from the bracket, then remove the harness holder bracket (B).



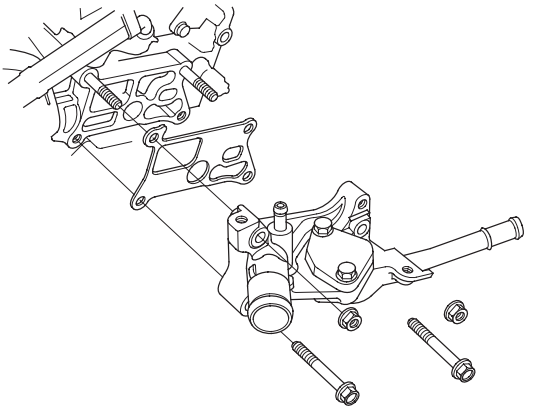
4. Disconnect the upper radiator hose (A), the heater hose (B), and the water bypass hose (C).



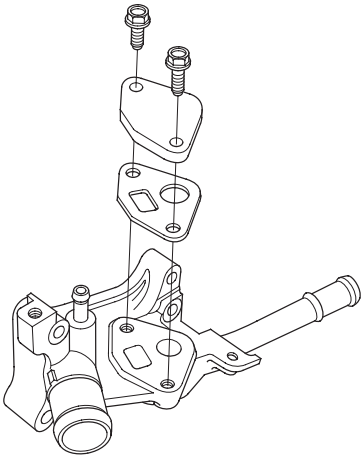
5. Remove the air cleaner brackets.



6. Remove the water outlet.



7. Remove the EGR plate.

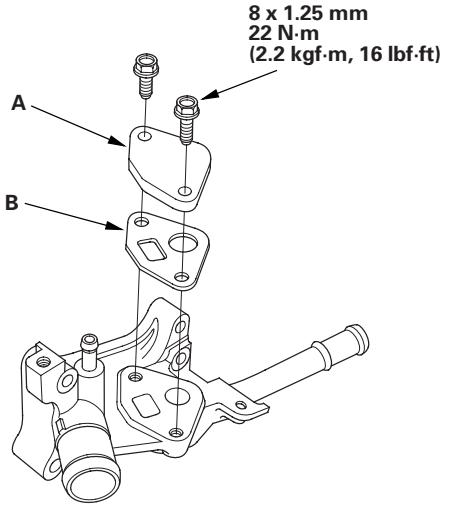


(cont'd)

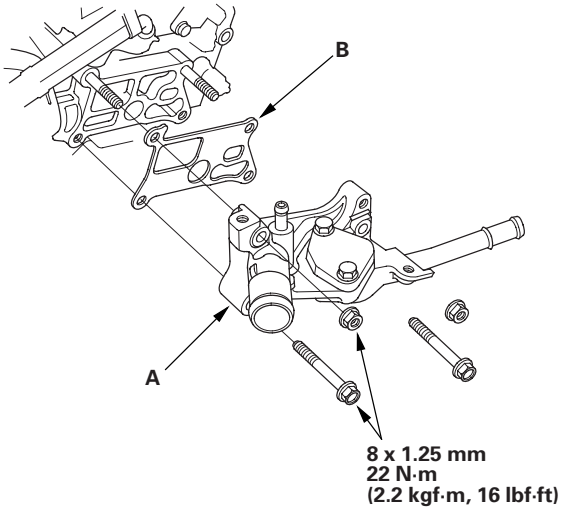
Water Outlet Removal and Installation (cont'd)

Installation - K20Z3 engine

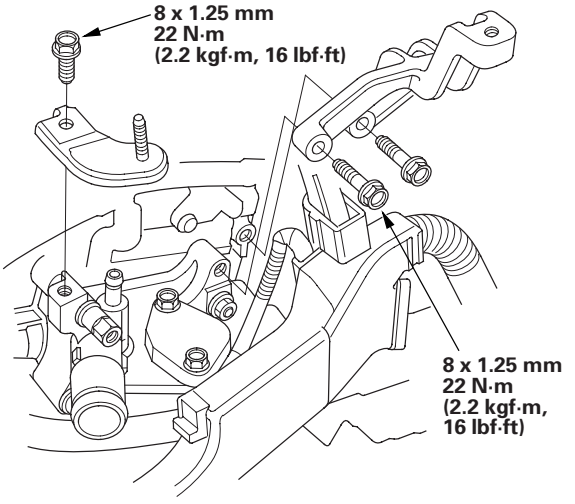
1. Install the EGR plate (A) with a new gasket (B).



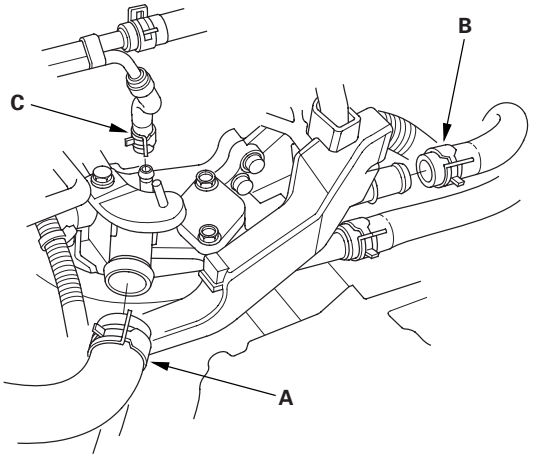
2. Install the water outlet (A) with a new gasket (B).



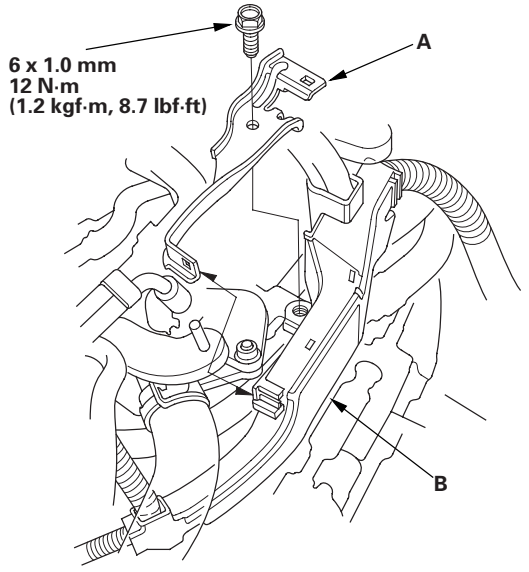
3. Install the air cleaner brackets.



4. Connect the upper radiator hose (A), the heater hose (B), and the water bypass hose (C).



5. Install the harness holder bracket (A), then install the harness holder (B).



6. Install the air cleaner assembly (see page 11-345).

7. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

8. Clean up any spilled engine coolant.

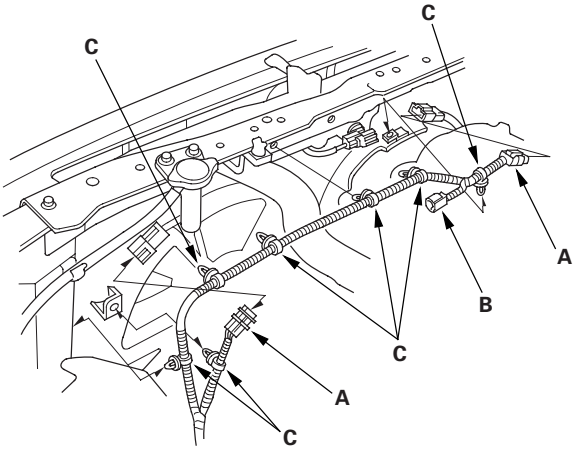
Radiator and Fan Replacement

1. Do the battery removal procedure (see page 22-69).

2. Drain the engine coolant (see page 10-8).

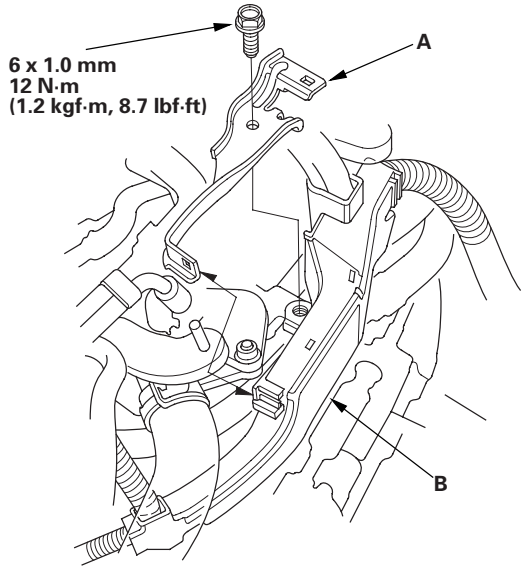
3. Remove the front grille cover (see page 20-163).

4. Disconnect the fan motor connectors (A) and the hood switch connector (B), then remove the harness clamps (C).



(cont'd)

5. Install the harness holder bracket (A), then install the harness holder (B).



6. Install the air cleaner assembly (see page 11-345).

7. Refill the radiator with engine coolant, and bleed the air from the cooling system with the heater valve open (see step 6 on page 10-8).

8. Clean up any spilled engine coolant.

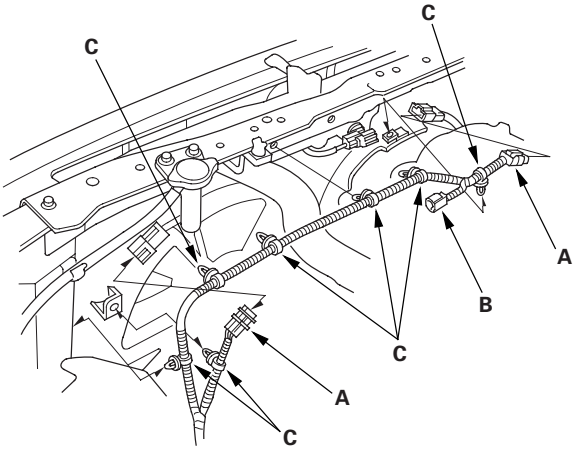
Radiator and Fan Replacement

1. Do the battery removal procedure (see page 22-69).

2. Drain the engine coolant (see page 10-8).

3. Remove the front grille cover (see page 20-163).

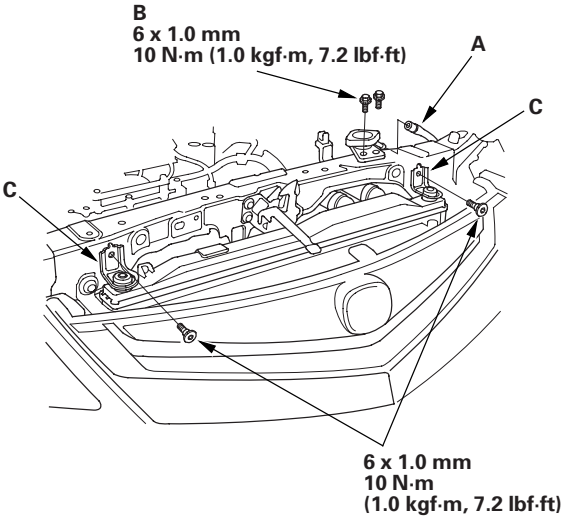
4. Disconnect the fan motor connectors (A) and the hood switch connector (B), then remove the harness clamps (C).



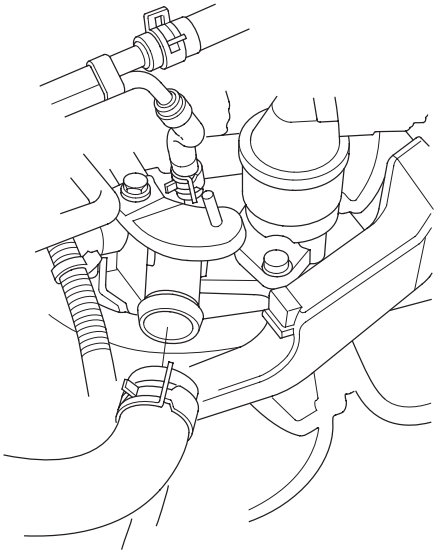
(cont'd)

Radiator and Fan Replacement (cont'd)

5. Disconnect the reservoir hose (A) and remove the radiator cap base mounting bolts (B), and the radiator upper brackets (C) and bolts (D).

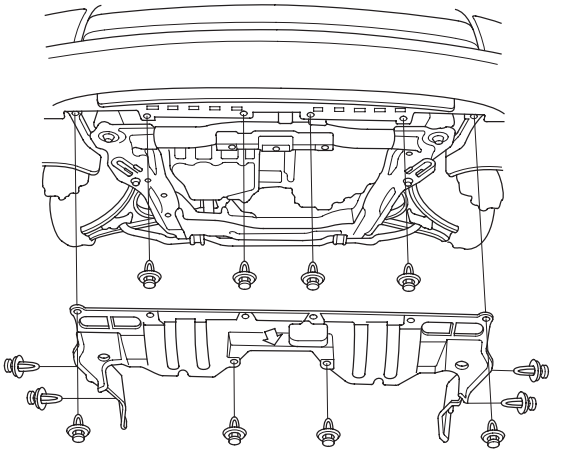


6. Disconnect the upper radiator hose.

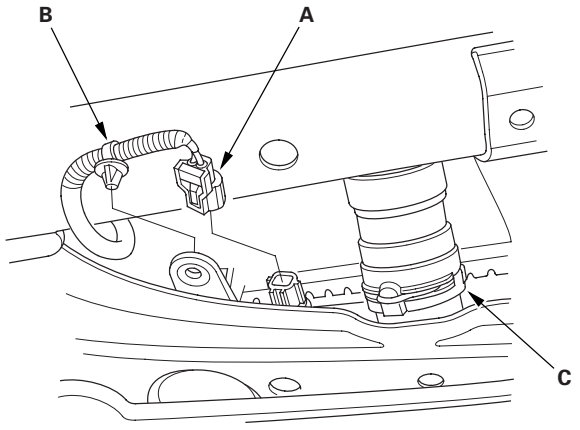


7. Raise the vehicle on the lift.

8. Remove the splash shield.

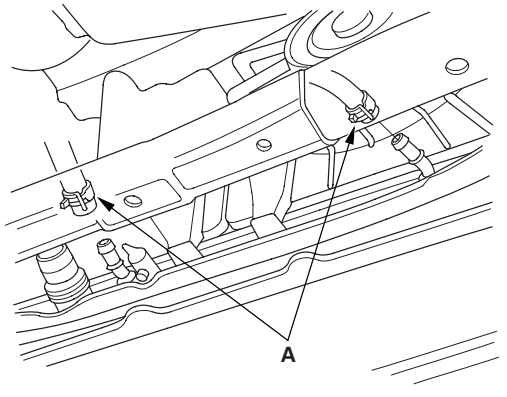


9. Disconnect the engine coolant temperature (ECT) sensor 2 connector (A), and remove the harness clamp (B).



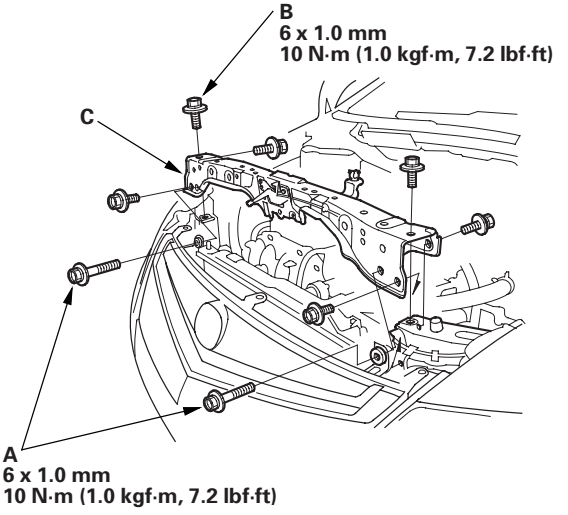
10. Disconnect the lower radiator hose (C) from the radiator.

11. A/T model: Disconnect the automatic transmission fluid (ATF) cooler hoses (A), then plug the lines and the hoses.



12. Lower the vehicle on the lift.

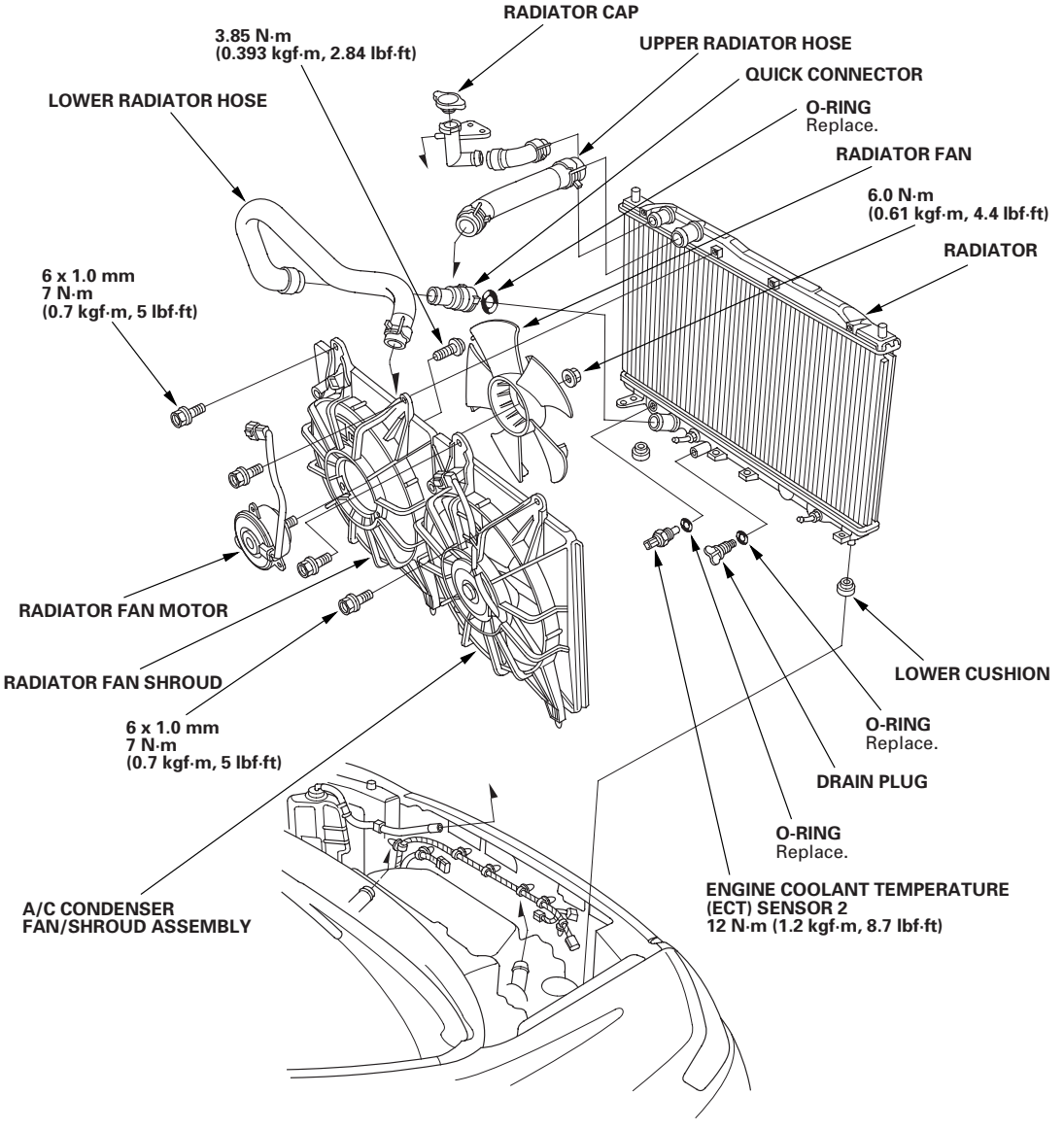
13. Remove the condenser bracket mounting bolts (A) and the bulkhead mounting bolts (B), then remove the bulkhead (C).



(cont'd)

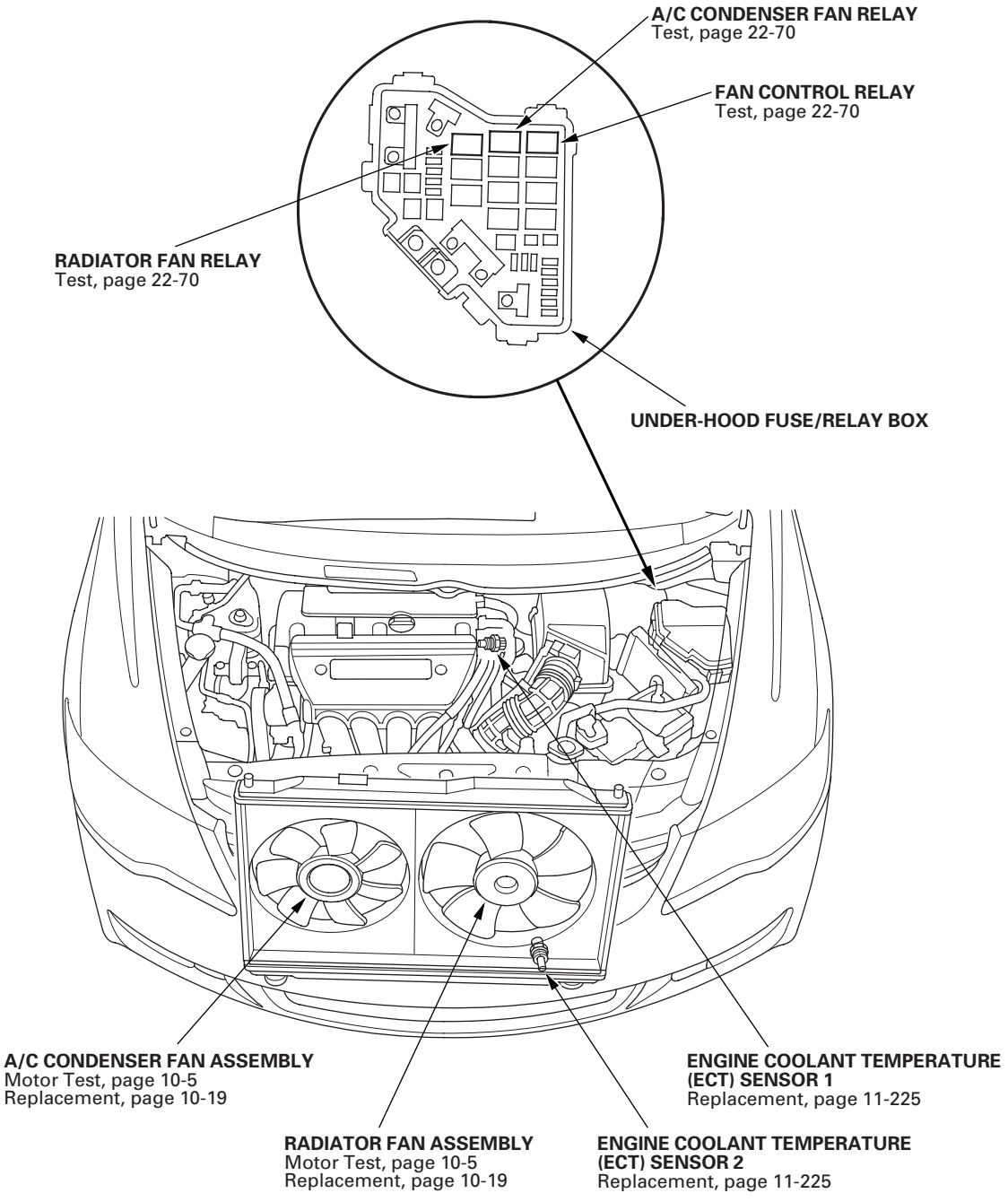
Radiator and Fan Replacement (cont'd)

14. Pull up the radiator, then remove the fan shroud assemblies and other parts from the radiator.



15. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
16. Connect the lower radiator hose to the radiator.
17. Install the bulkhead in the reverse order of removal. Apply body paint to the bulkhead mounting bolts.
18. Do the battery installation procedure (see page 22-69).
19. Fill the radiator with engine coolant, and bleed the air from the cooling system with heater valve open (see step 6 on page 10-8).
20. Clean up any spilled engine coolant.

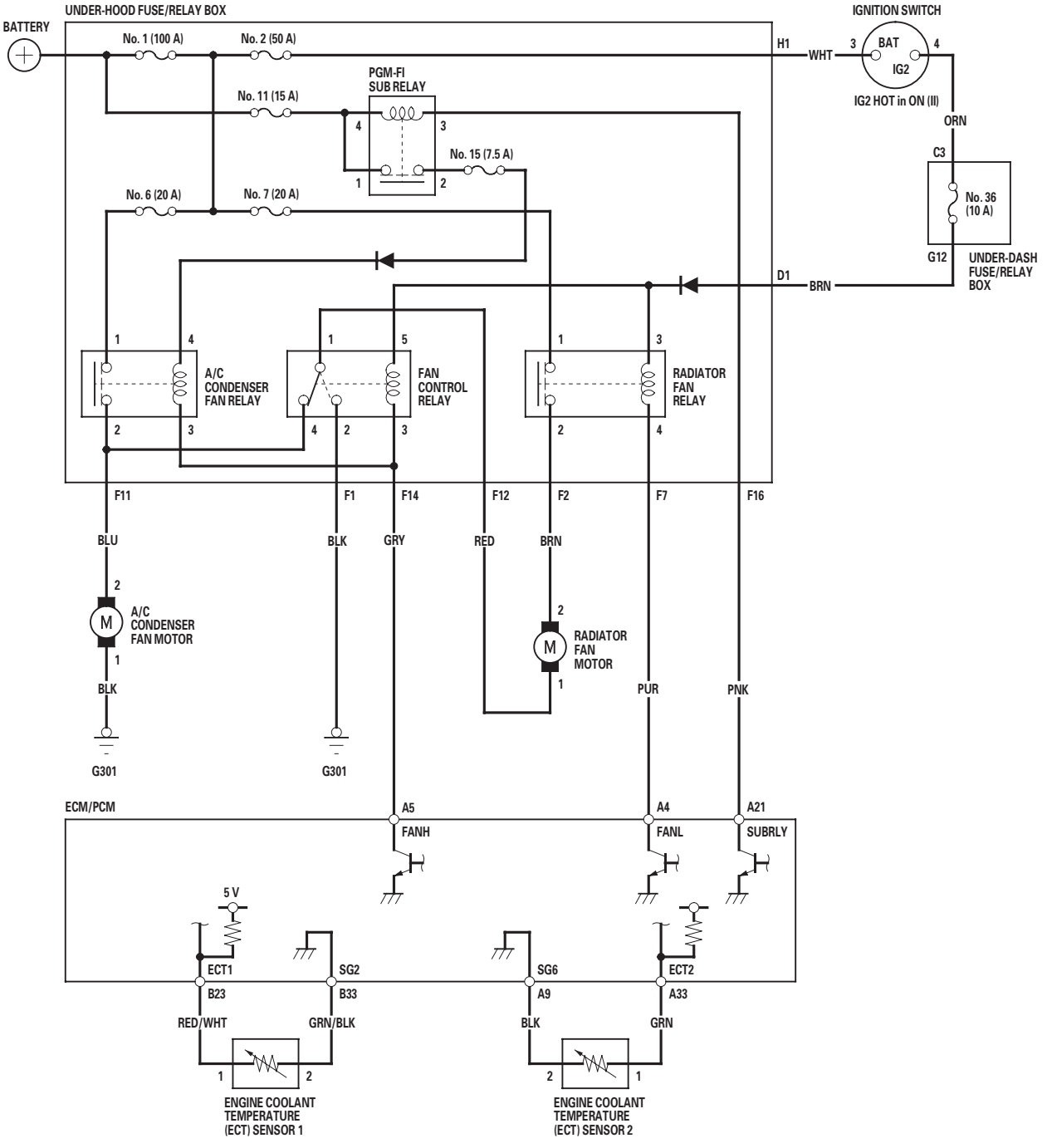
Component Location Index



Symptom Troubleshooting Index

Symptom	Diagnostic Procedure	Also check for
Engine overheats	1. Check the coolant level. 2. Check for engine coolant leakage (from gaskets, hoses, O-rings, etc.). 3. Check for dirt, leaves, or insects on radiator and A/C condenser. 4. Check for deteriorated coolant. 5. Check for a damaged or deformed fan shroud. 6. Inspect the fan motors (see page 10-5) or fan relays (see page 22-70). 7. Check the radiator cap (see page 10-4). 8. Check the thermostat (see page 10-5). 9. Inspect the water pump (see page 10-6). 10. Check for a clogged or deteriorated radiator hoses. 11. Check for clogged heater core or hoses. 12. Check for a damaged cylinder head gasket.	
The radiator fan does not run at high speed	Radiator fan high speed circuit troubleshooting (see page 10-26).	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan do not run at low speed	Radiator and A/C condenser fans low speed circuit troubleshooting (see page 21-56).	Cleanliness and tightness of all connectors
The A/C condenser fan does not run at high speed	A/C condenser fan high speed circuit troubleshooting (see page 21-60).	Cleanliness and tightness of all connectors

Circuit Diagram



Radiator Fan High Speed Circuit Troubleshooting

1. Check the No. 7 (20 A) fuse in the under-hood fuse/relay box and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Reinstall the fuse(s), then go to step 2.

   NO—Replace the fuse(s), and recheck. If the fuse continues to blow, locate and repair the short in the circuit between the under-hood fuse/relay box and the radiator fan motor, or between the under-dash fuse/relay box connector terminal G12, the under-hood fuse/relay box and the engine control module (ECM)/powertrain control module (PCM). ■

2. Remove the radiator fan relay and the fan control relay from the under-hood fuse/relay box, and test them (see page 22-70).

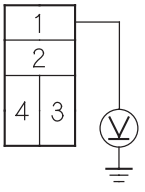
   Are the relays OK?

   YES—Go to step 3.

   NO—Replace the radiator fan relay and/or fan control relay. ■

3. Measure the voltage between the radiator fan relay 4P socket terminal No. 1 and body ground.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

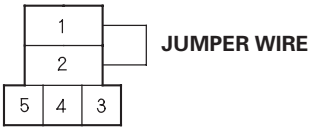
   Is there battery voltage?

   YES—Go to step 4.

   NO—Replace the under-hood fuse/relay box. ■

4. Connect fan control relay 5P socket terminals No. 1 and No. 2 with a jumper wire.

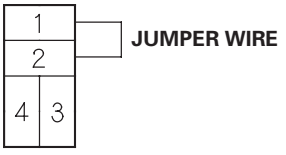
   FAN CONTROL RELAY 5P SOCKET



   Terminal side of female terminals

5. Connect radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

   RADIATOR FAN RELAY 4P SOCKET



   Terminal side of female terminals

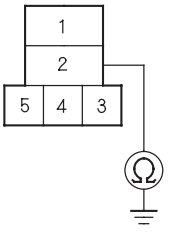
   Does the radiator fan run at high speed?

   YES—Go to step 10.

   NO—Go to step 6.

6. Remove the jumper wires, then check for continuity between fan control relay 5P socket terminal No. 2 and body ground.

FAN CONTROL RELAY 5P SOCKET



Terminal side of female terminals

Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire between fan control relay 5P socket terminal No. 2 and body ground. ■

7. Test the radiator fan motor (see page 10-5).

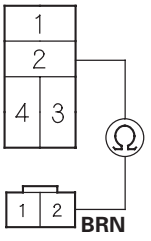
Is the motor OK?

YES—Go to step 8.

NO—Replace the radiator fan motor (see page 10-19). ■

8. Check for continuity between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2.

RADIATOR FAN RELAY 4P SOCKET
Terminal side of female terminals



RADIATOR FAN MOTOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

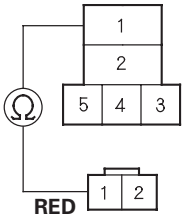
NO—Repair open in the wire between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2. ■

(cont'd)

Radiator Fan High Speed Circuit Troubleshooting (cont'd)

9. Check for continuity between fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1.

FAN CONTROL RELAY 5P SOCKET
Terminal side of female termianls



RADIATOR FAN MOTOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

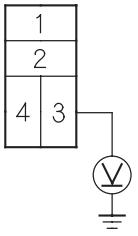
YES—Check for poor connections or loose terminals at the under-hood fuse/relay box, the radiator fan motor, and body ground (G301), then go to step 1.

NO—Repair open in the wire between fan control relay 5P socket terminal No. 1 and radiator fan motor 2P connector terminal No. 1. ■

10. Turn the ignition switch to ON (II).

11. Measure the voltage between radiator fan relay 4P socket terminal No. 3 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 12.

NO—Repair open in the wire between the under-dash fuse/relay box and the under-hood fuse/relay box. ■

12. Turn the ignition switch to LOCK (0).

13. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

14. Turn the ignition switch to ON (II).

15. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

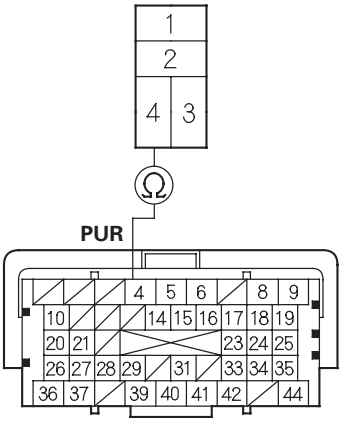
16. Jump the SCS line with the HDS, then turn the ignition switch to LOCK (0).

    NOTE: This step must be done to protect the ECM/PCM from damage.

17. Disconnect ECM/PCM connector A (44P).

18. Check for continuity between radiator fan relay 4P socket terminal No. 4 and ECM/PCM connector terminal A4.

RADIATOR FAN RELAY 4P SOCKET
Terminal side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

Is there continuity?

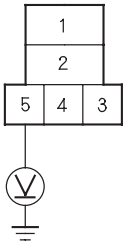
YES—Go to step 19.

NO—Repair open in the wire between radiator fan relay 4P socket terminal No. 4 and ECM/PCM connector terminal A4. ■

19. Turn the ignition switch to ON (II).

20. Measure the voltage between fan motor control relay 5P socket terminal No. 5 and body ground.

FAN CONTROL RELAY 5P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 21.

NO—Repair open in the wire between the under-dash fuse/relay box and the under-hood fuse/relay box. ■

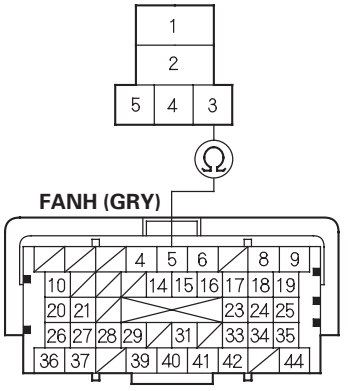
21. Turn the ignition switch to LOCK (0).

(cont'd)

Radiator Fan High Speed Circuit Troubleshooting (cont'd)

22. Check for continuity between fan control relay 5P socket terminal No. 3 and ECM/PCM connector terminal A5.

FAN CONTROL RELAY 5P SOCKET
Terminal side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

Is there continuity?

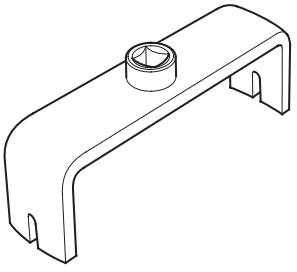
YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between fan control relay 5P socket terminal No. 3 and ECM/PCM connector terminal A5. ■

Fuel and Emissions

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAA-SNAA100	Fuel Pump Module Locknut Wrench	1
②	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
③	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
④	07NAJ-P07010A	Pressure Gauge Adapter	1
⑤	07ZAJ-S5AA200	Oil Pressure Hose	1
⑥-1	07406-0020201	A/T Pressure Hose	1
⑥-2	07406-0070301	A/T Low Pressure Gauge W/Panel	1
⑥-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑥-4	07MAJ-PY40120	A/T Pressure Adapter	1
⑦	07406-004000B	Fuel Pressure Gauge	1



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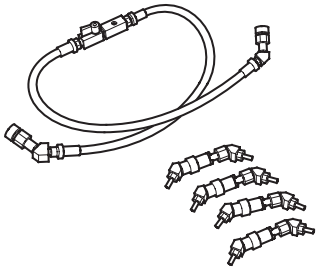

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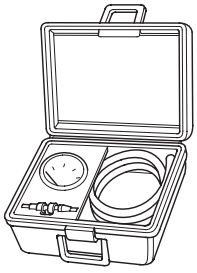

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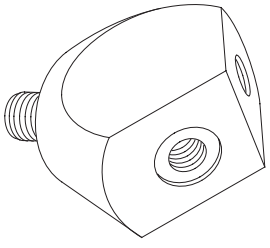

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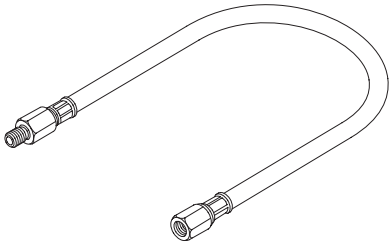

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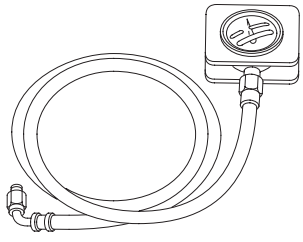
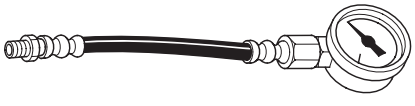


⑥-1, ⑥-2, ⑥-3, ⑥-4



⑦

General Troubleshooting Information

Intermittent Failures

The term intermittent failure means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose terminals at all connectors related to the circuit that you are troubleshooting. If the MIL was on but then went out, the original problem may have been intermittent.

Service Information

Periodically, new ECM/PCM software or new service procedures may become available. Always check online for the latest software or service information related to the DTCs or symptoms you are troubleshooting.

Opens and Shorts

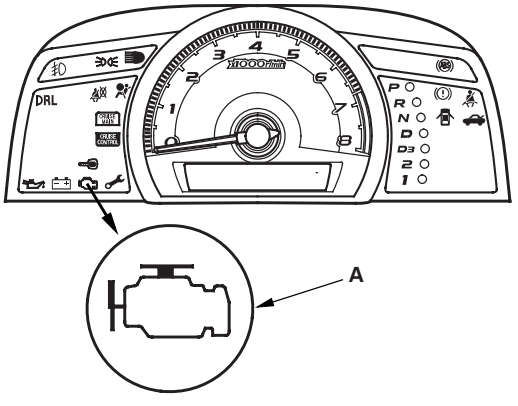
Open and short are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs or PCMs) this can sometimes mean something works, but not the way it's supposed to.

How to Use the HDS (Honda Diagnostic System)

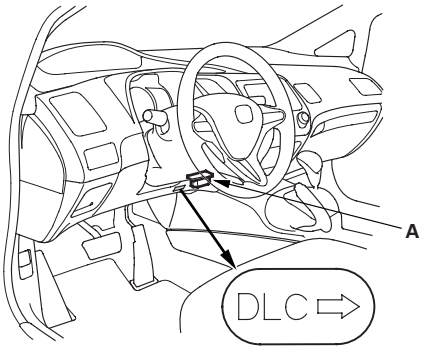
If the MIL (malfunction indicator lamp) has come on

1. Start the engine, and check the MIL (A).

   NOTE: If the ignition switch is turned to ON (II), and the engine is not started, the MIL stays on for 15—20 seconds (see page 11-69).



2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch to ON (II).

4. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data and/or on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

   NOTE:
   - Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction that activated the MIL was detected.
   - The HDS can read the DTC, freeze data, on-board snapshot, current data, and other engine control module (ECM) or powertrain control module (PCM) data.
   - For specific operations, refer to the user's manual that came with the HDS.

6. If no DTCs are found, go to MIL troubleshooting (see page 11-203).

If the MIL did not stay on
If the MIL did not stay on but there is a driveability problem, do the symptom troubleshooting.

If you can't duplicate the DTC
Some of the troubleshooting requires you to reset the ECM/PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the code, do not continue through the procedure. To do so will only result in confusion and possibly, a needlessly replaced ECM/PCM.

(cont'd)

General Troubleshooting Information (cont'd)

HDS Clear Command

The ECM/PCM stores various specific data to correct the system even if there is no electrical power, such as when the battery negative terminal or the No. 19 FI MAIN (15 A) fuse is disconnected. Stored data based on failed parts should be cleared by using the CLEAR COMMAND of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet this purpose. They are DTC clear, ECM/PCM reset, and CKP pattern clear. DTC clear command erases all stored DTC codes, freeze data, on-board snapshot, and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting.
The ECM/PCM reset command erases all stored DTC codes, freeze data, on-board snapshot, readiness codes, and all specific data to correct the system except CKP pattern. If the CKP pattern data in the ECM/PCM was cleared, you must do the CKP pattern learn procedure. The CKP pattern clear command erases only CKP pattern data. This command is for repair of a misfire or the CKP sensor.

Scan Tool Clear Command

If you are using a generic scan tool to clear commands, be aware that there is only one setting for clearing the ECM/PCM, and it clears all commands at the same time (CKP pattern learn, idle learn, readiness codes, freeze data, on-board snapshot, and DTCs). After you clear all commands, you then need to do these procedures, in this order: ECM/PCM idle learn procedure (see page 11-310); CKP pattern learn procedure;
Test-drive to set readiness codes to complete (see page 11-69).

DTC Clear

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch to ON (II), and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.

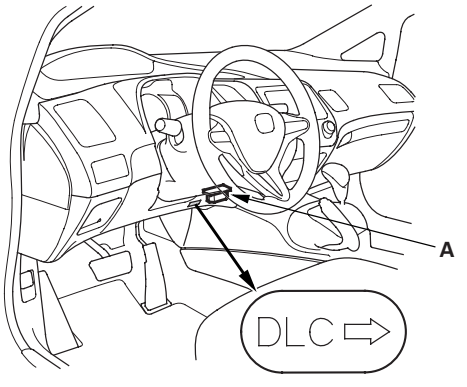
ECM/PCM Reset

1. Reset the ECM/PCM with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch to ON (II), and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
5. Do the ECM/PCM idle learn procedure (see page 11-310).

CKP Pattern Clear/CKP Pattern Learn

Clear/Learn Procedure (with the HDS)

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.

Learn Procedure (without the HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the A/T in S in 1st or 2nd, or M/T in 1st.
3. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 5,000 rpm down to 3,000 rpm with the A/T in S in 1st or 2nd, or M/T in 1st.
4. Repeat step 2 and 3 several times.
5. Turn the ignition switch to LOCK (0).
6. Turn the ignition switch to ON (II), and wait 30 seconds.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the ECM/PCM with the HDS.
2. Do the ECM/PCM idle learn procedure (see page 11-310).
3. Turn the ignition switch to LOCK (0).
4. Disconnect the HDS from the DLC.

   NOTE: The ECM/PCM is part of the immobilizer system. If you replace the ECM/PCM, it will have a different immobilizer code. For the engine to start, you must rewrite the immobilizer code with the HDS.

(cont'd)

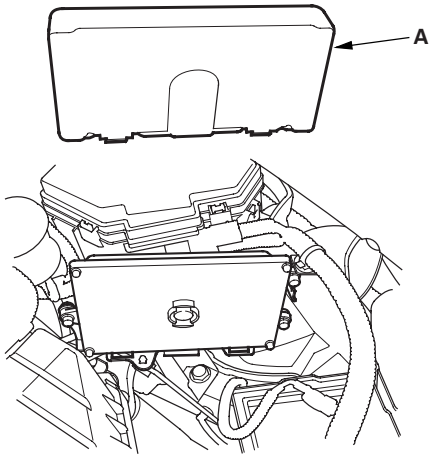
General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the ECM/PCM Connectors

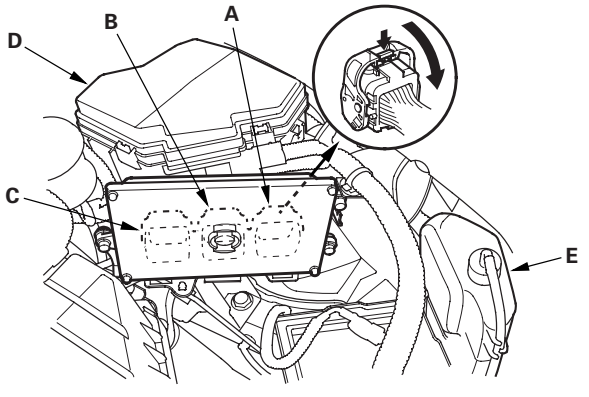
NOTE: The ECM/PCM overwrites data and monitors the EVAP system for about 30 minutes after the ignition switch is turned to LOCK (0) or ACC (I). Jumping the SCS line after turning the ignition switch to LOCK (0) or ACC (I) cancels this function. Disconnecting the ECM/PCM during this function, without jumping the SCS line first, can damage the ECM/PCM.

1. Make sure the ignition switch is turned to LOCK (0), then jump the SCS line with the HDS.

2. Remove the cover (A).



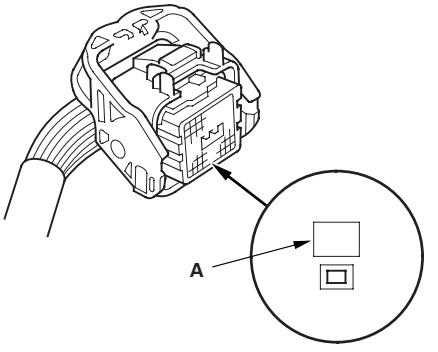
3. Lift up the under-hood fuse/relay box (D).



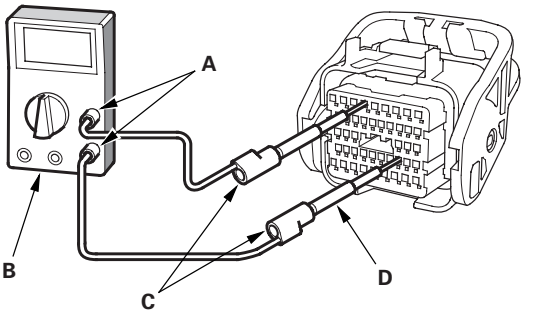
4. Remove the coolant reservoir (E). Disconnect ECM/PCM connectors A, B, and C, and probe the terminals from the terminal side of the connectors.

   NOTE: ECM/PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embosed on them for identification.

5. When diagnosis/troubleshooting is done at the ECM/PCM connector, use the terminal test port (A) above the terminal you need to check.



6. Connect one side of the patch cord's terminals (A) to a commercially available digital multimeter (B), and connect the other side cord's terminals (C) to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (D).



7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

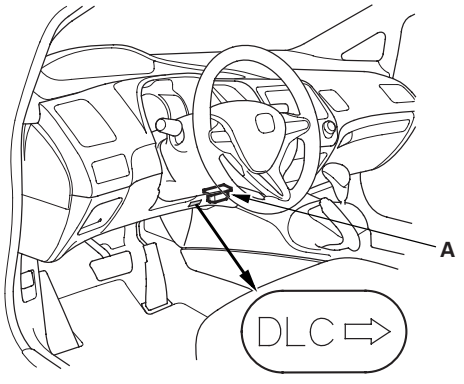
Substituting the ECM/PCM

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

NOTE: Use this procedure when you need to substitute a known-good ECM/PCM during troubleshooting procedures.

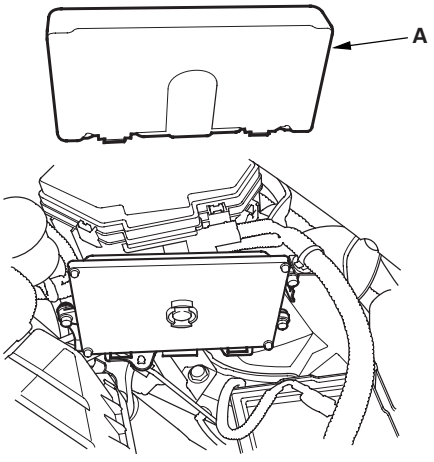
1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



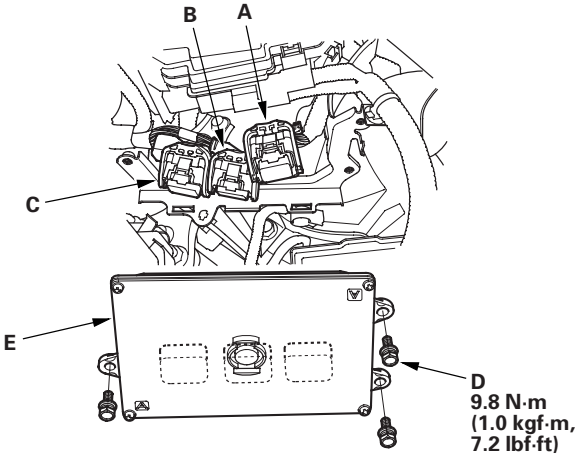
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204). If you are returning from DLC circuit troubleshooting, skip step 4 and 5, and clean the throttle body after substituting the ECM/PCM (see page 11-344).
4. Select the INSPECTION MENU with the HDS.
5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Do the battery removal procedure (see page 22-69).
9. Remove the cover (A).



10. Remove the bolts (D), then remove the ECM/PCM (E).



11. Disconnect ECM/PCM connectors A, B, and C.

    NOTE: ECM/PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

12. Install the parts in the reverse order of removal.

(cont'd)

General Troubleshooting Information (cont'd)

13. Do the battery installation procedure (see page 22-69).

14. Turn the ignition switch to ON (II).

    NOTE: DTC P0630 VIN Not Programmed or Mismatch may be stored because the VIN has not been programmed into the ECM/PCM; ignore it, and continue this procedure.

15. Manually input the VIN to the ECM/PCM with the HDS.

16. Select the IMMOBI SYSTEM with the HDS.

17. Enter the immobilizer code that you got from the iN, or use the ECM/PCM replacement procedure in the HDS; this allows you to start the engine.

18. Reset the ECM/PCM with the HDS.

19. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-344).

20. Update the ECM/PCM if it does not have the latest software (see page 11-227).

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Do the CKP pattern clear/CKP pattern learn procedure.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on board diagnosis is successfully finished.
- FAILED: The on board diagnosis has finished but failed.
- EXECUTING: The vehicle is in enable criteria conditions for the DTC and the on board diagnosis is running.
- NOT COMPLETED: The on board diagnosis was running but is out of the enable conditions of the DTC.
- OUT OF CONDITION: The vehicle has stayed out of the enable conditions for the DTC.

DTC Troubleshooting Index

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0010 (56)	———	Variable Valve Timing Control (VTC) Oil Control Solenoid Valve Malfunction	ON	(see page 11-274)
P0011 (56)	○	Variable Valve Timing Control (VTC) System Malfunction	ON	(see page 11-276)
P0101 (50)	○	Mass Air Flow (MAF) Sensor Circuit Range/Performance Problem	ON	(see page 11-74)
P0102 (50)	———	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	(see page 11-75)
P0103 (50)	———	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	(see page 11-78)
P0107 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-80)
P0108 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-82)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see page 11-85)
P0112 (10)	———	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see page 11-86)
P0113 (10)	———	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see page 11-87)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/ Performance Problem	ON	(see page 11-90)
P0117 (6)	———	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see page 11-91)
P0118 (6)	———	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see page 11-92)
P0122 (7)	———	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see page 11-232)
P0123 (7)	———	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see page 11-234)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Responce	ON	(see page 11-95)
P0128 (87)	○	Cooling System Malfunction	ON	(see page 11-96)
P0133 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Malfunction/Slow Response	ON	(see page 11-97)
P0134 (41)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	ON	(see page 11-98)
P0135 (41)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	ON	(see page 11-99)
P0137 (63)	———*4 ○*5	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Low Voltage	ON	(see page 11-104)
P0138 (63)	———*4 ○*5	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit High Voltage	ON	(see page 11-106)
P0139 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Slow Response	ON	(see page 11-109)
P0141 (65)	———	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-110)
P0171 (45)	○	Fuel System Too Lean	ON	(see page 11-113)
P0172 (45)	○	Fuel System Too Rich	ON	(see page 11-113)
P0222 (7)	———	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see page 11-236)
P0223 (7)	———	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see page 11-239)
P0300 (75) and any combination of the following: P0301 (71) P0302 (72) P0303 (73) P0304 (74)	○	Random Misfire Detected	ON	(see page 11-115)
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	(see page 11-118)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	(see page 11-118)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	(see page 11-118)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	(see page 11-118)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with the HDS.
- Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*4: K20Z2 engine
*5: K20Z3 engine

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0325 (23)	———	Knock Sensor Circuit Malfunction	ON	(see page 11-126)
P0335 (4)	———	Crankshaft Position (CKP) Sensor No Signal	ON	(see page 11-128)
P0339 (4)	———	Crankshaft Position (CKP) Sensor Circuit Intermittent Interruption	ON	(see page 11-131)
P0340 (57)	———	Camshaft Position (CMP) Sensor A No Signal	ON	(see page 11-278)
P0341 (57)	———	Camshaft Position (CMP) Sensor A and Crankshaft Position (CKP) Sensor Incorrect Phase Detected	ON	(see page 11-281)
P0344 (57)	———	Camshaft Position (CMP) Sensor A Circuit Intermittent Interruption	ON	(see page 11-282)
P0365 (8)	———	Camshaft Position (CMP) Sensor B No Signal	ON	(see page 11-132)
P0369 (8)	———	Camshaft Position (CMP) Sensor B Circuit Intermittent Interruption	ON	(see page 11-134)
P0401 (80) *4	○	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-357)
P0404 (12) *4	○	Exhaust Gas Recirculation (EGR) Valve Circuit Range/Performance Problem	ON	(see page 11-358)
P0406 (12) *4	———	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-361)
P0420 (67)	○	Catalyst System Efficiency Below Threshold	ON	(see page 11-353)
P0443 (92)	———	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-375)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-379)
P0452 (91)	———*6 ○*7	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see page 11-380)
P0453 (91)	———*6 ○*7	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see page 11-383)
P0455 (90)	○	Evaporative Emission (EVAP) System Large Leak Detected	ON	(see page 11-386)
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see page 11-386)
P0457 (90) *4	○	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see page 11-390)
P0457 (90) *5	———	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	OFF	(see page 11-390)
P0461 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/ Performance Problem	OFF	(see page 11-313)
P0462 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see page 11-313)
P0463 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see page 11-315)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow Detected	ON	(see page 11-391)
P0497 (90) *4	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	(see page 11-392)
P0497 (90) *5	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	(see page 11-395)
P0498 (117)	———	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	(see page 11-398)
P0499 (117)	———	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit High Voltage	ON	(see page 11-401)
P0506 (14)	○	Idle Control System RPM Lower Than Expected	ON	(see page 11-298)
P0507 (14)	○	Idle Control System RPM Higher Than Expected	ON	(see page 11-300)
P050A (167)	○	Cold Start Idle Air Control System Performance Problem	ON	(see page 11-135)
P050B (167)	○	Cold Start Ignition Timing Control System Performance Problem	ON	(see page 11-137)
P0532 (191)	———	A/C Pressure Sensor Circuit Low Voltage	OFF	(see page 11-301)
P0533 (191)	———	A/C Pressure Sensor Circuit High Voltage	OFF	(see page 11-303)
P0562 (34)	———	Charging System Low Voltage	OFF	(see page 11-140)
P0563 (34)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	(see page 11-141)
P0602 (196)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Programming Error	ON	(see page 11-144)
P0603 (131) *8	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-144)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with the HDS.
- Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*4: K20Z2 engine
*5: K20Z3 engine
*6: '06 model
*7: '07-09 models
*8: '06-08 models

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0606 (0)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Processor Malfunction	ON	(see page 11-145)
P060A (131) *1	———	Powertrain Control Module (PCM) (A/T System) Internal Control Module Malfunction	ON	(see page 11-145)
P062F (131) *9	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-144)
P0630 (139)	———	VIN Not Programmed or Mismatch	ON	(see page 11-146)
P0685 (135)	○	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	(see page 11-147)
P0720 (122) *1, *2	———	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see page 11-148)
P0720 (122) *3	———	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see page 11-149)
P1009 (56)	———	Variable Valve Timing Control (VTC) Advance Malfunction	ON	(see page 11-283)
P1109 (13)	———	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see page 11-152)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/ Performance Problem	ON	(see page 11-153)
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see page 11-155)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see page 11-156)
P1157 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS Circuit High Voltage	ON	(see page 11-157)
P1172 (61)	———*4 ○*5	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Out of Range High	ON	(see page 11-159)
P1297 (20)	———	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-160)
P1298 (20)	———	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-162)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-402)
P145C (90) *5	○	Evaporative Emission (EVAP) System Purge Flow Malfunction	ON	(see page 11-404)
P1549 (34)	———	Charging System High Voltage	OFF	(see page 11-164)
P1658 (40)	———	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see page 11-241)
P1659 (40)	———	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see page 11-243)
P1683 (40)	———	Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-247)
P1684 (40)	———	Throttle Valve Return Spring Performance Problem	ON	(see page 11-248)
P16BB (116)	———	Alternator B Terminal Circuit Low Voltage	OFF	(see page 11-165)
P16BC (116)	———	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	(see page 11-166)
P2101 (40)	———	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-249)
P2118 (40)	———	Throttle Actuator Current Range/Performance Problem	ON	(see page 11-251)
P2122 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	(see page 11-253)
P2123 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	(see page 11-256)
P2127 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	(see page 11-257)
P2128 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	(see page 11-260)
P2135 (7)	———	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON	(see page 11-262)
P2138 (37)	———	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-264)
P2176 (40)	———	Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-266)
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/ Performance Problem	ON	(see page 11-168)
P2184 (192)	———	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see page 11-170)
P2185 (192)	———	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see page 11-172)
P2195 (48)	———*3 ○*1	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	ON	(see page 11-174)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with the HDS.
- Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*1: A/T
*2: The D indicator and the MIL may come on at the same time (A/T).
*3: M/T
*4: K20Z2 engine
*5: K20Z3 engine
*9: '09 model

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2227 (13)	○	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	(see page 11-176)
P2228 (13)	———	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-177)
P2229 (13)	———	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-177)
P2238 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS+ Circuit Low Voltage	ON	(see page 11-178)
P2252 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS− Circuit Low Voltage	ON	(see page 11-179)
P2270 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Lean	ON	(see page 11-181)
P2271 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Rich	ON	(see page 11-181)
P2413 (12) *4	○	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-363)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	(see page 11-402)
P2610 (132)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Ignition Off Internal Timer Malfunction	ON	(see page 11-182)
P2646 (22)	———	Rocker Arm Oil Pressure Switch Circuit Low Voltage	ON	(see page 11-284)
P2647 (22)	———	Rocker Arm Oil Pressure Switch Circuit High Voltage	ON	(see page 11-287)
P2648 (21)	———	Rocker Arm Oil Control Solenoid Circuit Low Voltage	ON	(see page 11-289)
P2649 (21)	———	Rocker Arm Oil Control Solenoid Circuit High Voltage	ON	(see page 11-291)
P2A00 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Range/Performance Problem	ON	(see page 11-182)
U0028 (126)	———	F-CAN Malfunction (BUS-OFF (Engine Control Module (ECM)/ Powertrain Control Module (PCM)))	ON	(see page 11-183)
U0122 (126) *6	———	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Vehicle Stability Assist (VSA) Modulator-Control Unit)	OFF	(see page 11-184)
U0131 (126)	———	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Electrical Power Steering (EPS) Control Unit)	OFF	(see page 11-186)
U0155 (126)	———	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Gauge Control Module)	ON	(see page 11-188)
U0300 (131) *1	———	PGM-FI System and A/T System Program Version Mismatch	ON	(see page 11-190)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with the HDS.
- Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*1: A/T
*4: K20Z2 engine
*6: with VSA

Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-67). 2. Test the starter (see page 4-9). 3. Check the fuel pressure (see page 11-325). 4. Troubleshoot the fuel pump circuit (see page 11-318).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken cam chain • Fuel contamination
Engine will not start (MIL comes on and stays on, no DTCs set)	Troubleshoot the DLC circuit (see page 11-204).	
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see page 11-203).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system (see page 22-321).	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system (see page 22-323).	
Engine is hard to start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-67). 2. Check the fuel pressure (see page 11-325). 3. Clean the throttle body (see page 11-344).	• Low compression • Intake air leaks • Fuel contamination • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the idle speed (see page 11-309). 3. Clean the throttle body (see page 11-344).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the idle speed (see page 11-309). 3. Do the throttle position learning check (see page 11-343).	Intake air leaks
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the idle speed (see page 11-309). 3. Do the carbon accumulation check (see page 11-343). 4. Troubleshoot the A/C signal circuit (see page 11-306).	• Incorrect valve timing or clearance adjustment • Intake air leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-307). 2. Do the carbon accumulation check (see page 11-343).	Incorrect valve timing or clearance adjustment
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-307). 2. Inspect the APP sensor (see page 11-268).	Intake air leaks

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-325).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level • Exhaust restriction
Engine stalls (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the fuel pressure (see page 11-325). 3. Check the idle speed (see page 11-309). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-308).	• Intake air leaks • Faulty harness and sensor connections • Fuel contamination
Difficult to refuel (MIL works OK, no DTCs set)	1. Check the fuel vent tube between the EVAP canister and the fuel tank. 2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank. 3. Replace the fuel tank (see page 11-339).	• Malfunctioning gas station filling nozzle. • Filler neck restriction • Faulty fuel tank vapor control valve
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank (see page 11-339).	Malfunctioning gas station filling nozzle.
HDS does not communicate with the ECM/PCM or the vehicle	Troubleshoot the DLC circuit (see page 11-204).	
Fuel cap warning message stays on (MIL works OK, no DTCs set) (K20Z3 engine)	Troubleshoot the fuel cap warning message system (see page 11-405).	

System Description

Electronic Control Systems

The functions of the fuel and emission control systems are managed by the engine control module (ECM) on vehicles with manual transmissions or the powertrain control module (PCM) on vehicles with automatic transmissions.

Self-diagnosis
The ECM/PCM detects a failure of a signal from a sensor or another control unit and stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle (K20Z3 engine: DTC P0457, turns on the malfunction indicator lamp (MIL) during the third drive cycle). When a DTC is stored, the ECM/PCM turns on the malfunction indicator lamp (MIL) by a signal sent to the gauge via F-CAN.

- **One Drive Cycle Detection Method**
  When an abnormality occurs in the signal from a sensor or from another control unit, the ECM/PCM stores a DTC and turns on the MIL immediately.

- **Two Drive Cycle Detection Method**
  When an abnormality occurs in the signal from a sensor or from another control unit in the first drive cycle, the ECM/PCM stores a Temporary DTC. If the failure continues in the second drive cycle, the ECM/PCM stores a DTC and turns on the MIL.

Fail-safe Function
When an abnormality occurs in the signal from a sensor or another control unit, the ECM/PCM ignores the signal and substitutes a pre-programmed value that allows the engine to continue running. This causes a DTC to be stored and the MIL to come on.

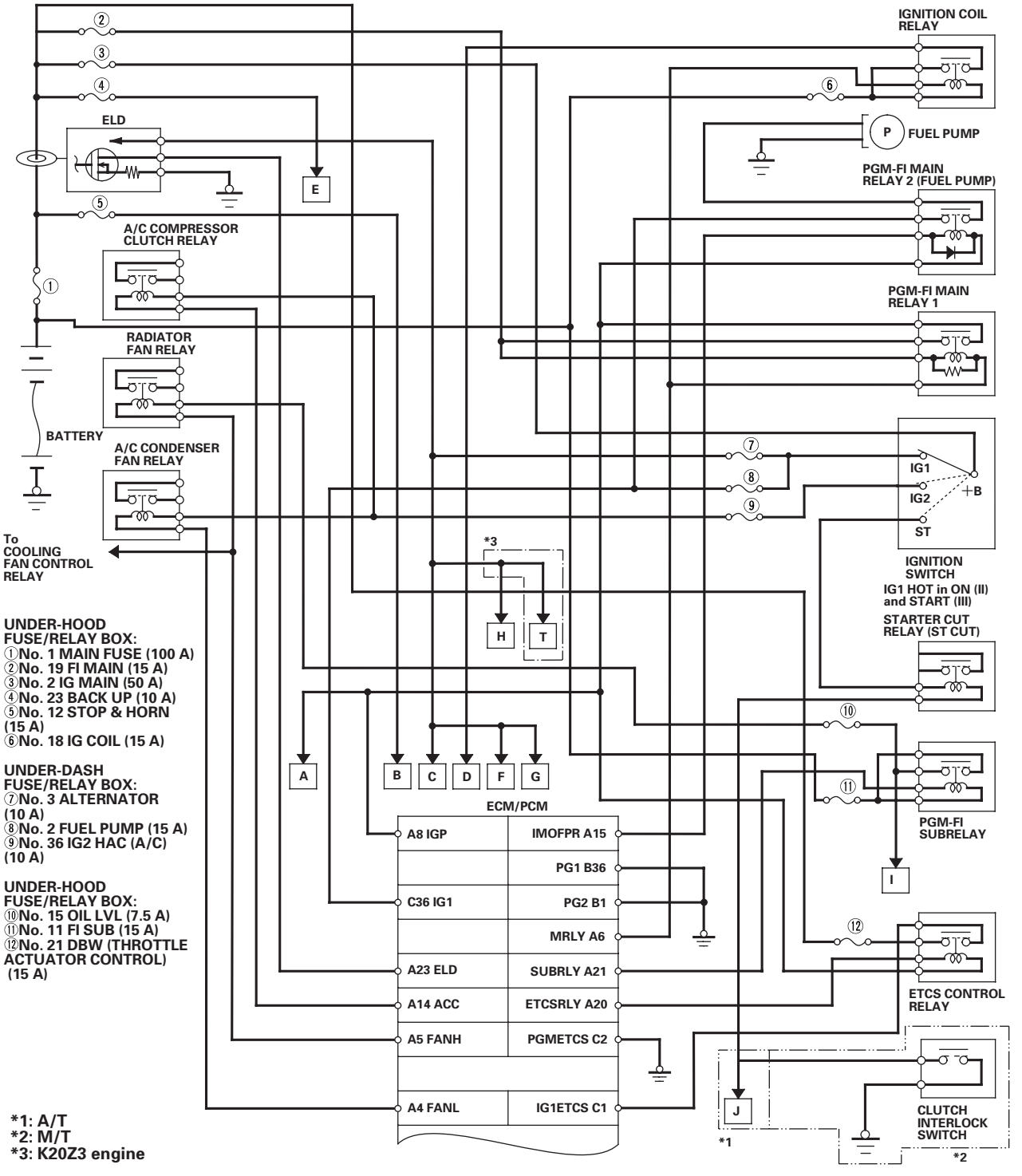
MIL Bulb Check and Readiness Code Condition
When the ignition switch is turned to ON (II), the ECM/PCM turns on the MIL via the F-CAN circuit for about 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

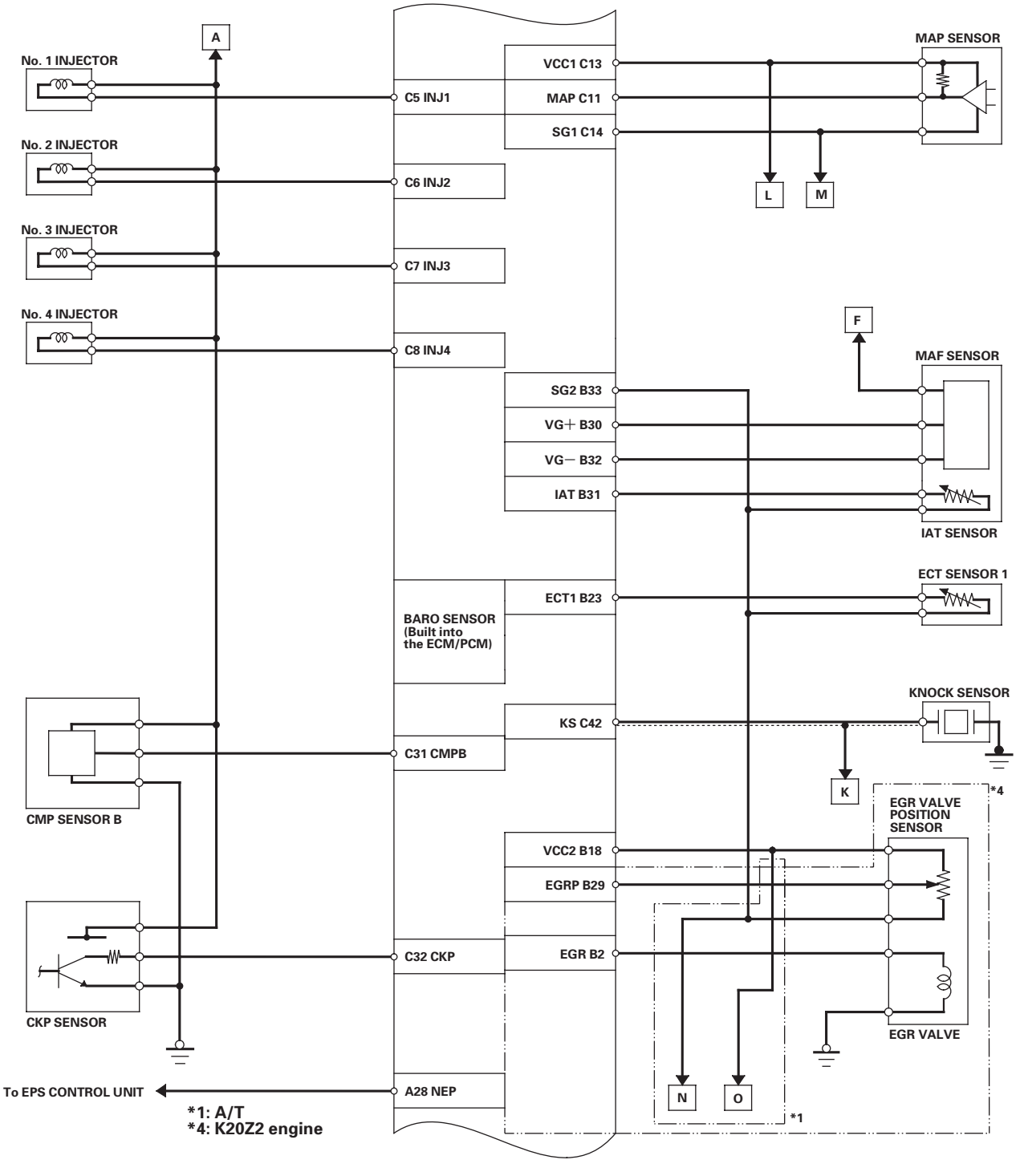
Self Shut Down (SSD) Mode
After the ignition switch is turned to LOCK (0), the ECM/PCM stays on (about 30 minutes). If the ECM/PCM connector is disconnected during this time, the ECM/PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the ignition switch is turned to LOCK (0).

(cont'd)

System Description (cont'd)

ECM/PCM Electrical Connections

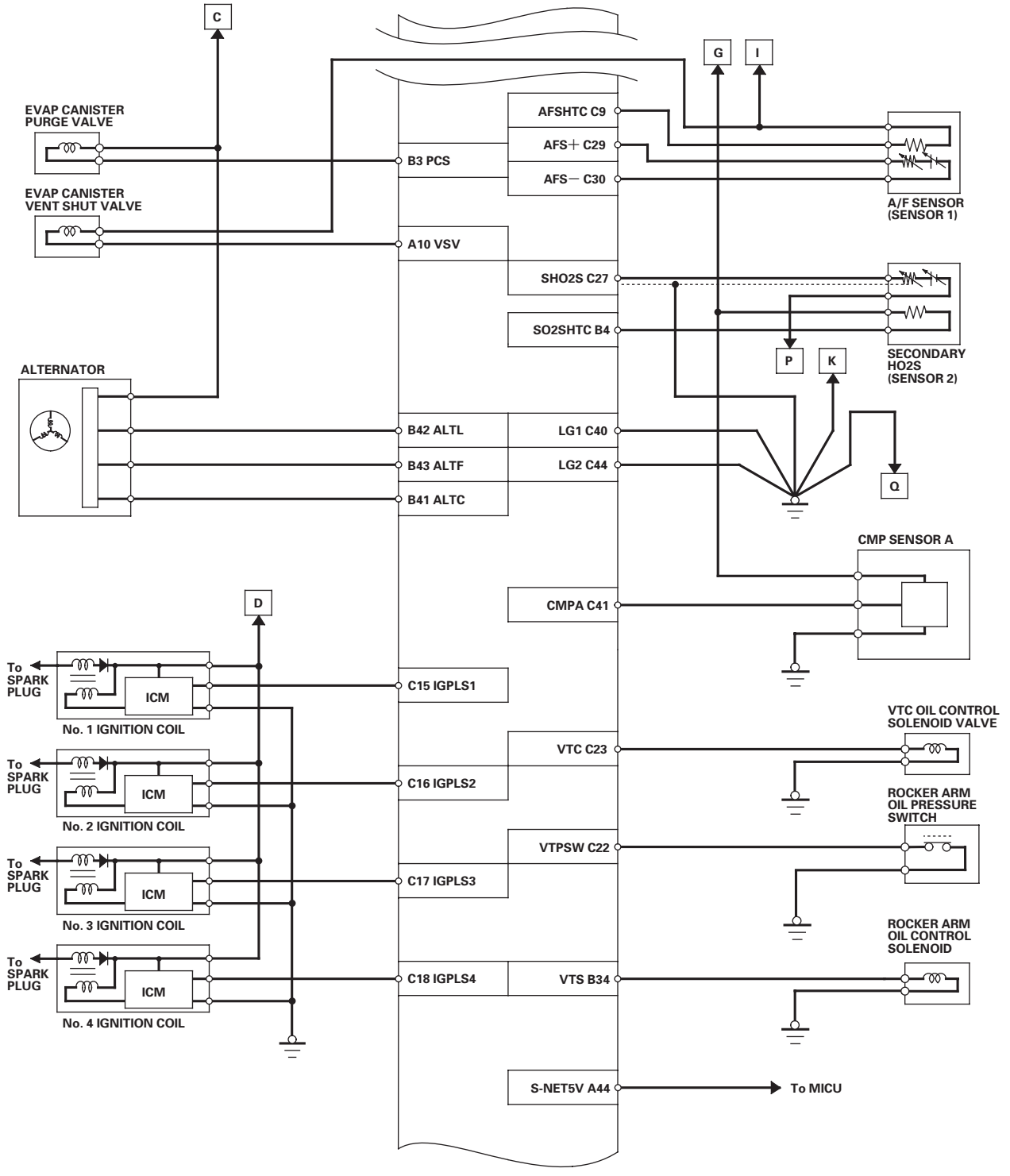


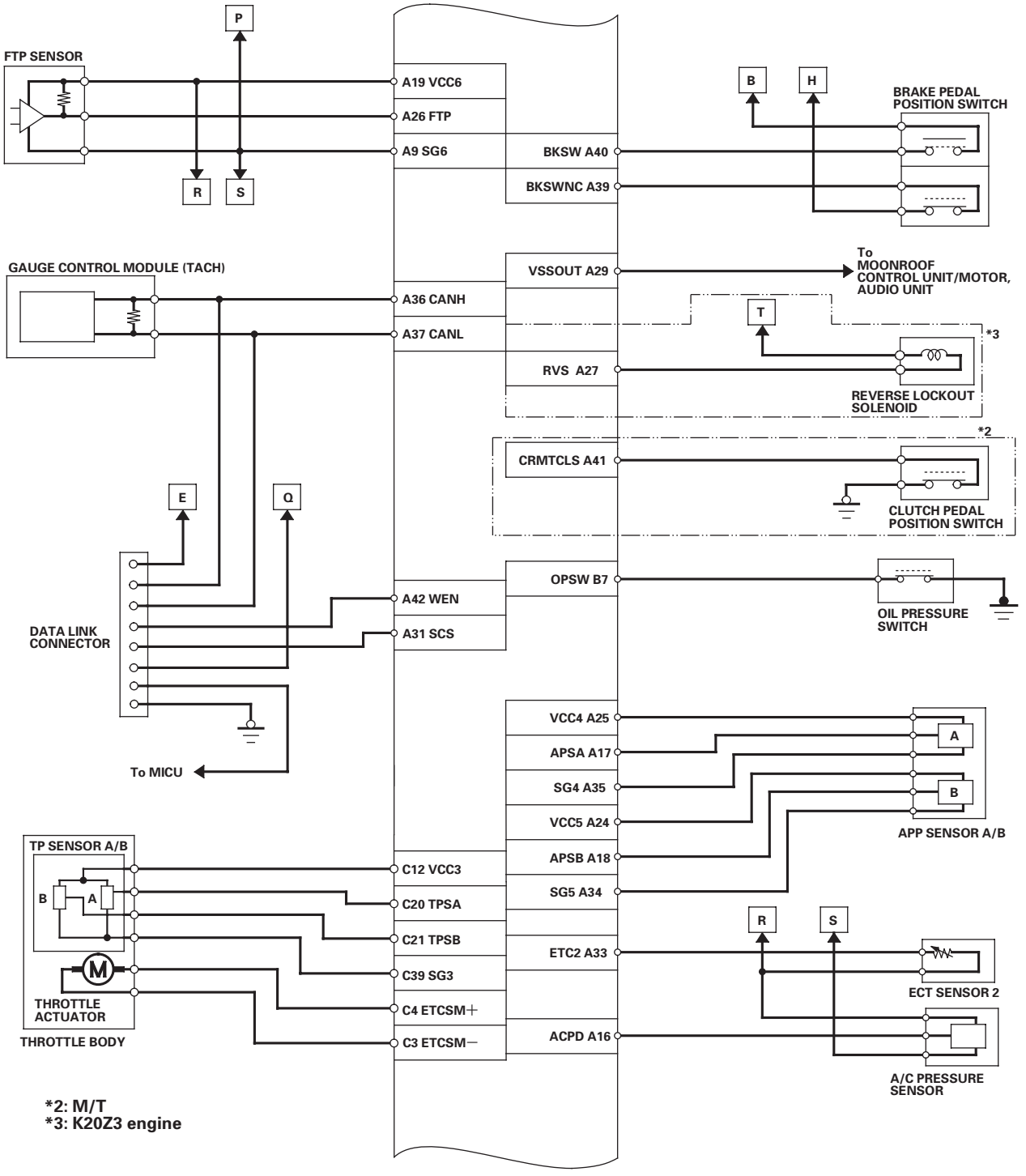

A
No. 1 INJECTOR
No. 2 INJECTOR
No. 3 INJECTOR
No. 4 INJECTOR
C5 INJ1
C6 INJ2
C7 INJ3
C8 INJ4
VCC1 C13
MAP C11
SG1 C14
MAP SENSOR
L
M
F
MAF SENSOR
SG2 B33
VG+ B30
VG− B32
IAT B31
IAT SENSOR
ECT SENSOR 1
ECT1 B23
BARO SENSOR (Built into the ECM/PCM)
KNOCK SENSOR
KS C42
K
*4
EGR VALVE POSITION SENSOR
C31 CMPB
CMP SENSOR B
VCC2 B18
EGRP B29
EGR B2
C32 CKP
CKP SENSOR
EGR VALVE
N
O
*1
To EPS CONTROL UNIT
A28 NEP
*1: A/T
*4: K20Z2 engine

(cont'd)

System Description (cont'd)

ECM/PCM Electrical Connections (cont'd)

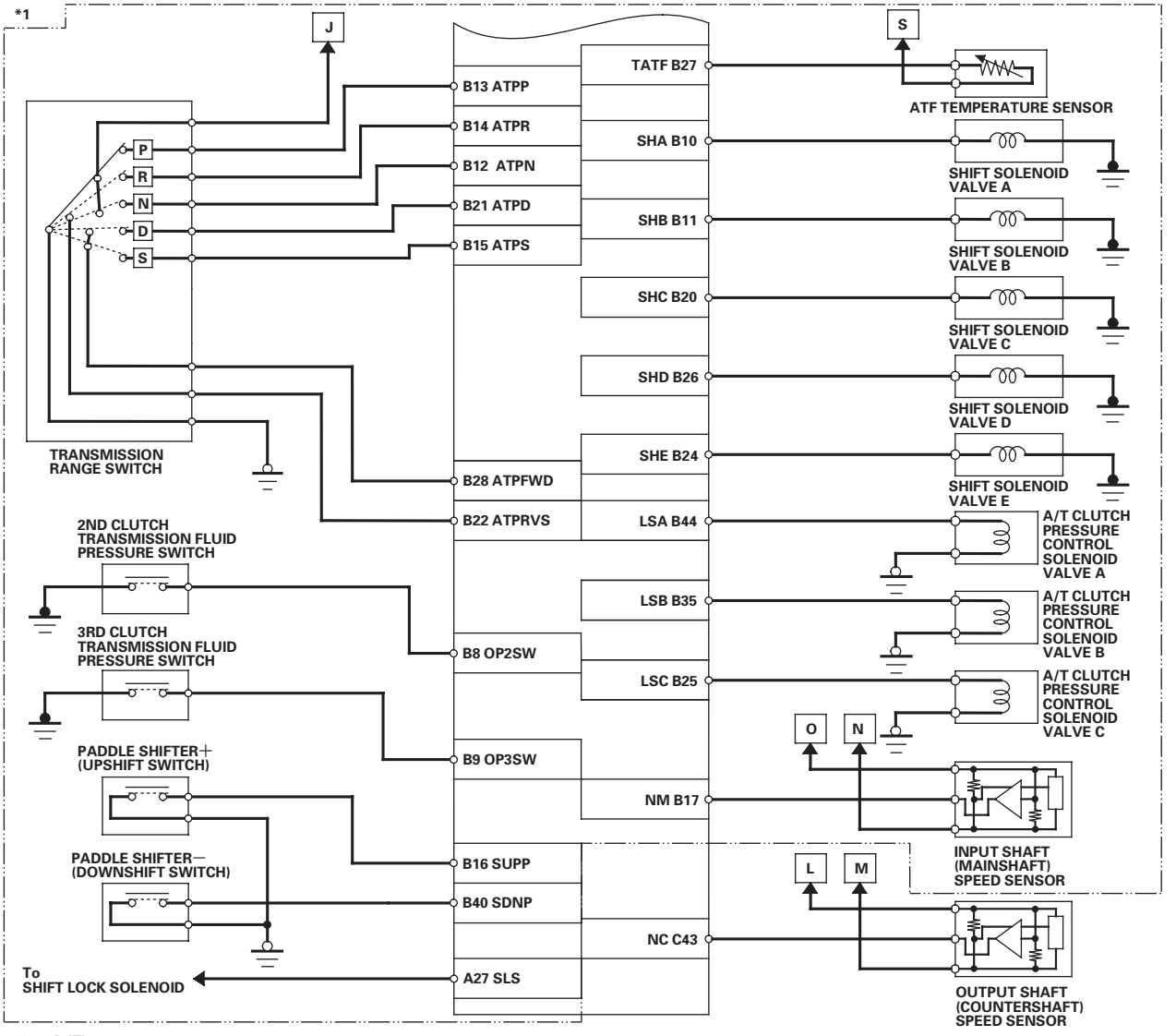



FTP SENSOR
P
R
S
A19 VCC6
A26 FTP
A9 SG6
BKSW A40
BKSWNC A39
B
H
BRAKE PEDAL POSITION SWITCH
GAUGE CONTROL MODULE (TACH)
A36 CANH
A37 CANL
VSSOUT A29
To MOONROOF CONTROL UNIT/MOTOR, AUDIO UNIT
T
*3
RVS A27
REVERSE LOCKOUT SOLENOID
*2
CRMTCLS A41
CLUTCH PEDAL POSITION SWITCH
E
Q
DATA LINK CONNECTOR
A42 WEN
A31 SCS
OPSW B7
OIL PRESSURE SWITCH
To MICU
VCC4 A25
APSA A17
SG4 A35
VCC5 A24
APSB A18
SG5 A34
A
B
APP SENSOR A/B
TP SENSOR A/B
B
A
M
THROTTLE ACTUATOR
THROTTLE BODY
C12 VCC3
C20 TPSA
C21 TPSB
C39 SG3
C4 ETCSM+
C3 ETCSM−
ETC2 A33
ACPD A16
R
S
ECT SENSOR 2
A/C PRESSURE SENSOR
*2: M/T
*3: K20Z3 engine

(cont'd)

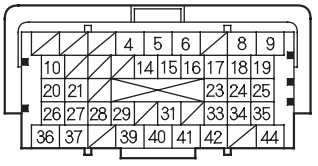
System Description (cont'd)

ECM/PCM Electrical Connections (cont'd)

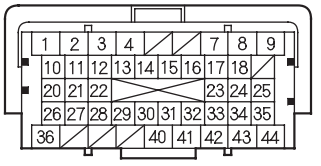


*1: A/T

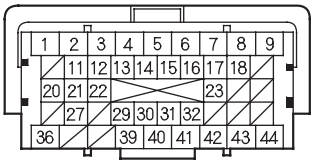
ECM/PCM A (□) (44P)



ECM/PCM B (△) (44P)



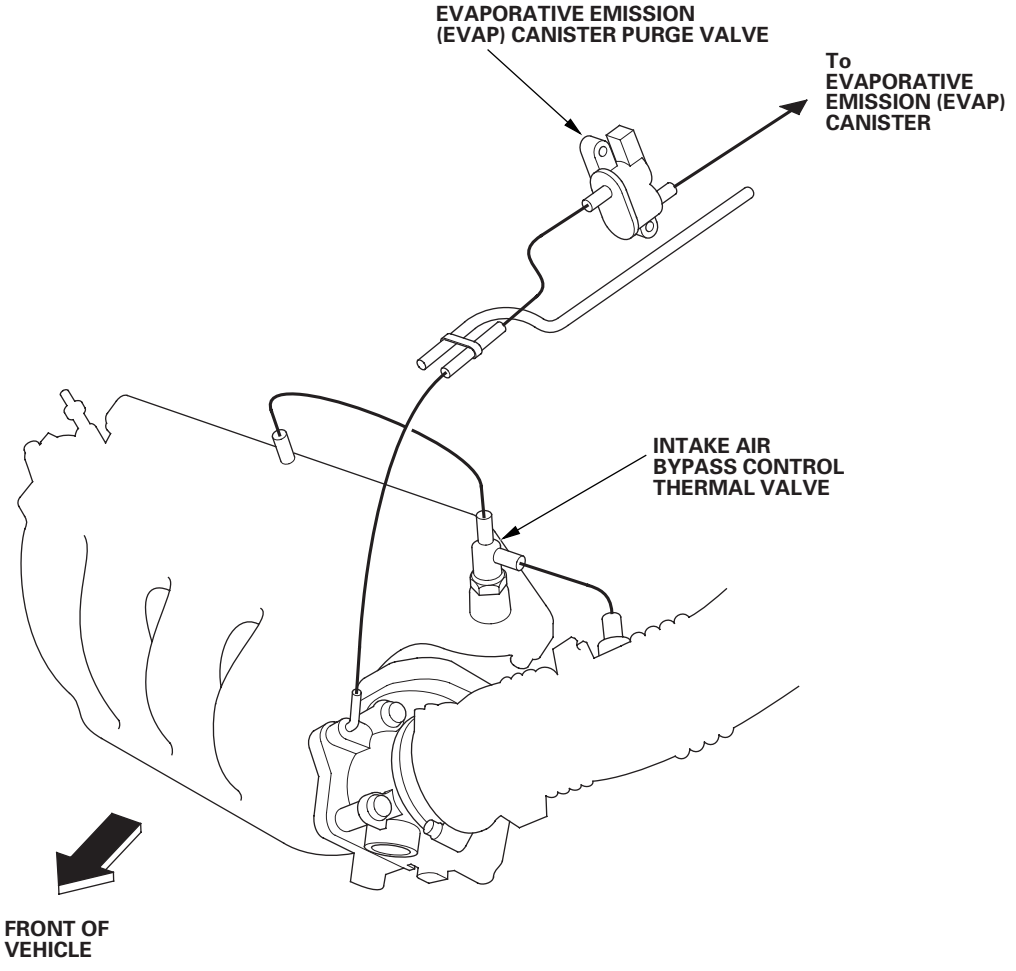
ECM/PCM C (○) (44P)



TERMINAL LOCATIONS

Vacuum Hose Routing

K20Z2 engine

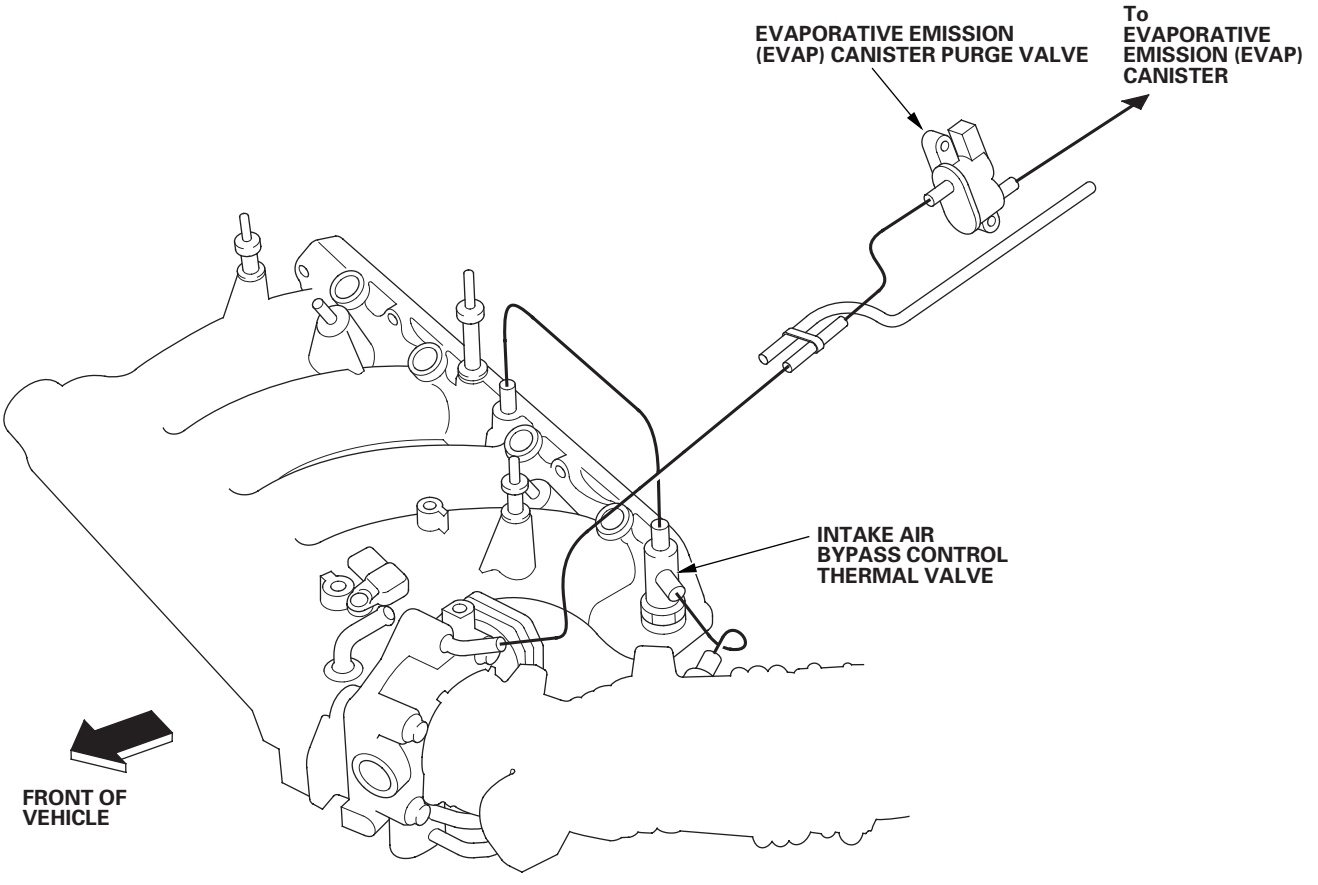


(cont'd)

System Description (cont'd)

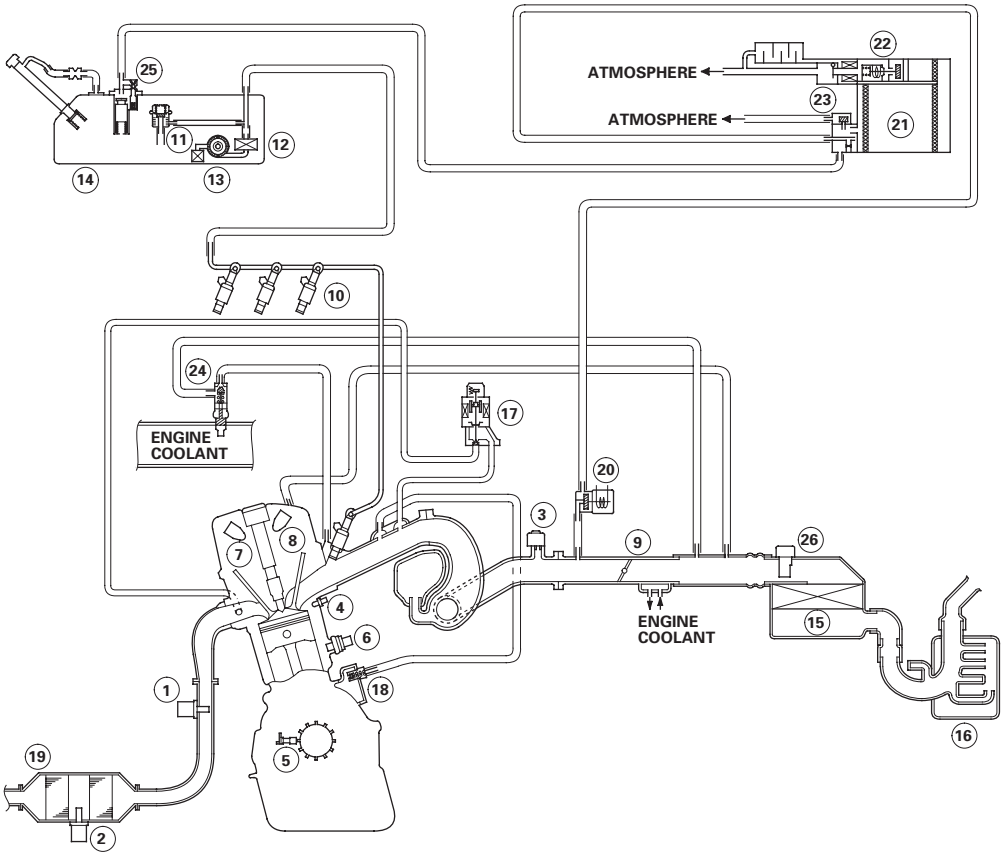
Vacuum Hose Routing (cont'd)

K20Z3 engine



Vacuum Distribution

K20Z2 engine



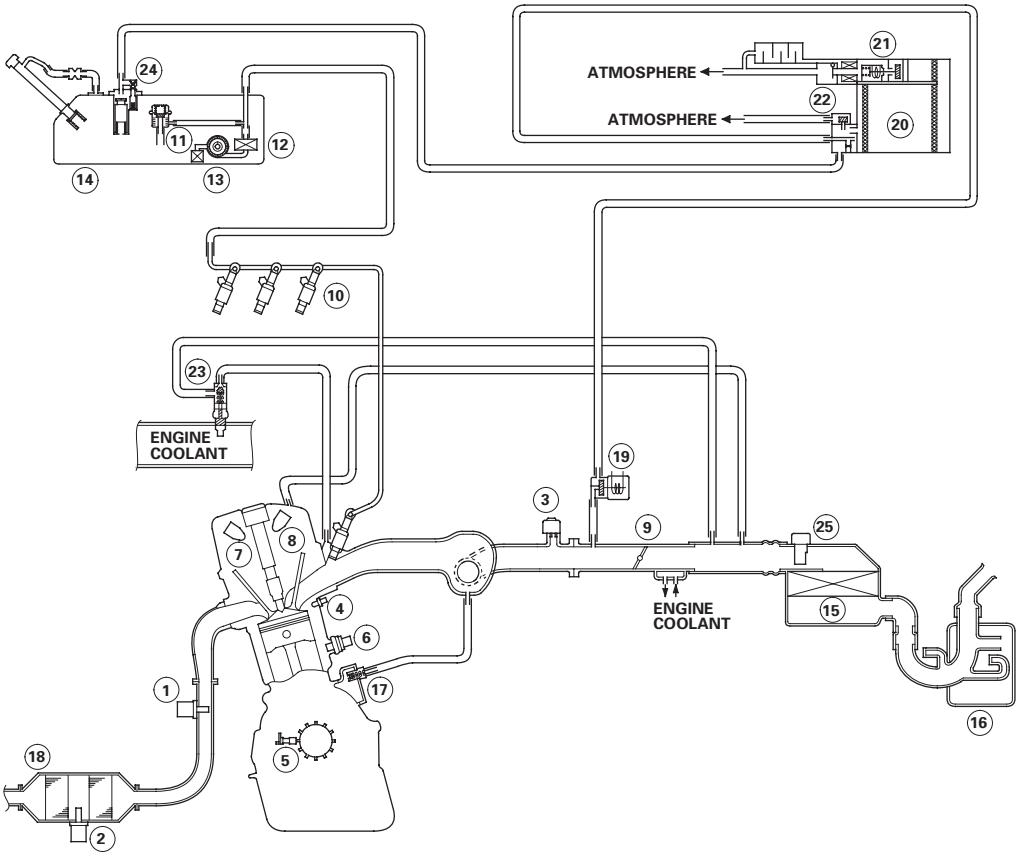
① AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
⑤ CRANKSHAFT POSITION (CKP) SENSOR
⑥ KNOCK SENSOR
⑦ CAMSHAFT POSITION (CMP) SENSOR B
⑧ CAMSHAFT POSITION (CMP) SENSOR A
⑨ THROTTLE BODY
⑩ INJECTOR
⑪ FUEL PRESSURE REGULATOR
⑫ FUEL FILTER
⑬ FUEL PUMP
⑭ FUEL TANK
⑮ AIR CLEANER
⑯ INTAKE AIR RESONATOR
⑰ EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR
⑱ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑲ THREE WAY CATALYTIC CONVERTER
⑳ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉑ EVAPORATIVE EMISSION (EVAP) CANISTER
㉒ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉓ FUEL TANK PRESSURE (FTP) SENSOR
㉔ INTAKE AIR BYPASS CONTROL THERMAL VALVE
㉕ FUEL TANK VAPOR CONTROL VALVE
㉖ MASS AIR FLOW (MAF) SENSOR/ INTAKE AIR TEMPERATURE (IAT) SENSOR

(cont'd)

System Description (cont'd)

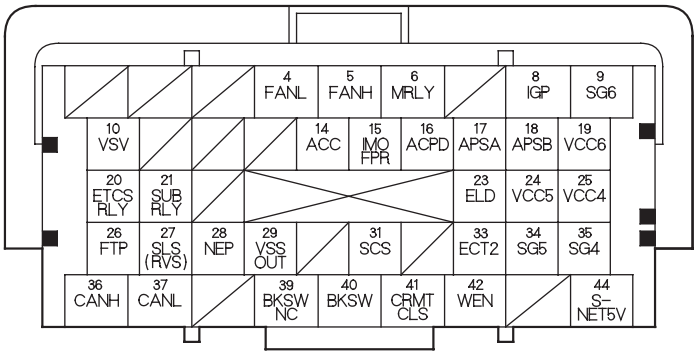
Vacuum Distribution (cont'd)

K20Z3 engine



① AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
⑤ CRANKSHAFT POSITION (CKP) SENSOR
⑥ KNOCK SENSOR
⑦ CAMSHAFT POSITION (CMP) SENSOR B
⑧ CAMSHAFT POSITION (CMP) SENSOR A
⑨ THROTTLE BODY
⑩ INJECTOR
⑪ FUEL PRESSURE REGULATOR
⑫ FUEL FILTER
⑬ FUEL PUMP
⑭ FUEL TANK
⑮ AIR CLEANER
⑯ INTAKE AIR RESONATOR
⑰ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑱ THREE WAY CATALYTIC CONVERTER
⑲ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
⑳ EVAPORATIVE EMISSION (EVAP) CANISTER
㉑ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉒ FUEL TANK PRESSURE (FTP) SENSOR
㉓ INTAKE AIR BYPASS CONTROL THERMAL VALVE
㉔ FUEL TANK VAPOR CONTROL VALVE
㉕ MASS AIR FLOW (MAF) SENSOR/ INTAKE AIR TEMPERATURE (IAT) SENSOR

ECM/PCM Inputs and Outputs at Connector A (□) (44P)



Terminal side of female terminals

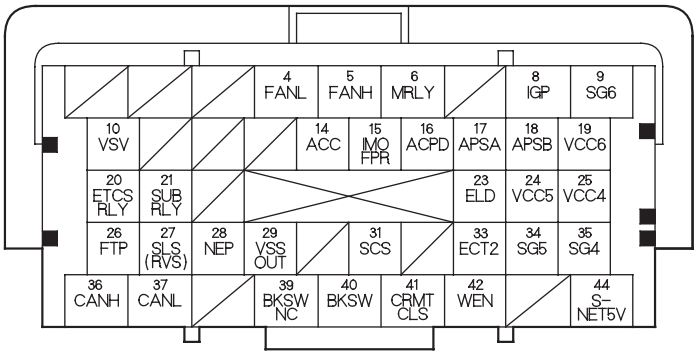
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
4	PUR	FANL (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
5	GRY	FANH (RADIATOR FAN CONTROL)	Drives A/C condenser fan relay	With A/C condenser fan running: about 0 V With A/C condenser fan stopped: battery voltage
6	GRN	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
8	ORN	IGP (POWER SOURCE)	Power source for ECM/PCM circuit	With ignition switch ON (II): battery voltage
9	BLK	SG6 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
10	LT GRN	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
14	RED	ACC (A/C COMPRESSOR CLUTCH RELAY)	Drives A/C compressor clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
15	BRN	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	About 0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
16	LT GRN	ACPD (A/C PRESSURE SENSOR)	Detects A/C pressure sensor signal	With A/C switch ON: about 1.7—4.8 V (depending on A/C pressure)
17	YEL	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.7 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
18	PUR	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.25 V
19	RED	VCC6 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20	YEL	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V (4.0 V momentarily)
21	PNK	SUBRLY (PGM-FI SUBRELAY)	Drives PGM-FI subrelay	With ignition switch ON (II): about 0 V
23	ORN	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1—4.8 V (depending on electrical load)

(cont'd)

System Description (cont'd)

ECM/PCM Inputs and Outputs at Connector A (□) (44P)



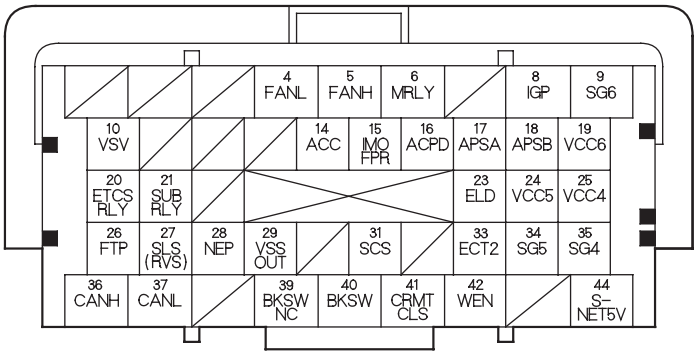
Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
24	GRY	VCC5 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
25	BRN	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
26	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap removed: about 2.5 V
27 *1	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P, brake pedal pressed, and accelerator released: battery voltage
27 *3	GRN	RVS (REVERSE LOCKOUT SOLENOID)	Drives reverse lockout solenoid	With vehicle speed below 9 mph (15 km/h): battery voltage With vehicle speed above 13 mph (20 km/h): about 0 V
28	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
29	BLU	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed signal	Depending on vehicle speed: pulses
31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using HDS: about 0 V With service check signal opened: about 5.0 V
33	GRN	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
34	LT BLU	SG5 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	BLU	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)
37	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)

* 1: A/T
* 3: K20Z3 engine

ECM/PCM Inputs and Outputs at Connector A (□) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

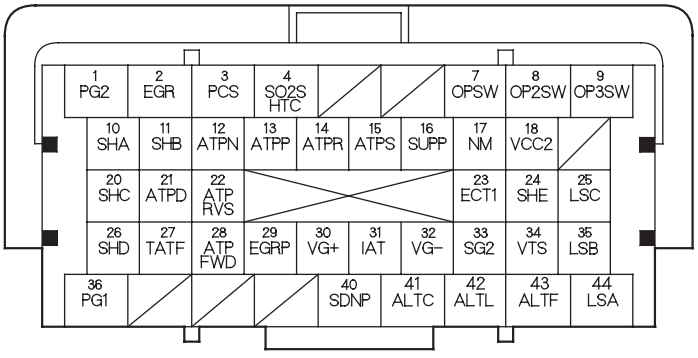
Terminal number	Wire color	Terminal name	Description	Signal
39	BRN	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
40	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
41 *2	LT BLU	CRMTCLS (CRUISE CLUTCH PEDAL POSITION SIGNAL)	Detects clutch pedal position switch signal	With ignition switch ON (II) and clutch pedal released: about 0 V With ignition switch ON (II) and clutch pedal pressed: battery voltage
42	RED	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
44	PNK	S-NET5V (SERIAL COMMUNICATION FOR IMMOBILIZER)	Sends serial communication signal	With ignition switch ON (II): pulses With ignition switch OFF: about 5.0 V

* 2: M/T

(cont'd)

System Description (cont'd)

ECM/PCM Inputs and Outputs at Connector B (△) (44P)



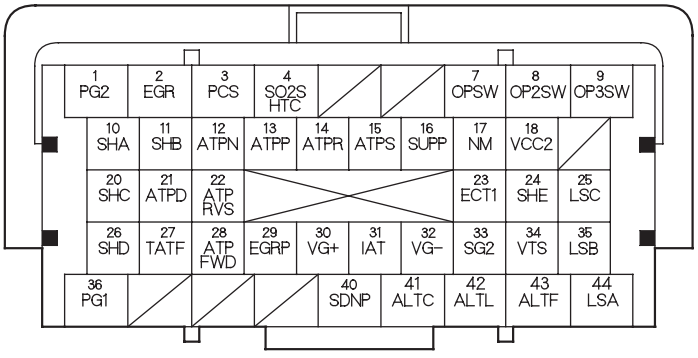
Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK/RED (BLK) *5	PG2 (POWER GROUND)	Ground circuit for ECM/PCM	Less than 1.0 V at all times
2 *4	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
3	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 60 ℃ (140 ℉): battery voltage With engine running, engine coolant above 60 ℃ (140 ℉): duty controlled
4	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER (SENSOR 2))	Drives secondary HO2S heater (sensor 2)	With ignition switch ON (II): battery voltage With warmed up engine running: duty controlled
7	YEL/RED	OPSW (OIL PRESSURE SWITCH)	Detects engine oil pressure signal	With ignition switch OFF: about 0 V With engine running: battery voltage
8 *1	BLU/RED	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch input	With ignition switch ON (II): • Without 2nd clutch pressure: about 5.0 V • With 2nd clutch pressure: about 0 V
9 *1	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch input	With ignition switch ON (II): • Without 3rd clutch pressure: about 5.0 V • With 3rd clutch pressure: about 0 V
10 *1	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R, D, and S (in 1st, 4th, or 5th gears): battery voltage With engine running in P, N, D, and S (in 2nd and 3rd gears): about 0 V
11 *1	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D, and S (in 1st and 2nd gears): battery voltage With engine running in D and S (in 3rd, 4th, 5th gears): about 0 V
12 *1	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal input	In N: about 0 V In any position other than N: about 5.0 V
13 *1	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH P)	Detects transmission range switch P position signal input	In P: about 0 V In any position other than P: about 5.0 V
14 *1	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal input	In R: about 0 V In any position other than R: about 5.0 V
15 *1	RED	ATPS (TRANSMISSION RANGE SWITCH S)	Detects transmission range switch S position signal input	In S: about 0 V In any position other than S: battery voltage

* 1: A/T
* 4: K20Z2 engine
* 5: '07-09 models

ECM/PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

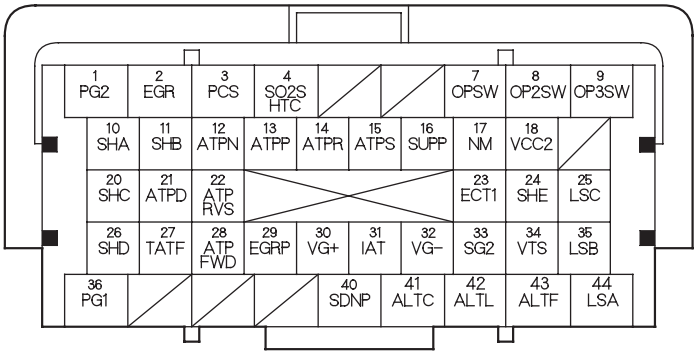
Terminal number	Wire color	Terminal name	Description	Signal
16 *1	BLU/YEL	SUPP (PADDLE SHIFTER+ (UPSHIFT SWITCH))	Detects paddle shifter+ (upshift switch)	In S: • With paddle shifter+ (upshift switch) pressed: about 0 V • With paddle shifter+ (upshift switch) released: battery voltage
17 *1	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V With engine idling in N: about 2.5 V
18	YEL/BLU (YEL) *3	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20 *1	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in N and S (in 1st, 3rd, and 5th gears): battery voltage With engine running in P, R, D, and S (in 2nd and 4th gears): about 0 V
21 *1	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal input	In D: about 0 V In any position other than D: battery voltage
22 *1	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch RVS position signal input	In R: about 0 V In any position other than R: battery voltage
23	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
24 *1	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in P and R: battery voltage With engine running in N, D, and S (in 1st gear): about 0 V
25 *1	BLU/YEL	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): current controlled
26 *1	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in D and S (in 2nd and 5th gears): battery voltage With engine running in P, R, N, D, and S (in 1st, 3rd, and 4th gears): about 0 V
27 *1	RED/YEL	TATF (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	With ignition switch ON (II): about 0.2—4.0 V (about 1.8 V at operating temperature) (depending on ATF temperature)
28 *1	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch D and S positions signal	In D and S: about 0 V In any other position D and S: battery voltage
29 *4	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: about 1.2—3.0 V (depending on EGR valve lift)

* 1: A/T
* 3: K20Z3 engine
* 4: K20Z2 engine

(cont'd)

System Description (cont'd)

ECM/PCM Inputs and Outputs at Connector B (△) (44P)



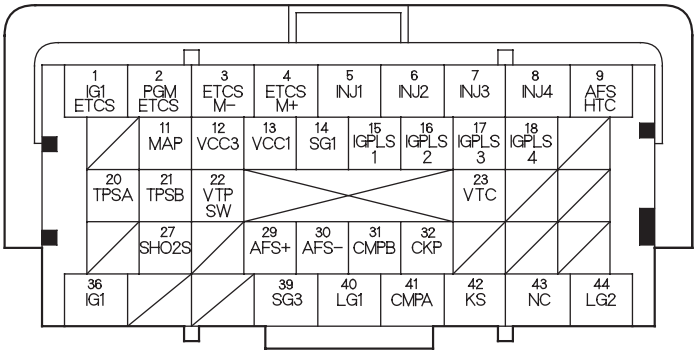
Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
30	RED/BLK	VG+ (MASS AIR FLOW (MAF) SENSOR +SIDE)	Detects MAF sensor signal	At idle: about 1.1—1.6 V (between VG+ terminal and VG— terminal)
31	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1—4.0 V (about 1.8 V at normal operating temperature)
32	BLK/BLU	VG— (MASS AIR FLOW (MAF) SENSOR —SIDE)	Ground for MAF sensor signal	
33	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
34	GRN/YEL	VTS (ROCKER ARM OIL CONTROL SOLENOID)	Drives rocker arm oil control solenoid	At idle: about 0 V
35 *1	BRN	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): current controlled
36	BLK	PG1 (POWER GROUND)	Ground circuit for ECM/ PCM	Less than 1.0 V at all times
40 *1	BRN	SDNP (PADDLE SHIFTER— (DOWN SHIFT SWITCH))	Detects paddle shifter— (downshift switch) signal	In S: • With paddle shifter— (downshift switch) pressed: about 0 V • With paddle shifter— (downshift switch) released: about 5.0 V
41	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With warmed up engine running: about 5.0 V (depending on electrical load)
42	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
43	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 2.6—3.4 V (depending on electrical load)
44 *1	RED/BLK	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): current controlled

* 1: A/T

ECM/PCM Inputs and Outputs at Connector C (◯) (44P)



Terminal side of female terminals

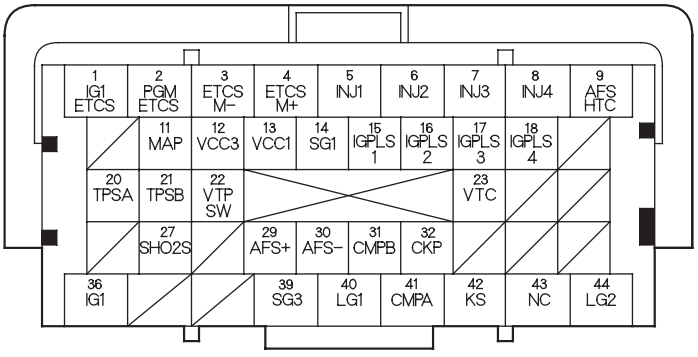
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	WHT	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
2	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for ECM/ PCM	Less than 1.0 V at all times
3	GRN/YEL	ETCSM− (THROTTLE ACTUATOR −SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	BLU/RED	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
6	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
9	WHT/GRN	AFSHTC (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL (SENSOR 1))	Drives A/F sensor heater (sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V
11	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3.0 V At idle: about 1.0 V (depending on engine speed)
12	BLU	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
15	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
16	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
17	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
18	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
20	RED/BLK	TPSA (THROTTLE POSITION (TP) SENSOR A)	Detects TP sensor A signal	With throttle fully open: about 3.9 V With throttle fully closed: about 0.9 V
21	RED/BLU	TPSB (THROTTLE POSITION (TP) SENSOR B)	Detects TP sensor B signal	With throttle fully open: about 4.1 V With throttle fully closed: about 1.7 V

(cont'd)

System Description (cont'd)

ECM/PCM Inputs and Outputs at Connector C (◯) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

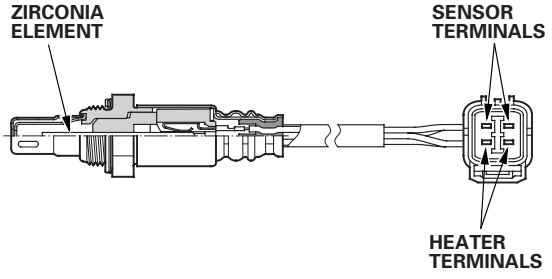
Terminal number	Wire color	Terminal name	Description	Signal
22	BLU/BLK	VTPSW (ROCKER ARM OIL PRESSURE SWITCH)	Detects rocker arm oil pressure switch signal	With engine at low speed: about 0 V With engine at high speed: battery voltage
23	BLU/WHT	VTC (VTC OIL CONTROL SOLENOID VALVE)	Drives VTC oil control solenoid valve	with ignition switch ON (II): about 0 V
27	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2))	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle and warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
29	RED	AFS＋ (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) ＋SIDE)	Detects A/F sensor (sensor 1) signal	
30	RED/YEL	AFS− (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) −SIDE)	Detects A/F sensor (sensor 1) signal	
31	GRN	CMPB (CAMSHAFT POSITION (CMP) SENSOR B)	Detects CMP sensor B signal	With engine running: pulses
32	BLU/YEL	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
36	BLK/GRN	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
39	GRN	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 1.0 V at all times
41	BLU/WHT	CMPA (CAMSHAFT POSITION (CMP) SENSOR A)	Detects CMP sensor A signal	With engine running: pulses
42	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
43	BLK/WHT	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signals	With ignition switch ON (II): pulses With vehicle moving: about 5.0 V (pulses)
44	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 1.0 V at all times

PGM-FI System

The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

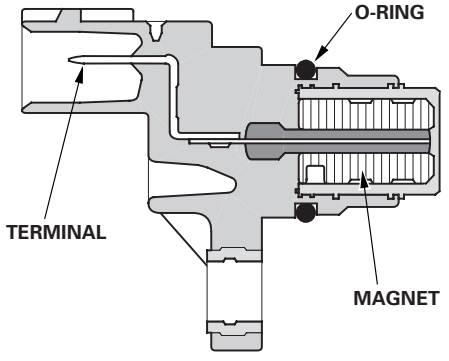
Air Conditioning (A/C) Compressor Clutch Relay
When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor
The A/F sensor operates over a wide air/fuel range. The A/F sensor is installed upstream of the TWC, and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly.

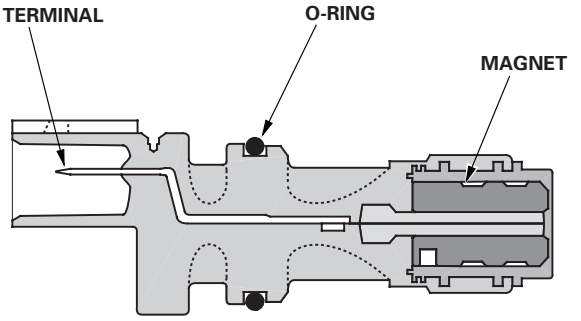


Barometric Pressure (BARO) Sensor
The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

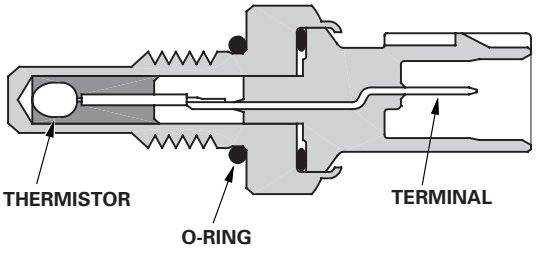
Camshaft Position (CMP) Sensor B
CMP sensor B detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



Crankshaft Position (CKP) Sensor
The CKP sensor detects crankshaft speed and is used by the ECM/PCM to determine the ignition timing, timing for the fuel injection of each cylinder, and engine misfire detection.



Engine Coolant Temperature (ECT) Sensor 1 and 2
ECT sensors 1 and 2 are temperature dependent resistors (thermistors). The resistance decreases as the engine coolant temperature increases.



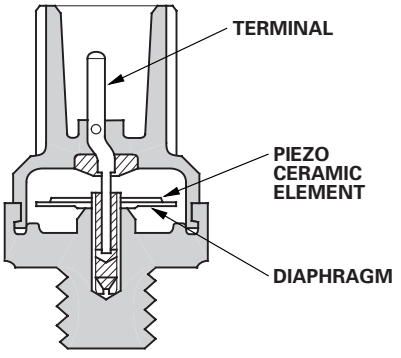
Ignition Timing Control
The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature and intake air temperature.

Injector Timing and Duration
The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.
By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system and sets diagnostic trouble codes (DTCs) if needed.

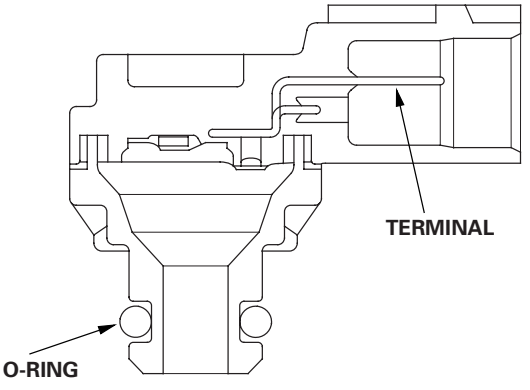
(cont'd)

System Description (cont'd)

Knock Sensor
The knock control system adjusts the ignition timing to minimize knock.



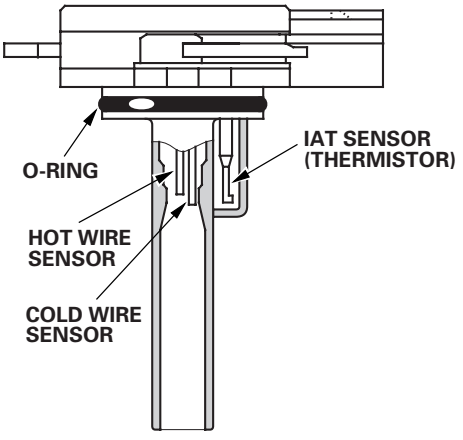
Manifold Absolute Pressure (MAP) Sensor
The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.



Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)
The vehicle has certain readiness codes that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

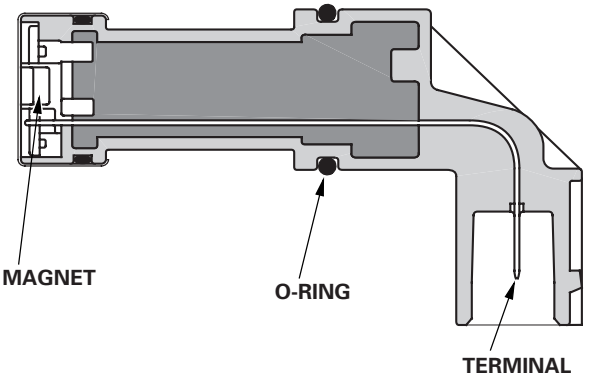
To check if the readiness codes are set to complete, turn the ignition switch to ON (II), but do not start the engine. The MIL will come on for 15—20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not complete. To set each code, drive the vehicle or run the engine as described in the procedures (see page 11-69).

Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor
The mass air flow (MAF) sensor/intake air temperature (IAT) sensor contains a hot wire sensor, a cold wire sensor, and a thermistor. It is located in the intake air passage. The resistance of the hot wire sensor, the cold wire sensor, and the thermistor change due to intake air temperature and air flow. The control circuit in the MAF sensor controls the current to keep the hot wire at a set temperature. The current is converted to voltage in the control circuit, then output to the ECM/PCM.

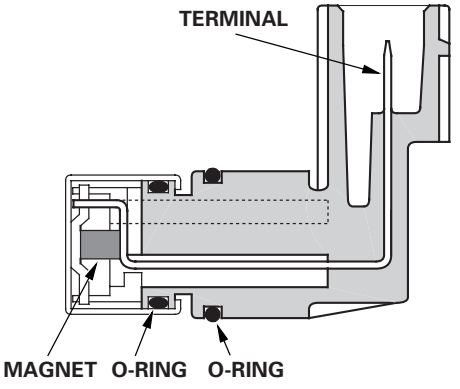


Output Shaft (Countershaft) Speed Sensor
This sensor detects countershaft speed.

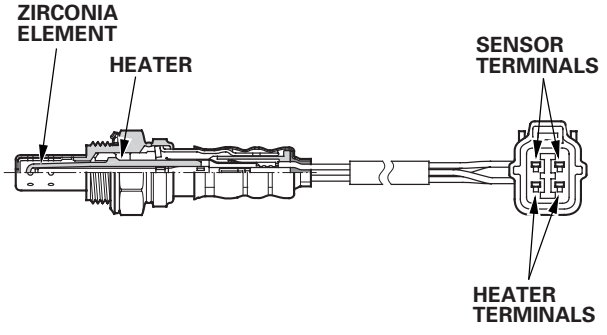
A/T



M/T



Secondary Heated Oxygen Sensor (Secondary HO2S)
The secondary HO2S detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC), and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilize its output, the sensor has an internal heater. The ECM/PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is on the TWC.



Electronic Throttle Control System

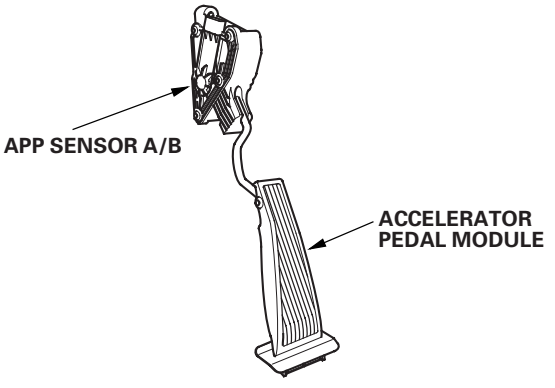
The throttle is electronically controlled by the electronic throttle control system. Refer to the system diagram to see a functional layout of the system.

Idle control: When the engine is idling, the ECM/PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the ECM/PCM opens the throttle valve, depending on the accelerator pedal position (APP) sensor signal.

Cruise control: The ECM/PCM controls the throttle actuator to maintain the set speed when the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

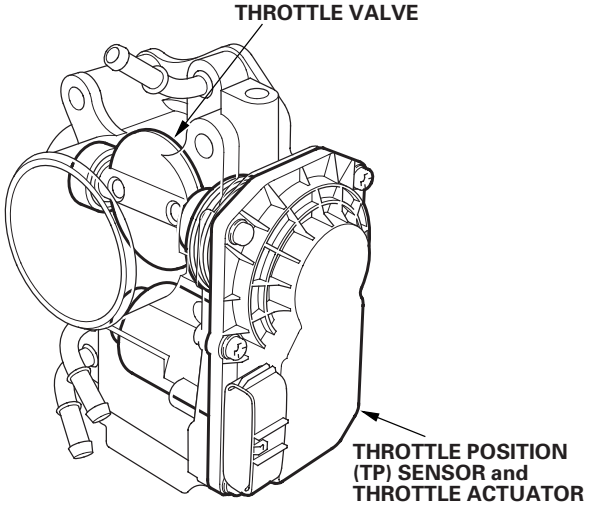
Accelerator Pedal Position (APP) Sensor
As the accelerator pedal position changes, the sensor varies the signal voltage to the ECM/PCM.



(cont'd)

System Description (cont'd)

Throttle Body
The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.



Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM sends signal to the throttle position to maintain the correct idle speed.

Brake Pedal Position Switch
The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal
The EPS signals the ECM/PCM when the power steering load is high.

Fuel Supply System

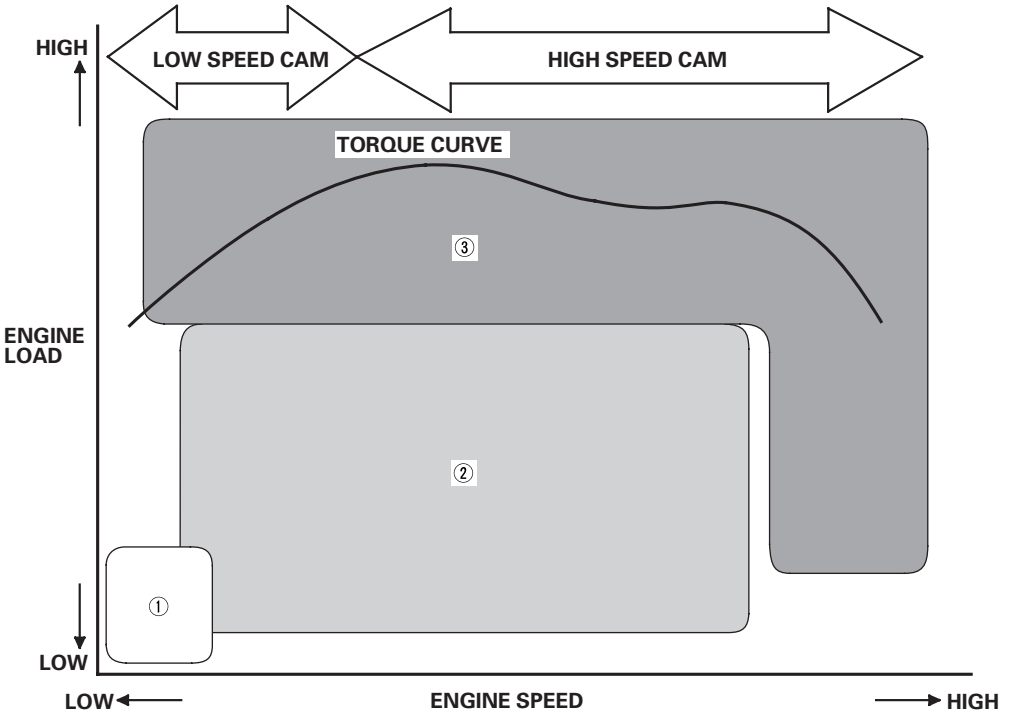
Fuel Cutoff Control
During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 1,000 rpm. Fuel cutoff control also occurs when the engine speed exceeds 6,900 rpm (K20Z3: 8,200 rpm), regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the ECM/PCM cuts the fuel at engine speeds over 5,000 rpm (K20Z3: 7,700 rpm). On a cold engine, fuel cut occurs at a lower engine speed.

Fuel Pump Control
When the ignition switch is turned to ON (II), the ECM/PCM grounds PGM-FI main relay 2 (FUEL PUMP) which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the ECM/PCM grounds PGM-FI main relay 2 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is turned to ON (II), the ECM/PCM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump.

PGM-FI Main Relay 1 and 2
PGM-FI main relay 1 is energized whenever the ignition switch is ON (II), to supply battery voltage to the ECM/PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned to ON (II), and when the engine is cranking or running.

i-VTEC

- The i-VTEC system has a variable valve timing control (VTC) mechanism on the intake camshaft in addition to the usual VTEC.
  This system improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.
- The VTEC system changes the valve lift and timing by using more than one cam profile.
- The VTC system changes the phase of the intake camshaft via oil pressure. It changes the intake valve timing continuously.



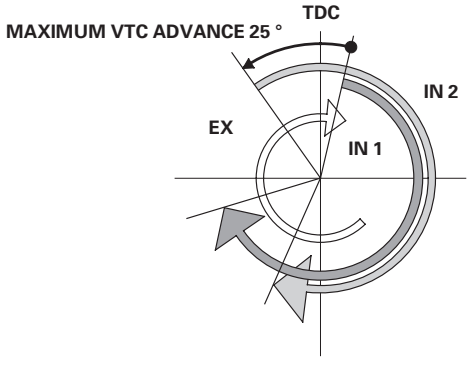
Driving Condition	VTC Control	Description
① Light-load	Base Position	For stable combustion, the cam angle is retarded, and reduces the entry of exhaust gas into the cylinder.
② Medium/high-load	Advance Control	Cam phase angle is controlled to optimize valve timing, improving fuel efficiency and reducing emissions.
③ High speed	Advance-Base Position	To reduce pumping loss, the intake valve is closed quickly. This gives the air/fuel mixture a charging effect that helps to maximize engine power.

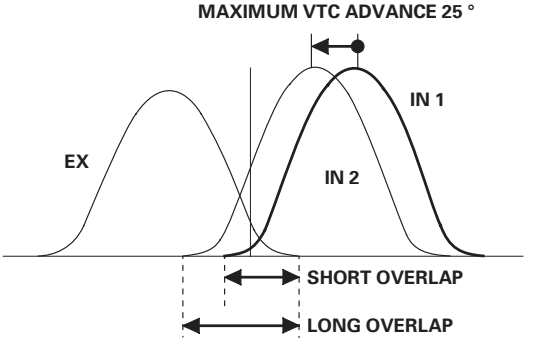
(cont'd)

System Description (cont'd)

VTC System

- The VTC system makes continuous intake valve timing changes based on operating conditions.
- Intake valve timing is optimized to allow the engine to produce maximum power.
- Cam angle is advanced to obtain the EGR effect and reduce pumping loss. The intake valve is closed quickly to reduce the entry of the air/fuel mixture into the intake port and improve the charging effect.
- The system reduces the cam advance at idle, stabilizes combustion, and reduces engine speed.
- If a malfunction occurs, the VTC system control is disabled and the valve timing is fixed at the fully retarded position.

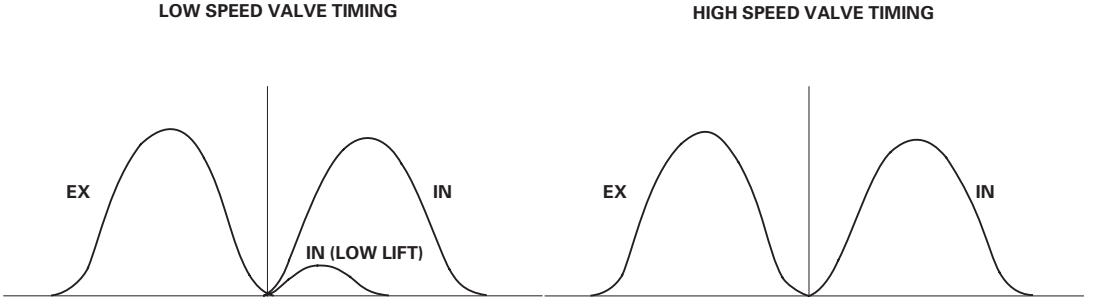




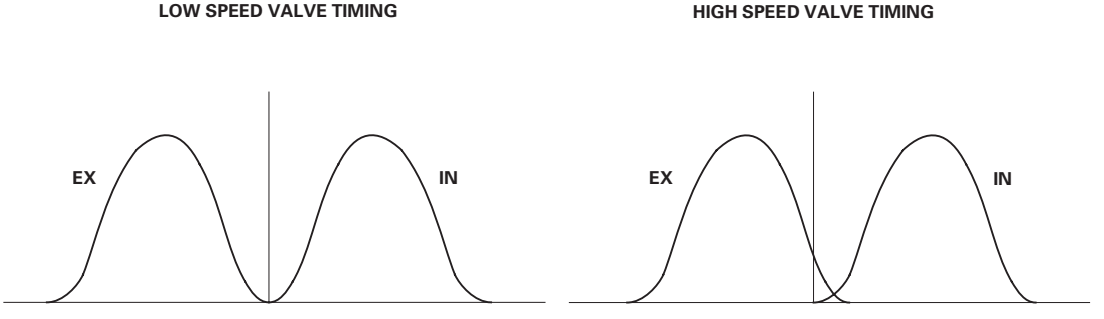
VTEC System

- The VTEC system changes the cam profile to correspond to the engine speed. It maximizes torque at low engine speed and output at high engine speed.
- The low lift cam is used at low engine speeds, and the high lift cam is used at high engine speeds.

K20Z2 engine

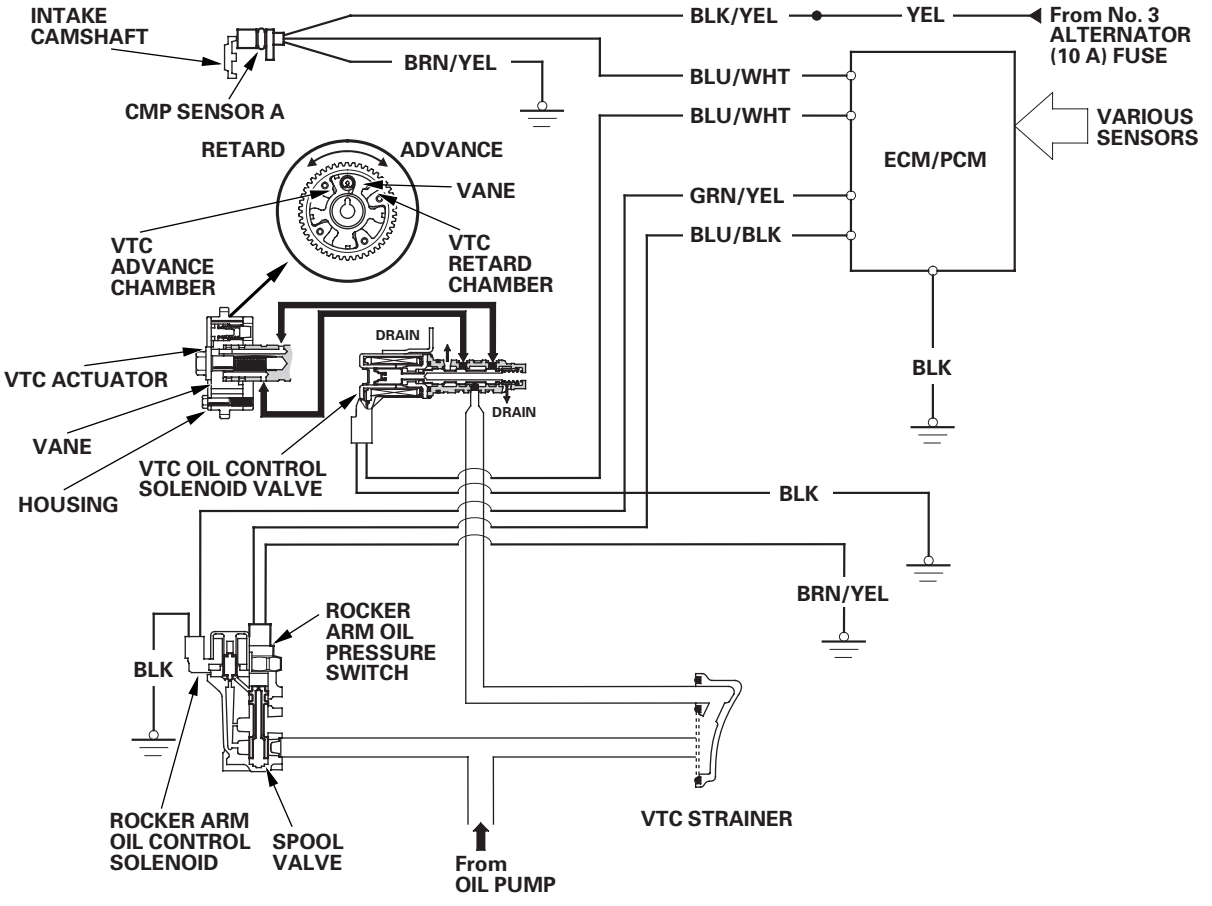


K20Z3 engine



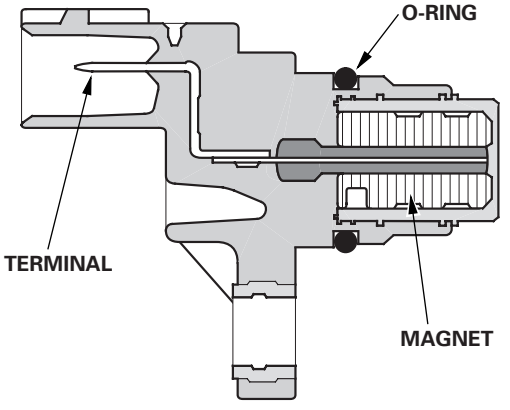
VTEC/VTC

System Diagram



Camshaft Position (CMP) Sensor A

CMP sensor A detects camshaft angle position for the VTC system.



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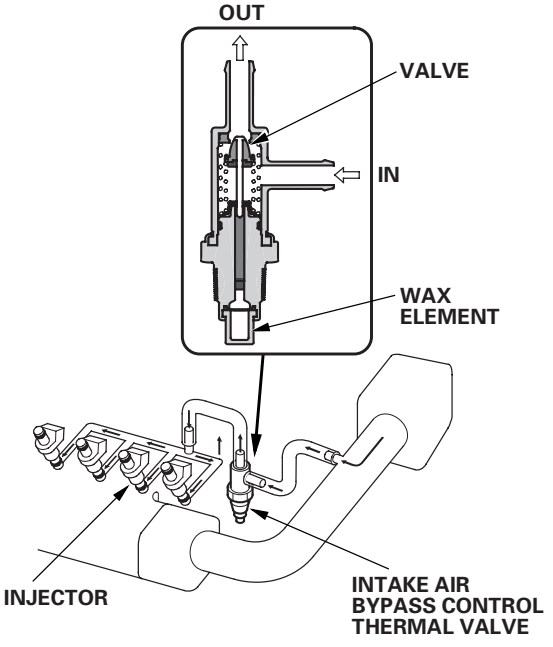
System Description (cont'd)

Intake Air System

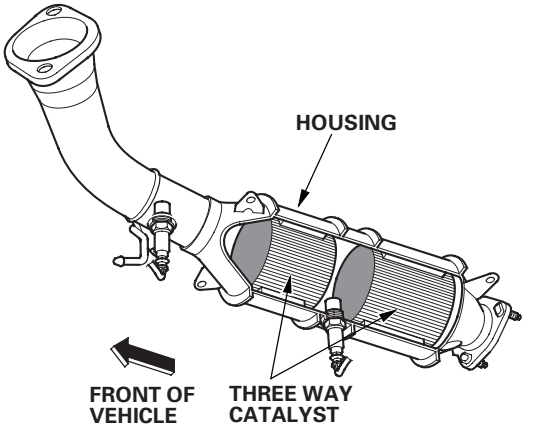
This system supplies air for engine needs.

Intake Air Bypass Control Thermal Valve
When the engine is cold, the intake air bypass control thermal valve sends air to the injector.
The amount of air is regulated by engine coolant temperature. Once the engine is hot, the intake air bypass control thermal valve closes, stopping air to the injector.



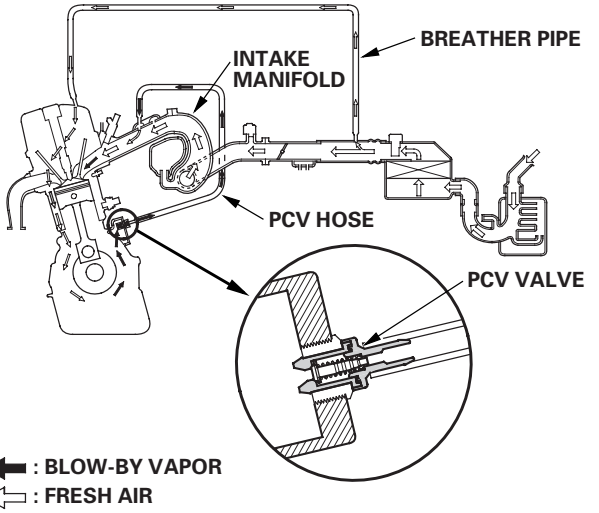
Catalytic Converter System

Three Way Catalytic Converter (TWC)
The TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO_2), nitrogen (N_2), and water vapor.



Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



* : This illustration shows K20Z2 engine

Exhaust Gas Recirculation (EGR) System (K20Z2 engine)

Refer to the system diagram to see a functional layout of the system.

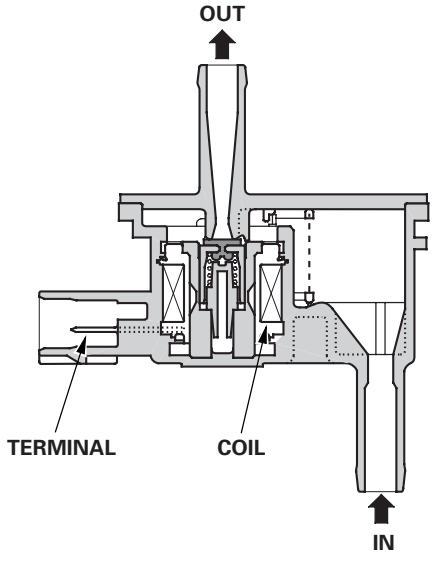
EGR Valve
The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Evaporative Emission (EVAP) Control System

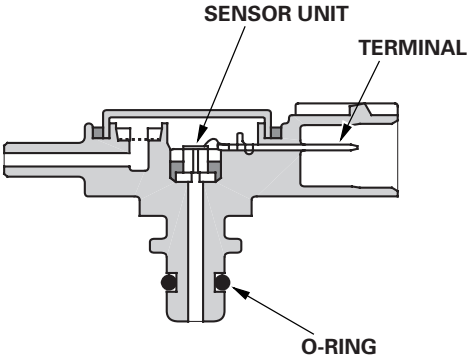
Refer to the system diagram to see a functional layout of the system.

EVAP Canister
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged back into the engine and burned.

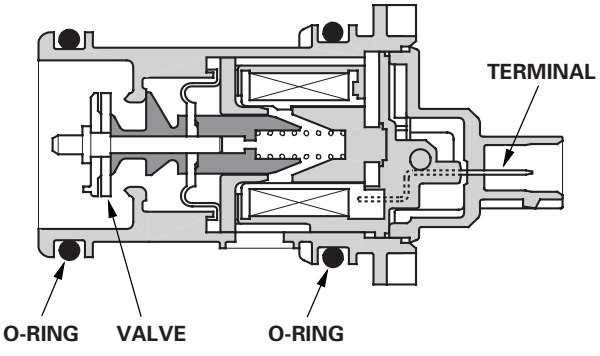
EVAP Canister Purge Valve
When the engine coolant temperature is below 60 ℃ (140 ℉), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.



Fuel Tank Pressure (FTP) Sensor
The FTP sensor converts fuel tank absolute pressure into an electrical input to the ECM/PCM.



EVAP Canister Vent Shut Valve
The EVAP canister vent shut valve is on the EVAP canister.
The EVAP canister vent shut valve controls the venting of the EVAP canister.



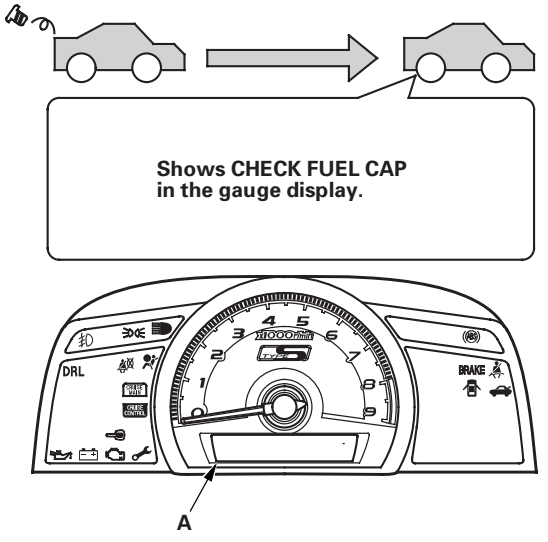
(cont'd)

System Description (cont'd)

Fuel Cap Warning Message

The ECM/PCM detects a loose or missing fuel fill cap as an evaporative system leak, and alarts the driver by showing a warning message in the gauge display.

First drive cycle
The first time a leak is detected a CHECK FUEL CAP message is shown in the gauge display (A). To scroll to another message, press the select/reset button. The CHECK FUEL CAP message appears each time you restart the engine until the system turns the message off. Turn the engine off, then replace or tighten the fuel fill cap until it clicks at least once.



To make the message go off (with the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Clear the Temporary DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

To make the message go off (without the HDS) ('06 model)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. The message should go off after several days of normal driving.

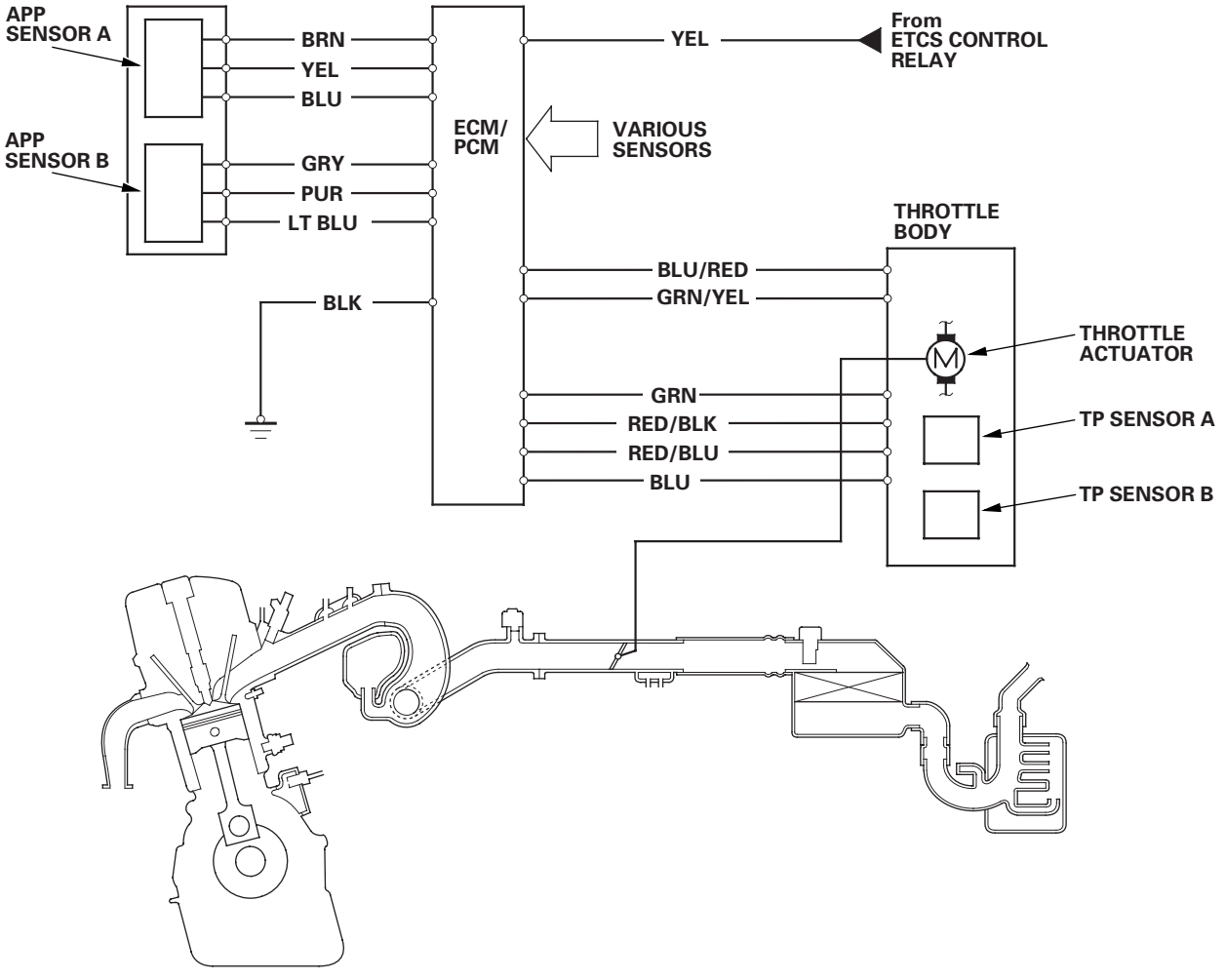
To make the message go off (without the HDS) ('07-09 models)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Start the engine, then turn the ignition switch to LOCK (0).
3. Repeat step 2 two more times.

Electronic Throttle Control System Diagram

The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor A/B, accelerator pedal position (APP) sensor A/B, the electronic throttle control system (ETCS) control relay, and the ECM/PCM.



* : This illustration shows K20Z2 engine

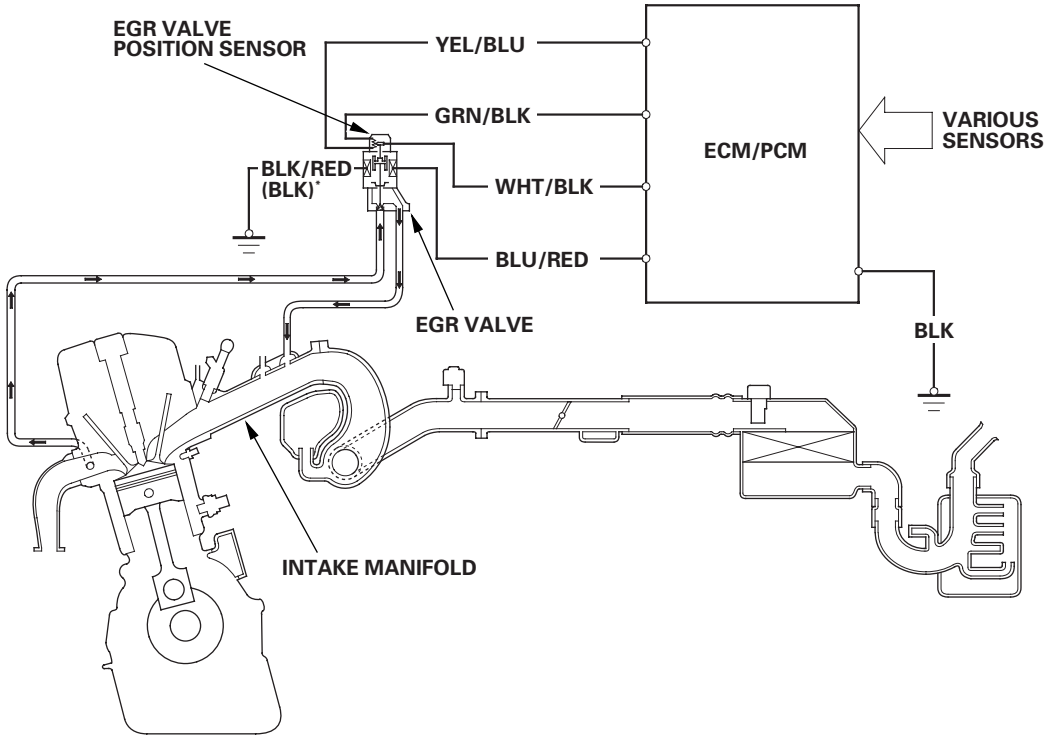
(cont'd)

System Description (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram (K20Z2 engine)

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the ECM/PCM cuts current to the EGR valve.

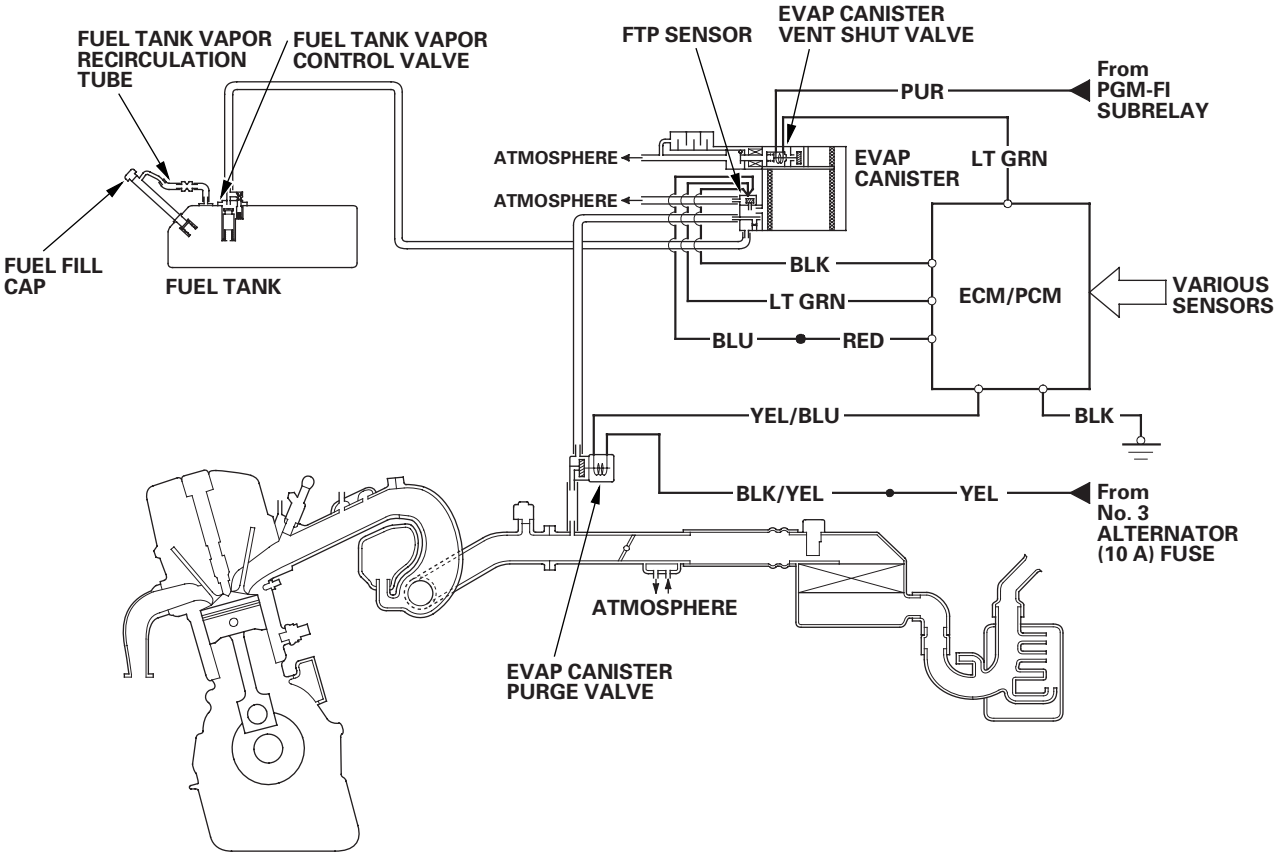


* : '07-09 models

Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping into the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold.
The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 60 ℃ (140 ℉).

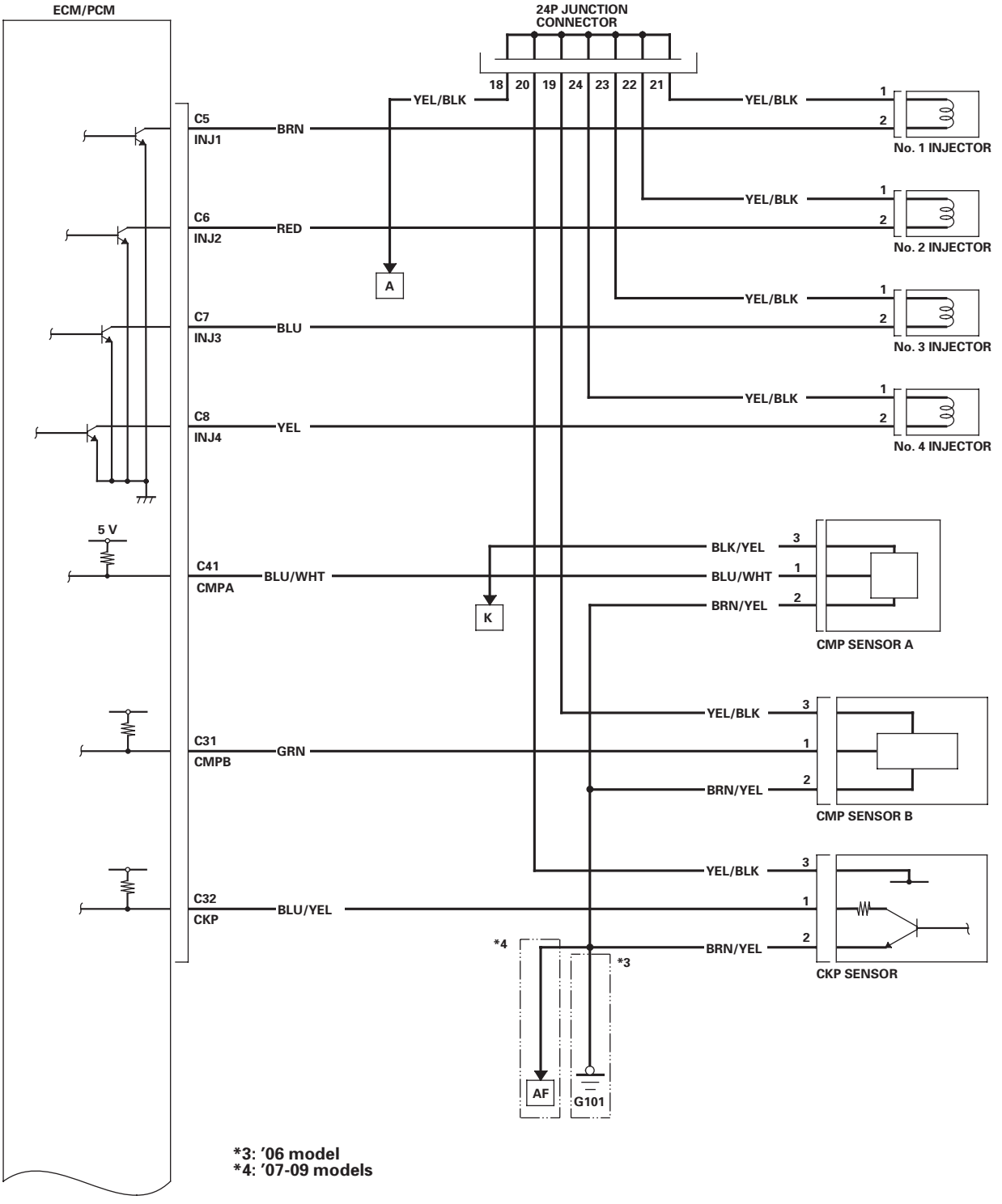


* : This illustration shows K20Z2 engine

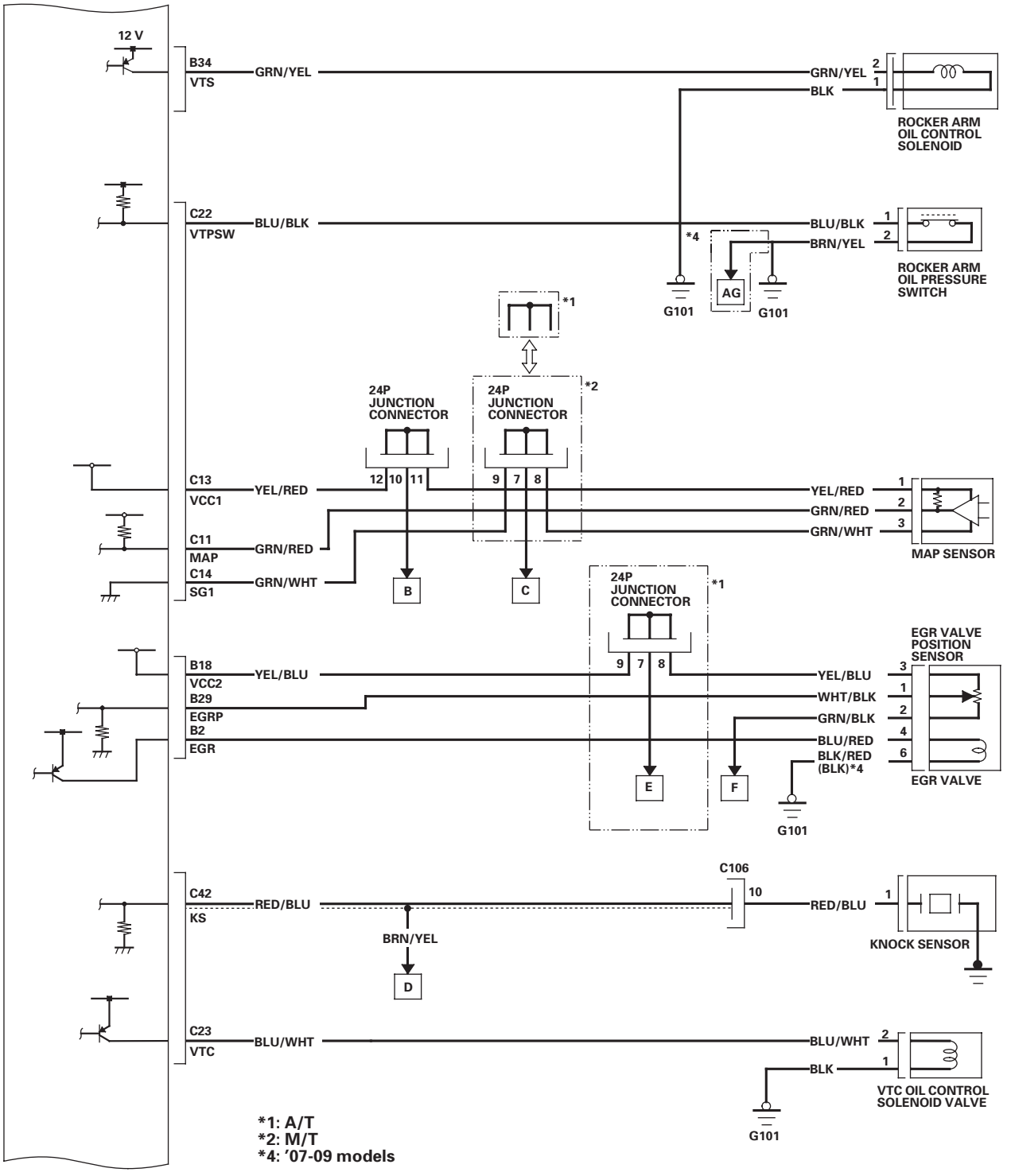
(cont'd)

System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine)



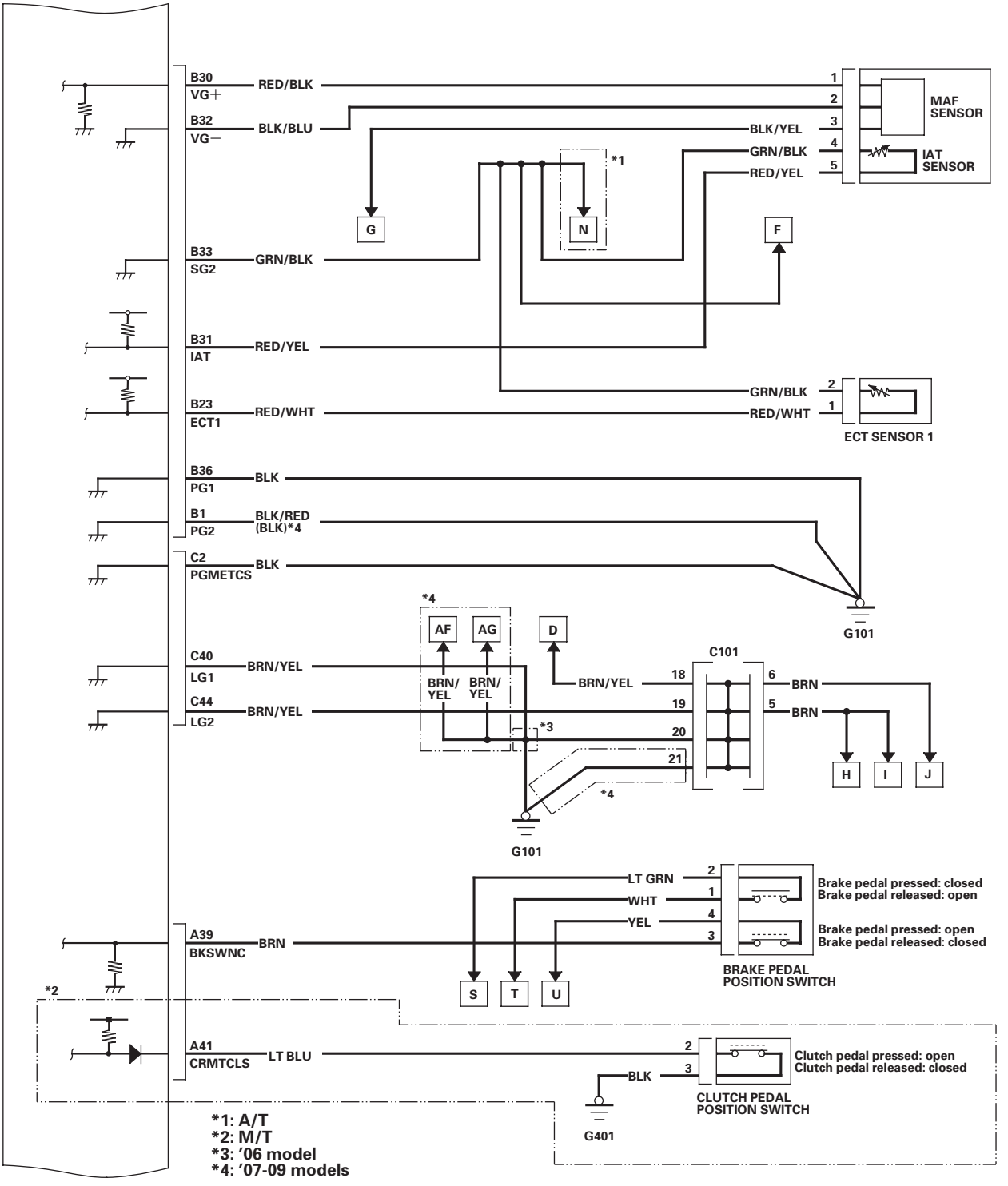
*3: '06 model
*4: '07-09 models

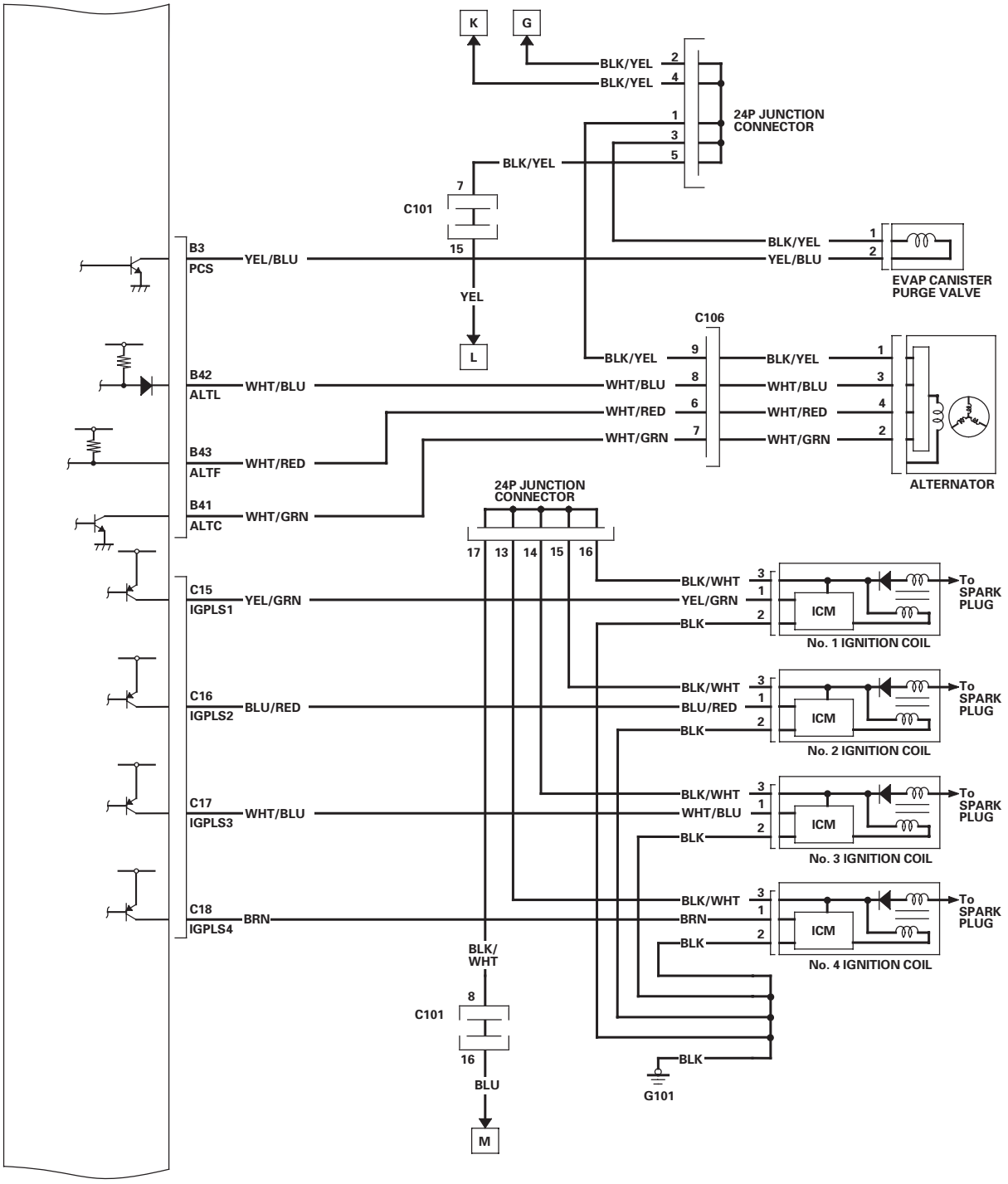

12 V
B34
VTS
GRN/YEL
GRN/YEL
BLK
ROCKER ARM OIL CONTROL SOLENOID
C22
VTPSW
BLU/BLK
BLU/BLK
BRN/YEL
ROCKER ARM OIL PRESSURE SWITCH
*4
AG
G101
G101
*1
*2
24P JUNCTION CONNECTOR
24P JUNCTION CONNECTOR
12 10 11
9 7 8
C13
VCC1
YEL/RED
C11
MAP
GRN/RED
C14
SG1
GRN/WHT
YEL/RED
GRN/RED
GRN/WHT
MAP SENSOR
B
C
24P JUNCTION CONNECTOR
*1
B18
VCC2
B29
EGRP
B2
EGR
YEL/BLU
WHT/BLK
GRN/BLK
BLU/RED
BLK/RED (BLK)*4
EGR VALVE POSITION SENSOR
EGR VALVE
E
F
G101
C42
KS
RED/BLU
BRN/YEL
C106
10
RED/BLU
KNOCK SENSOR
D
C23
VTC
BLU/WHT
BLU/WHT
BLK
VTC OIL CONTROL SOLENOID VALVE
G101
*1: A/T
*2: M/T
*4: '07-09 models

(cont'd)

System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)

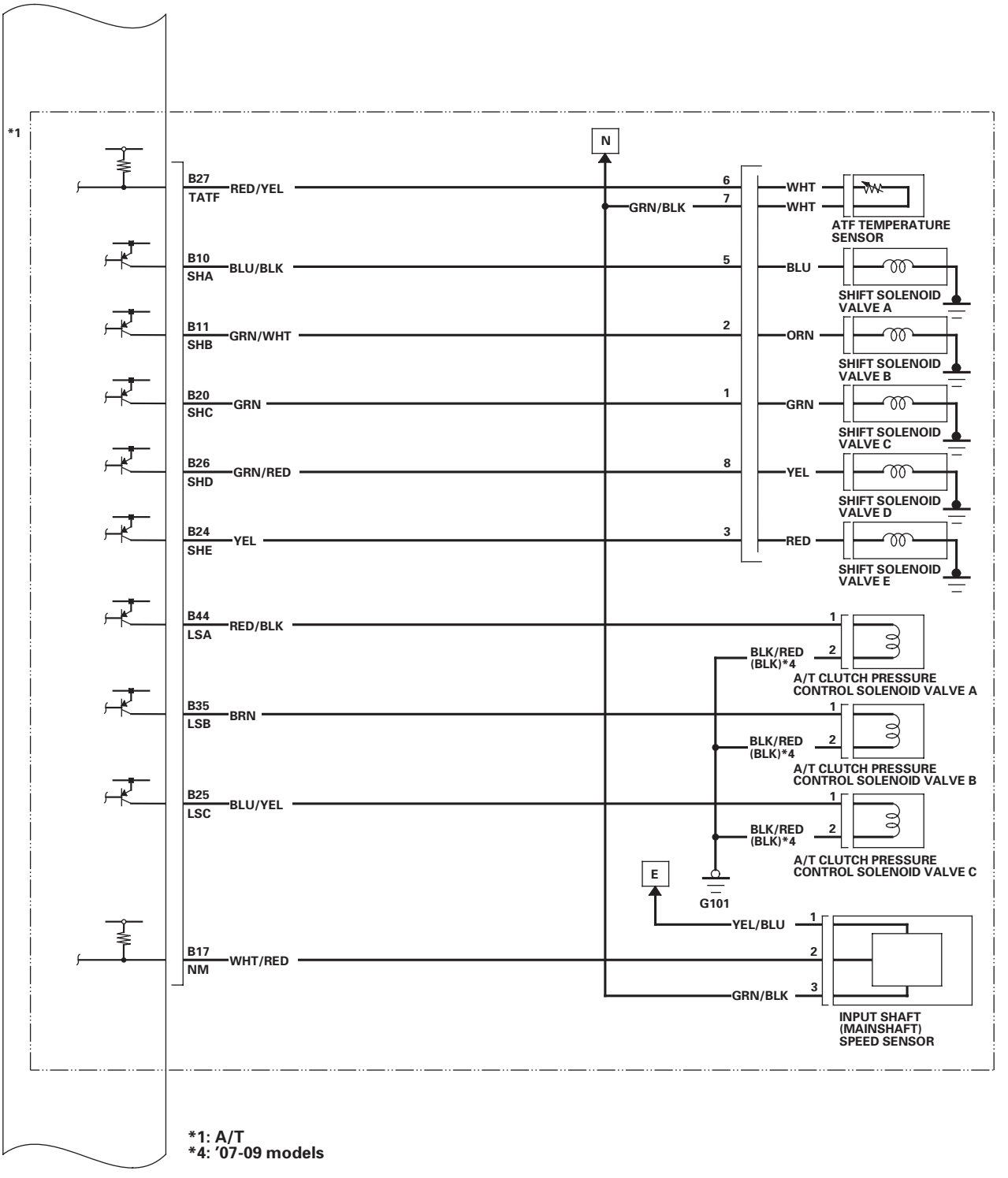



K
G
BLK/YEL
BLK/YEL
24P JUNCTION CONNECTOR
BLK/YEL
C101
7
15
YEL
L
B3
PCS
YEL/BLU
BLK/YEL
YEL/BLU
EVAP CANISTER PURGE VALVE
C106
B42
ALTL
WHT/BLU
WHT/BLU
WHT/RED
WHT/GRN
B43
ALTF
WHT/RED
B41
ALTC
WHT/GRN
ALTERNATOR
24P JUNCTION CONNECTOR
17 13 14 15 16
C15
IGPLS1
YEL/GRN
C16
IGPLS2
BLU/RED
C17
IGPLS3
WHT/BLU
C18
IGPLS4
BRN
BLK/WHT
YEL/GRN
BLK
BLU/RED
WHT/BLU
BRN
ICM
No. 1 IGNITION COIL
No. 2 IGNITION COIL
No. 3 IGNITION COIL
No. 4 IGNITION COIL
To SPARK PLUG
BLK/WHT
C101
8
16
BLU
M
BLK
G101

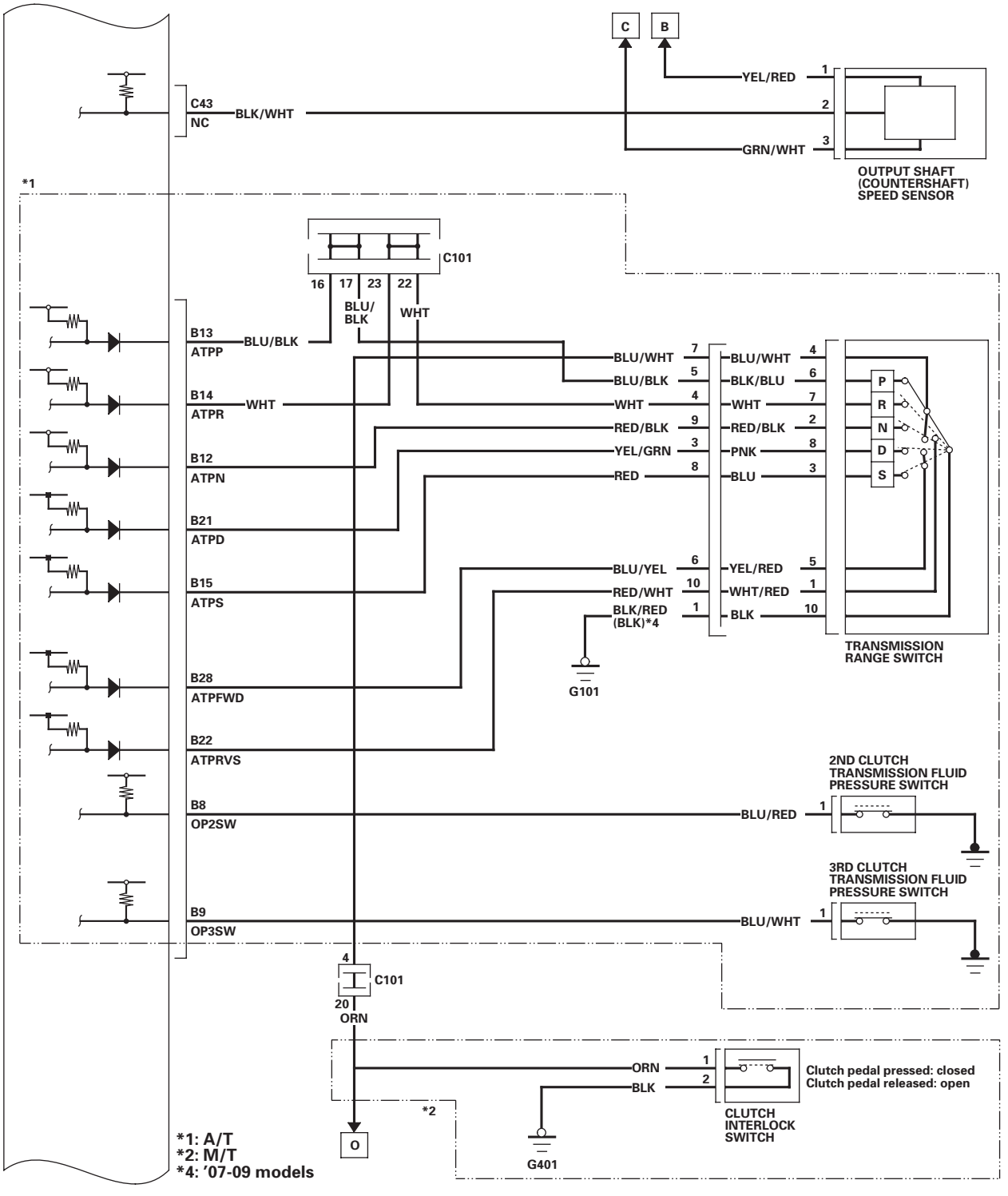
(cont'd)

System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



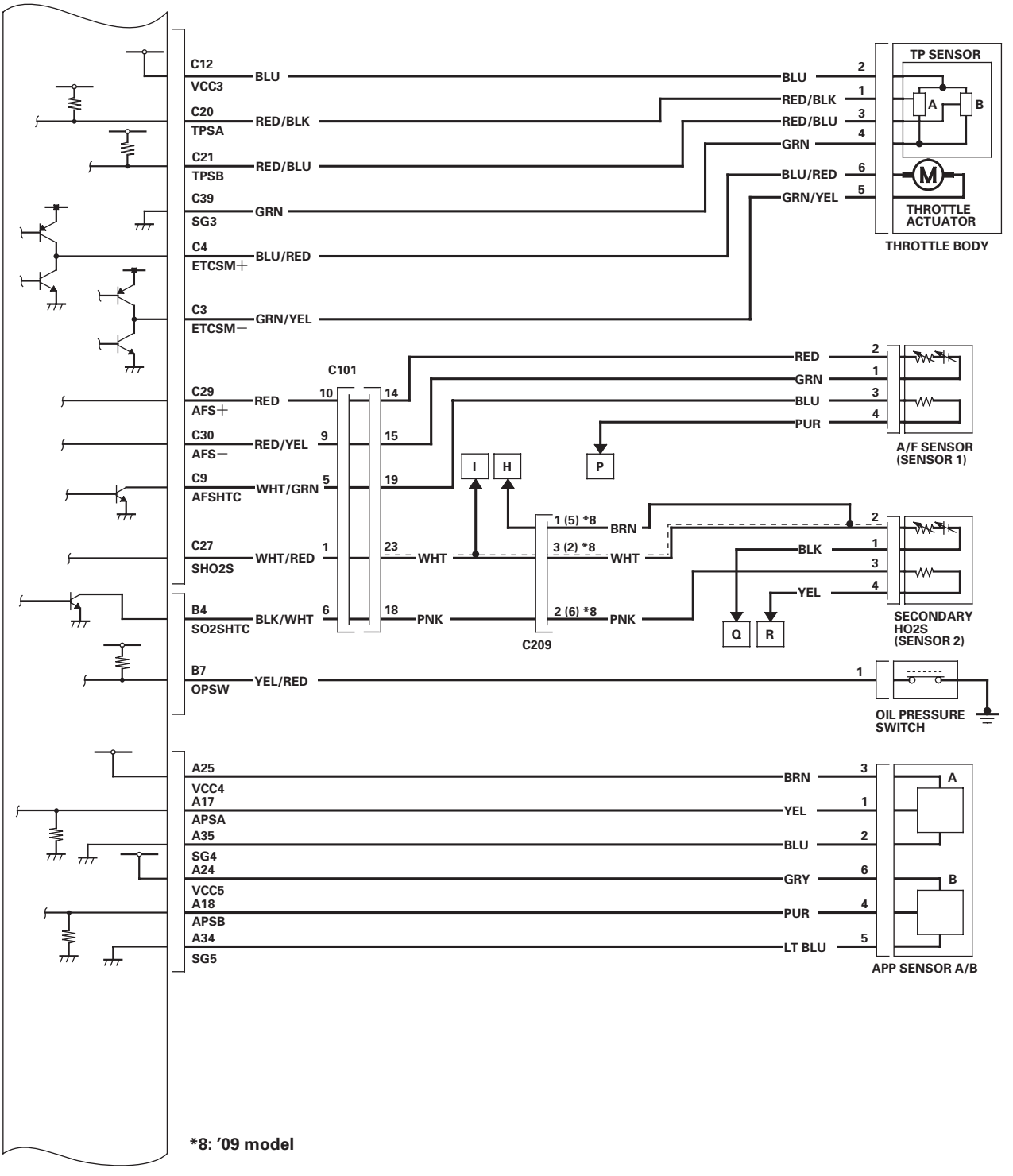
*1: A/T
*4: '07-09 models


C
B
YEL/RED
1
2
3
GRN/WHT
C43
NC
BLK/WHT
OUTPUT SHAFT
(COUNTERSHAFT)
SPEED SENSOR
*1
C101
16
17
23
22
BLU/
BLK
WHT
B13
ATPP
BLU/BLK
B14
ATPR
WHT
B12
ATPN
B21
ATPD
B15
ATPS
B28
ATPFWD
B22
ATPRVS
B8
OP2SW
B9
OP3SW
BLU/WHT
BLU/BLK
WHT
RED/BLK
YEL/GRN
RED
BLU/YEL
RED/WHT
BLK/RED
(BLK)*4
BLU/WHT
BLK/BLU
WHT
RED/BLK
PNK
BLU
YEL/RED
WHT/RED
BLK
P
R
N
D
S
TRANSMISSION
RANGE SWITCH
G101
2ND CLUTCH
TRANSMISSION FLUID
PRESSURE SWITCH
BLU/RED
3RD CLUTCH
TRANSMISSION FLUID
PRESSURE SWITCH
BLU/WHT
4
C101
20
ORN
ORN
BLK
Clutch pedal pressed: closed
Clutch pedal released: open
CLUTCH
INTERLOCK
SWITCH
*2
O
G401
*1: A/T
*2: M/T
*4: '07-09 models

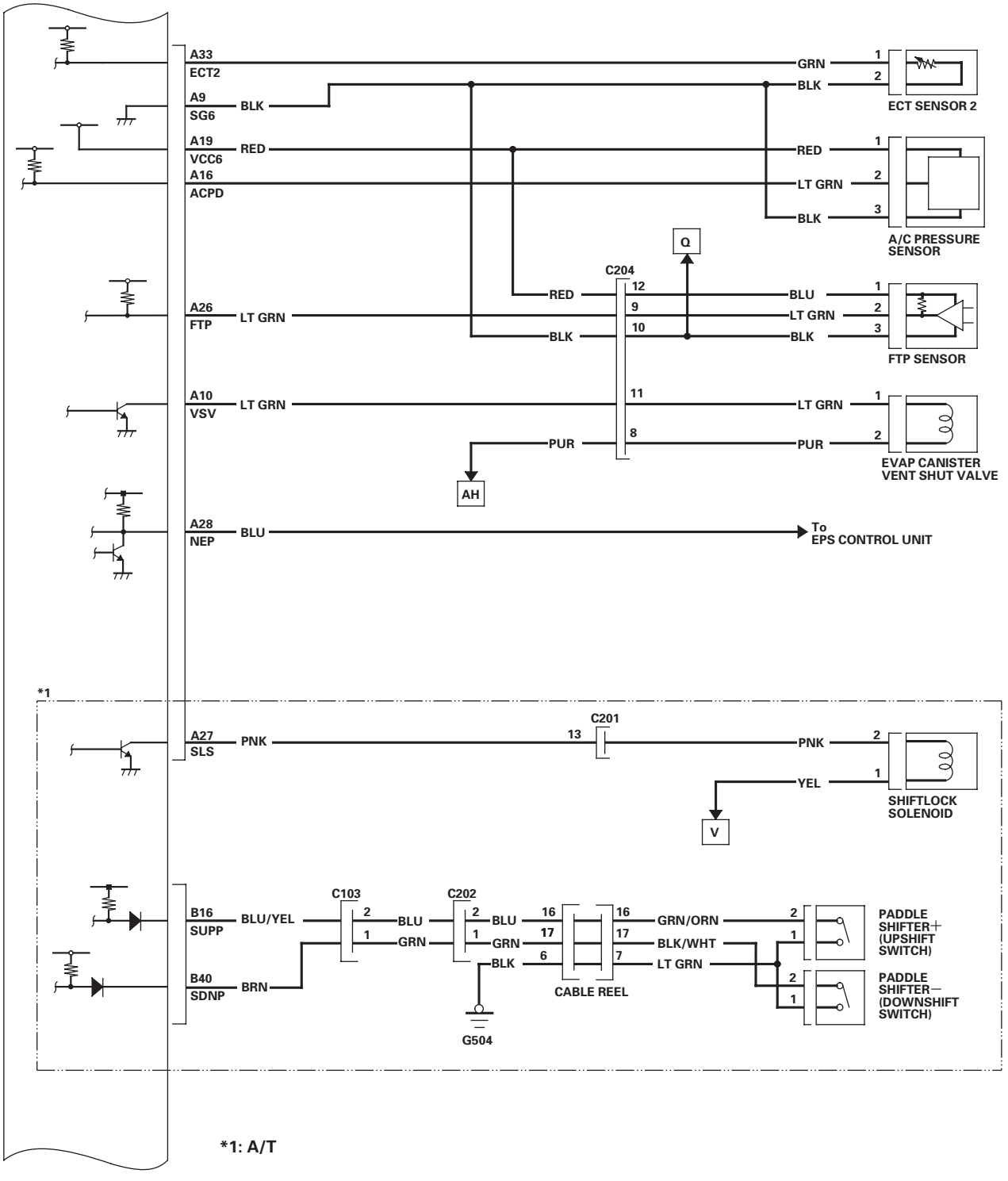
(cont'd)

System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



*8: '09 model

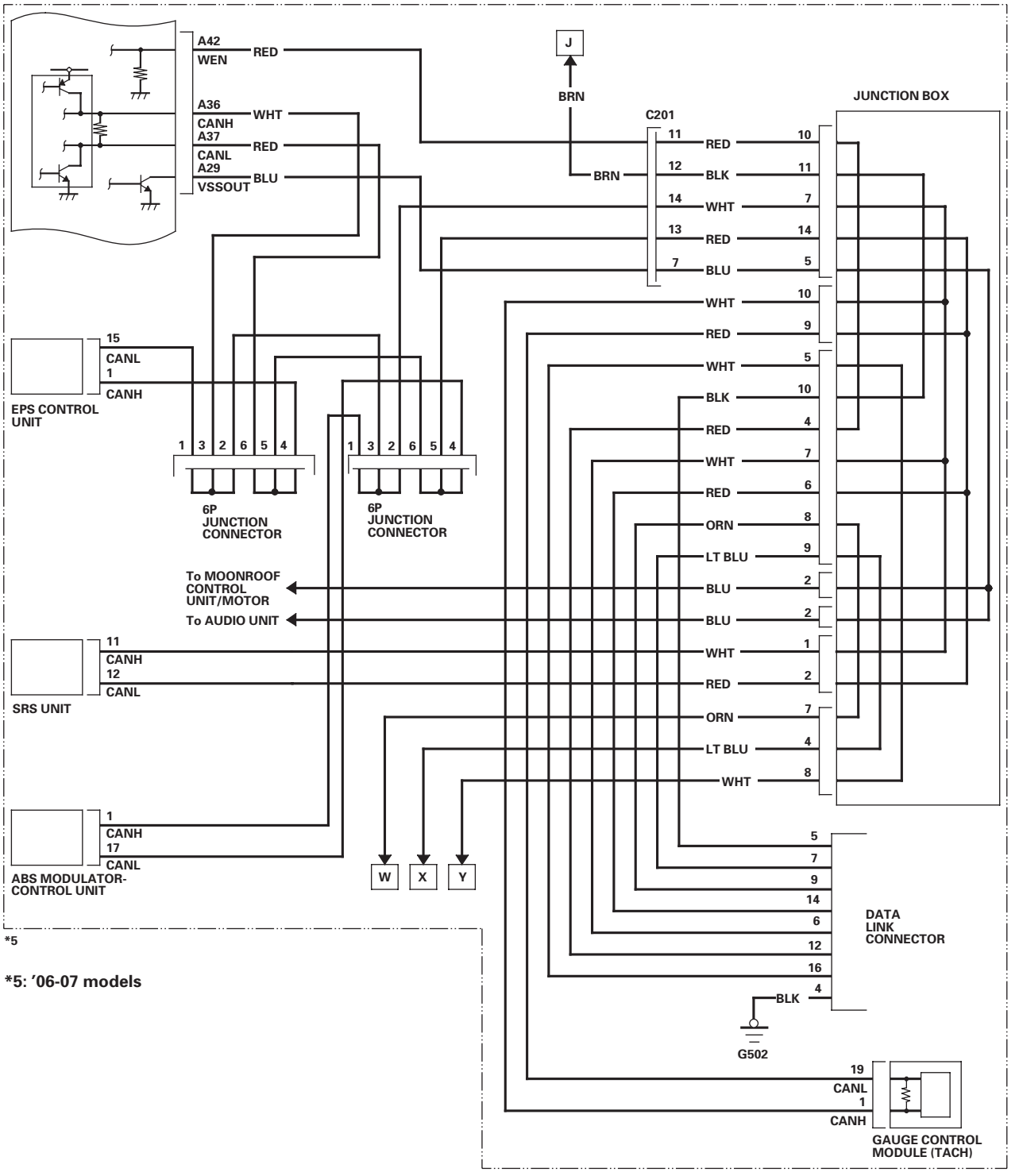

A33
ECT2
A9
SG6
BLK
A19
VCC6
RED
A16
ACPD
GRN
BLK
ECT SENSOR 2
RED
LT GRN
BLK
A/C PRESSURE SENSOR
Q
C204
A26
FTP
LT GRN
RED
BLK
12
9
10
BLU
LT GRN
BLK
FTP SENSOR
A10
VSV
LT GRN
11
8
PUR
LT GRN
PUR
EVAP CANISTER VENT SHUT VALVE
AH
A28
NEP
BLU
To EPS CONTROL UNIT
*1
A27
SLS
PNK
C201
13
PNK
YEL
SHIFTLOCK SOLENOID
V
B16
SUPP
BLU/YEL
B40
SDNP
BRN
C103
C202
BLU
GRN
BLK
CABLE REEL
GRN/ORN
BLK/WHT
LT GRN
PADDLE SHIFTER+ (UPSHIFT SWITCH)
PADDLE SHIFTER– (DOWNSHIFT SWITCH)
G504

*1: A/T

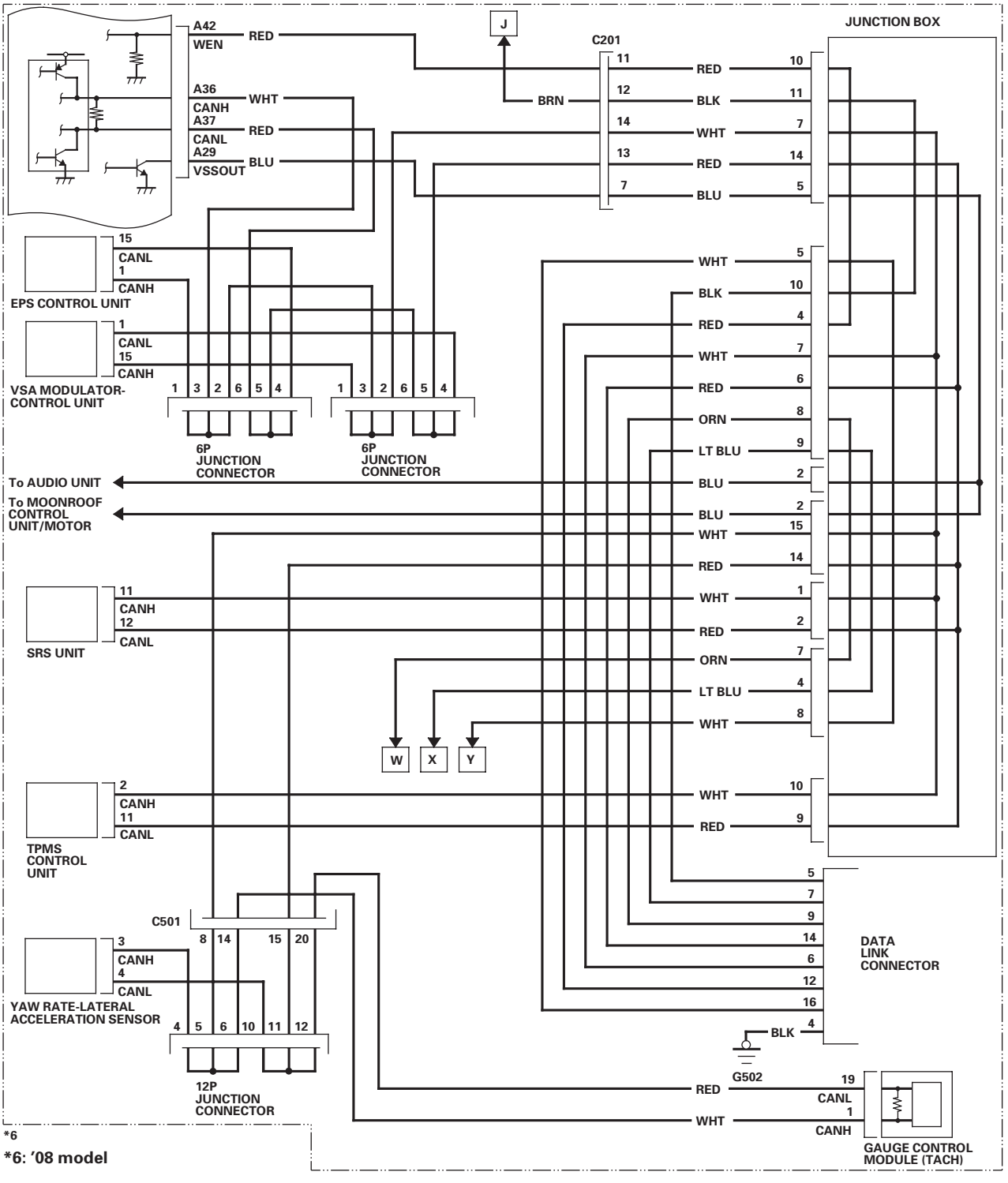
(cont'd)

System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



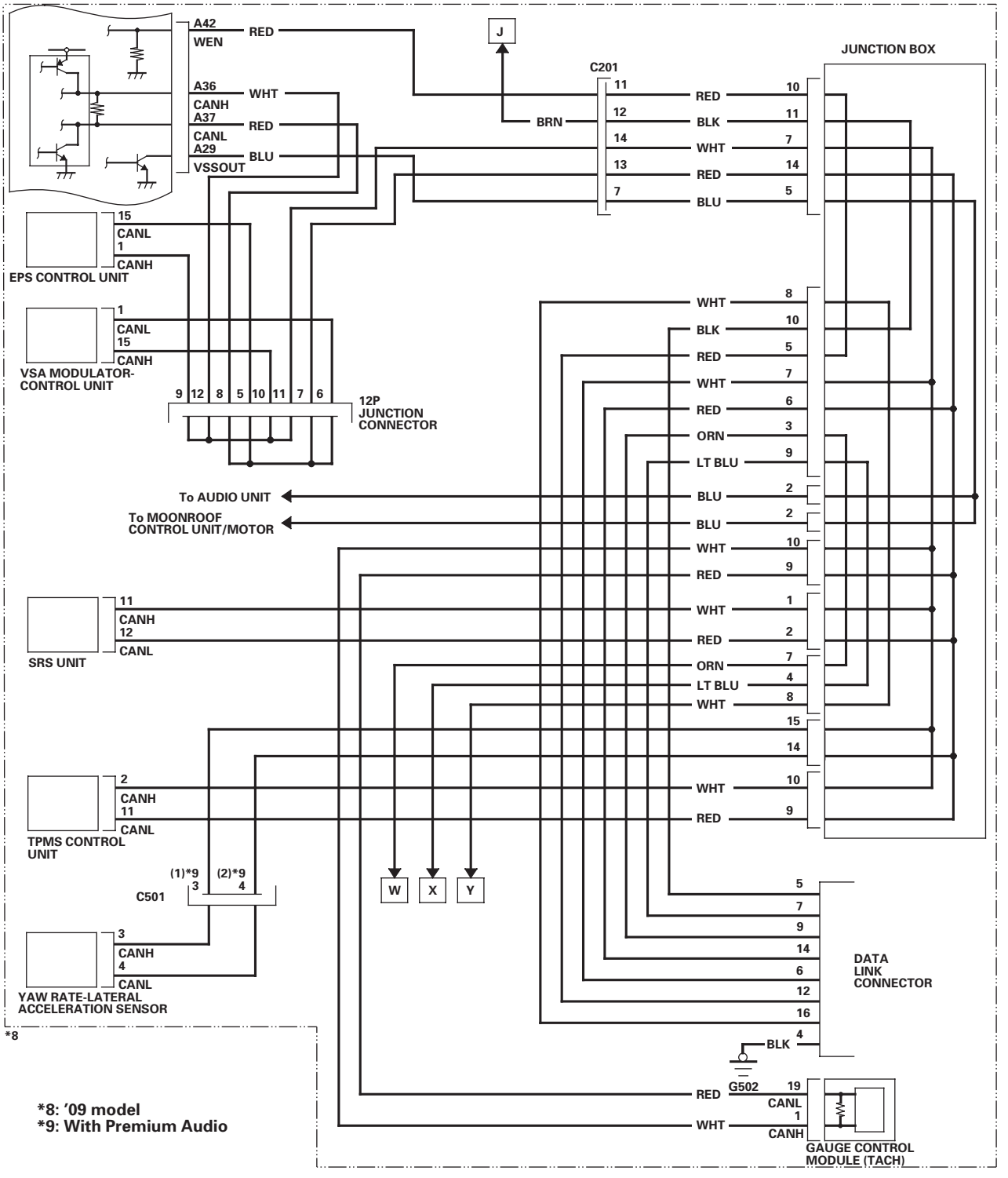
*5: '06-07 models


A42
WEN
RED
A36
CANH
WHT
A37
CANL
RED
A29
VSSOUT
BLU
J
BRN
C201
11
RED
12
BLK
14
WHT
13
RED
7
BLU
JUNCTION BOX
10
11
7
14
5
15
CANL
1
CANH
EPS CONTROL UNIT
1
CANL
15
CANH
VSA MODULATOR-
CONTROL UNIT
1 3 2 6 5 4
1 3 2 6 5 4
6P
JUNCTION
CONNECTOR
6P
JUNCTION
CONNECTOR
To AUDIO UNIT
To MOONROOF
CONTROL
UNIT/MOTOR
WHT
BLK
RED
WHT
RED
ORN
LT BLU
BLU
BLU
WHT
RED
WHT
RED
ORN
LT BLU
WHT
5
10
4
7
6
8
9
2
2
15
14
1
2
7
4
8
W
X
Y
11
CANH
12
CANL
SRS UNIT
2
CANH
11
CANL
TPMS
CONTROL
UNIT
WHT
RED
10
9
C501
8 14 15 20
3
CANH
4
CANL
YAW RATE-LATERAL
ACCELERATION SENSOR
4 5 6 10 11 12
12P
JUNCTION
CONNECTOR
5
7
9
14
6
12
16
4
DATA
LINK
CONNECTOR
BLK
G502
RED
WHT
19
CANL
1
CANH
GAUGE CONTROL
MODULE (TACH)
*6
*6: '08 model

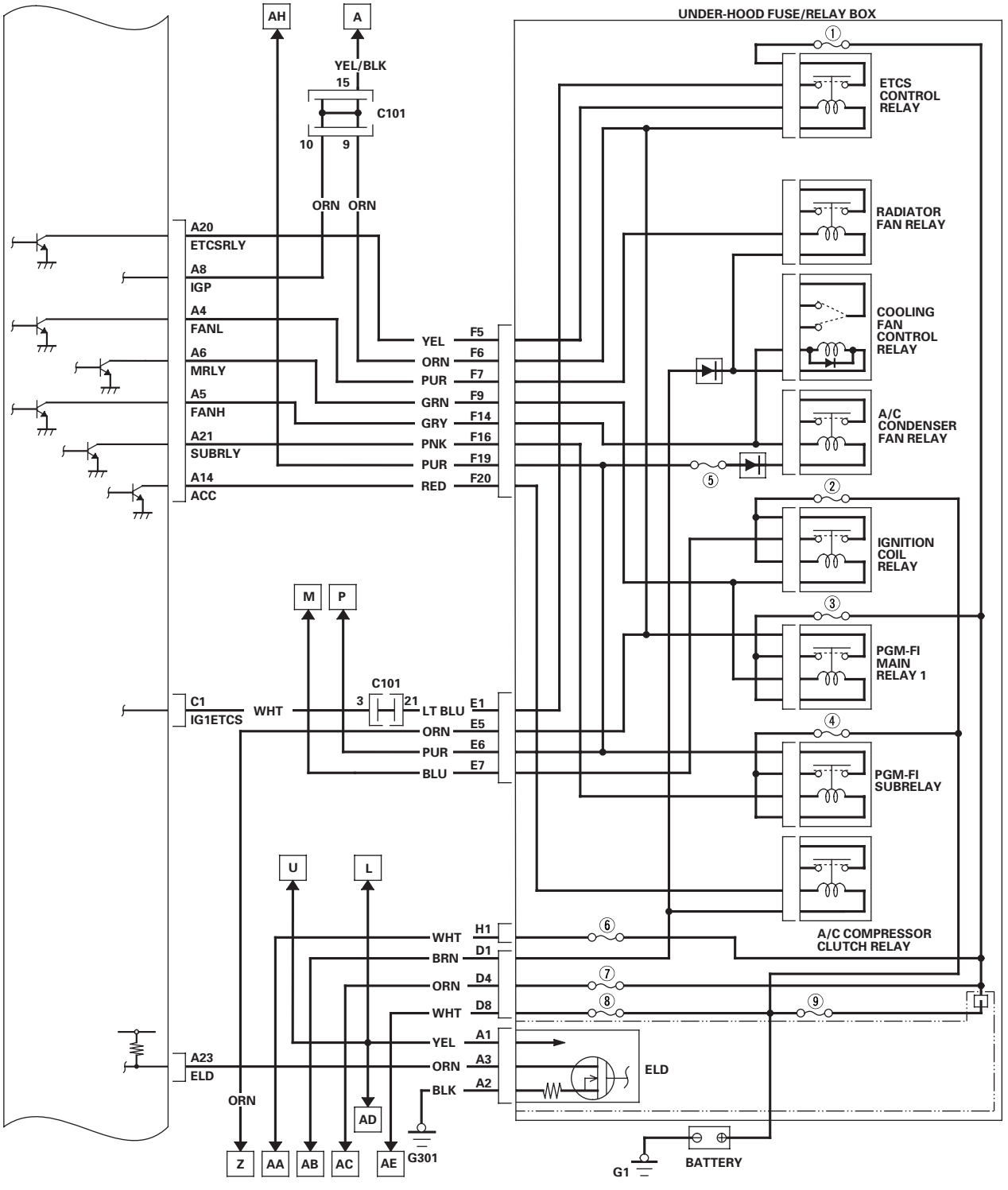
(cont'd)

System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



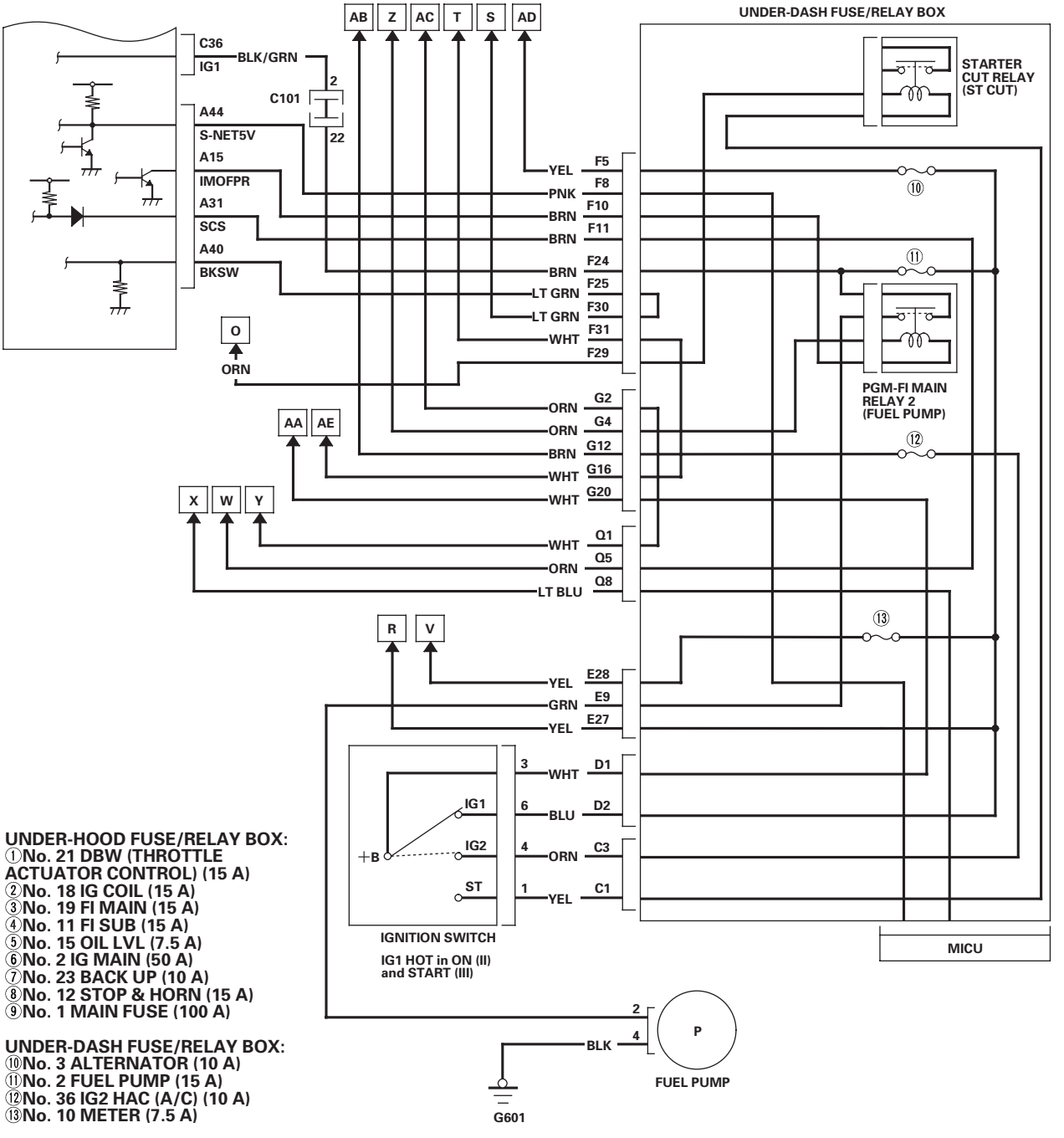
*8: '09 model
*9: With Premium Audio


AH
A
YEL/BLK
15
C101
10
9
ORN
ORN
A20
ETCSRLY
A8
IGP
A4
FANL
A6
MRLY
A5
FANH
A21
SUBRLY
A14
ACC
YEL
ORN
PUR
GRN
GRY
PNK
PUR
RED
F5
F6
F7
F9
F14
F16
F19
F20
UNDER-HOOD FUSE/RELAY BOX
ETCS CONTROL RELAY
RADIATOR FAN RELAY
COOLING FAN CONTROL RELAY
A/C CONDENSER FAN RELAY
IGNITION COIL RELAY
PGM-FI MAIN RELAY 1
PGM-FI SUBRELAY
A/C COMPRESSOR CLUTCH RELAY
M
P
C101
3
21
C1
IG1ETCS
WHT
LT BLU
ORN
PUR
BLU
E1
E5
E6
E7
U
L
WHT
BRN
ORN
WHT
H1
D1
D4
D8
A23
ELD
YEL
ORN
BLK
A1
A3
A2
ELD
ORN
AD
Z
AA
AB
AC
AE
G301
G1
BATTERY

(cont'd)

System Description (cont'd)

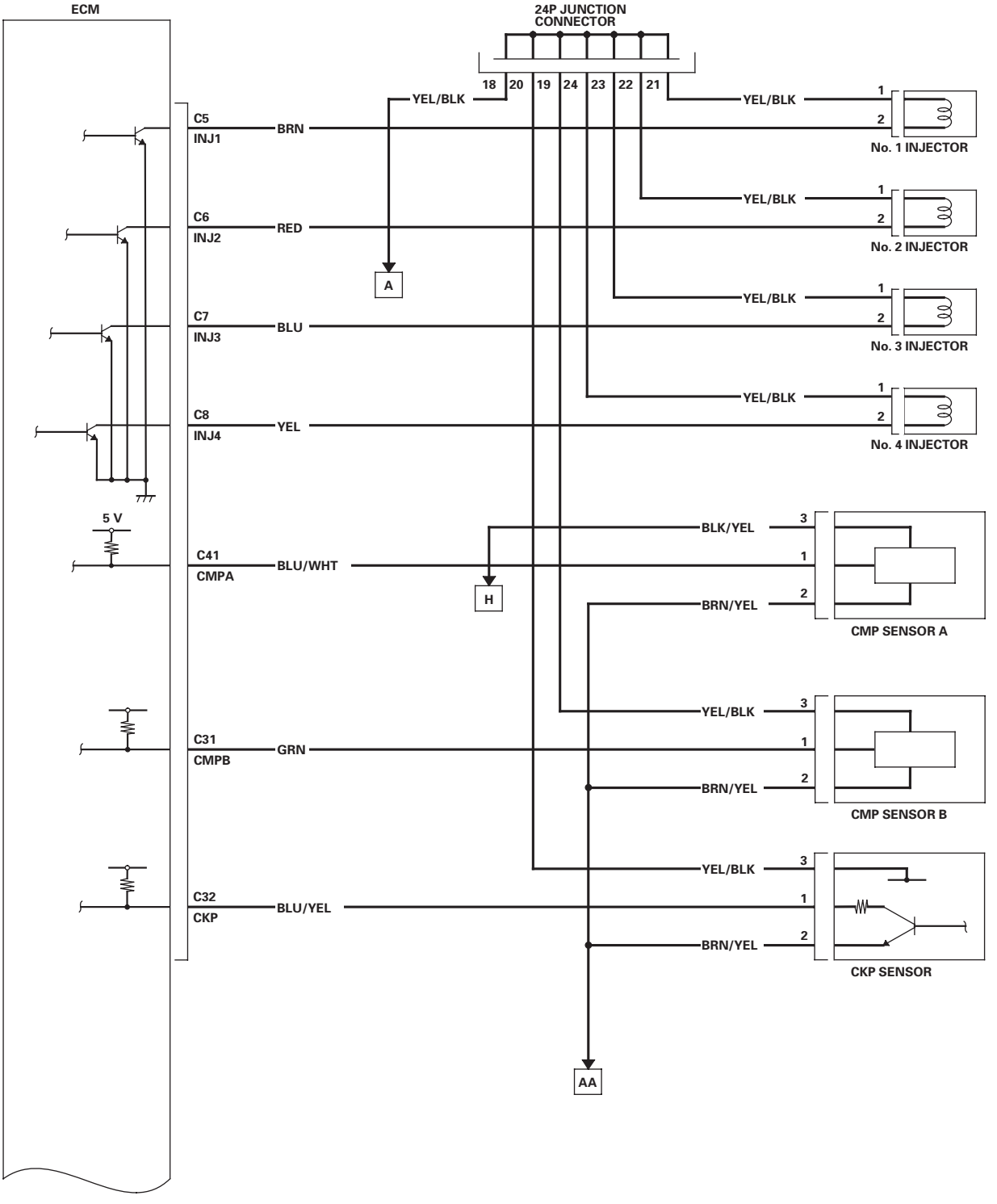
ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



UNDER-HOOD FUSE/RELAY BOX:
①No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A)
②No. 18 IG COIL (15 A)
③No. 19 FI MAIN (15 A)
④No. 11 FI SUB (15 A)
⑤No. 15 OIL LVL (7.5 A)
⑥No. 2 IG MAIN (50 A)
⑦No. 23 BACK UP (10 A)
⑧No. 12 STOP & HORN (15 A)
⑨No. 1 MAIN FUSE (100 A)

UNDER-DASH FUSE/RELAY BOX:
⑩No. 3 ALTERNATOR (10 A)
⑪No. 2 FUEL PUMP (15 A)
⑫No. 36 IG2 HAC (A/C) (10 A)
⑬No. 10 METER (7.5 A)

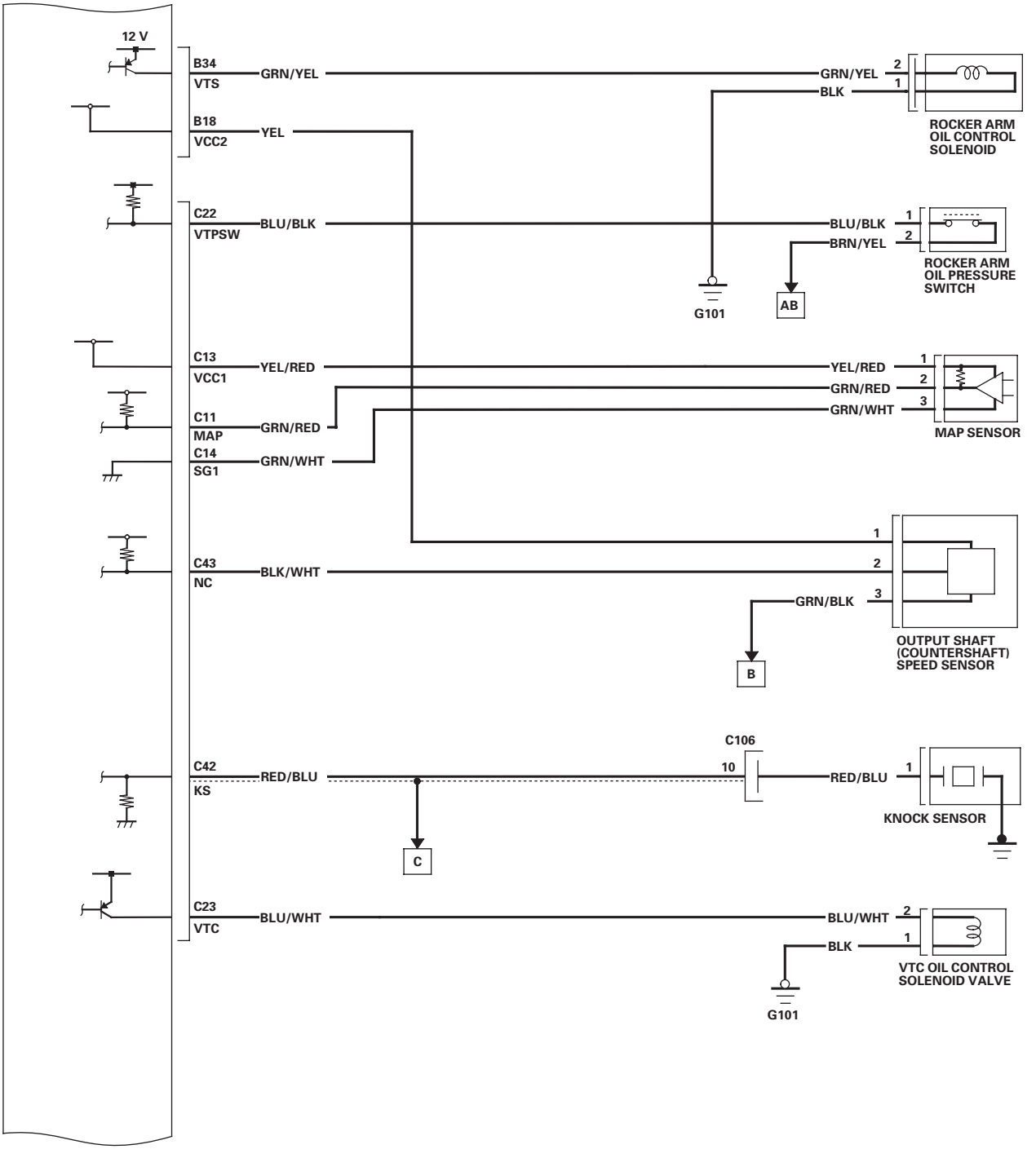
ECM Circuit Diagram (K20Z3 engine)

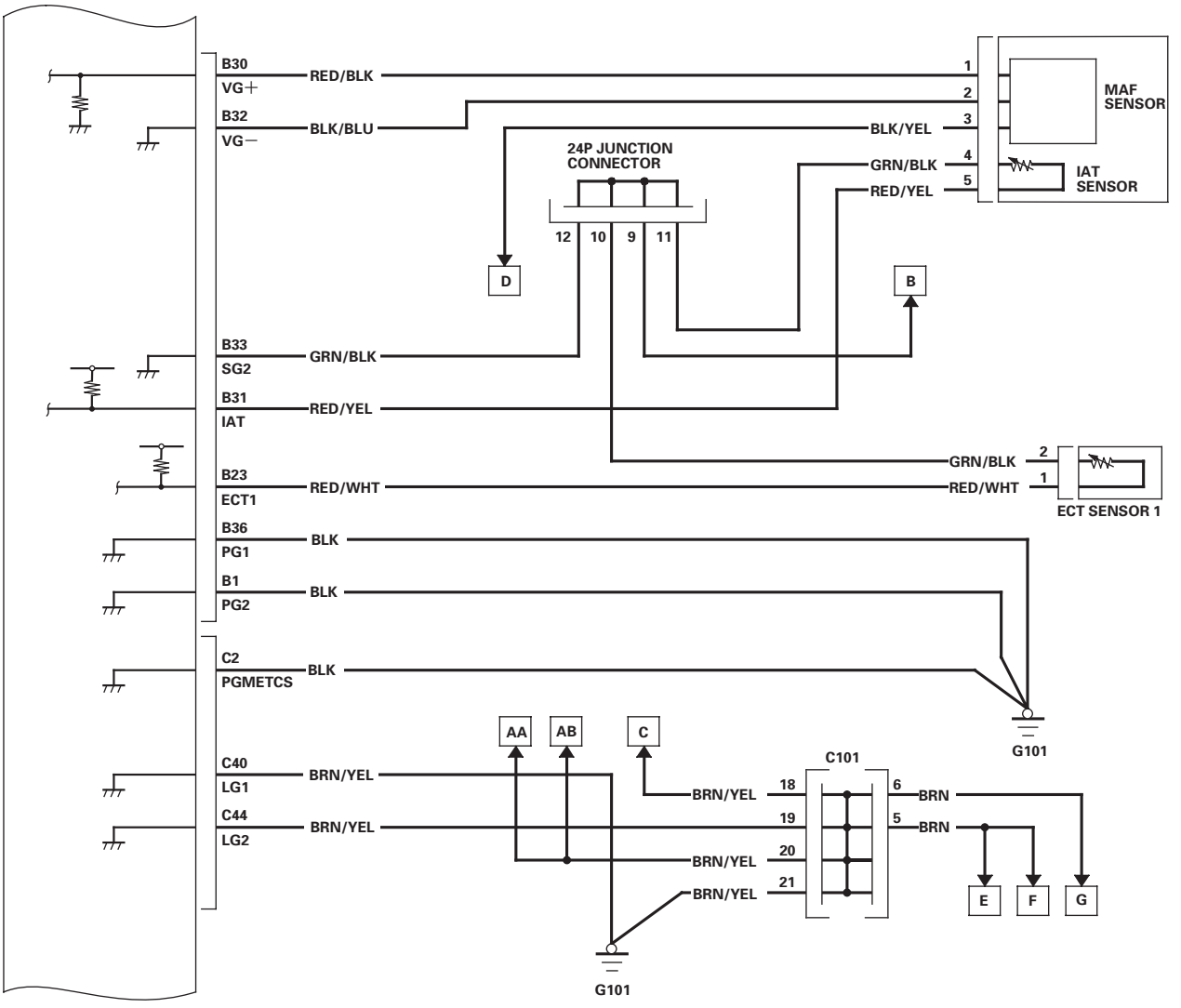


(cont'd)

System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)

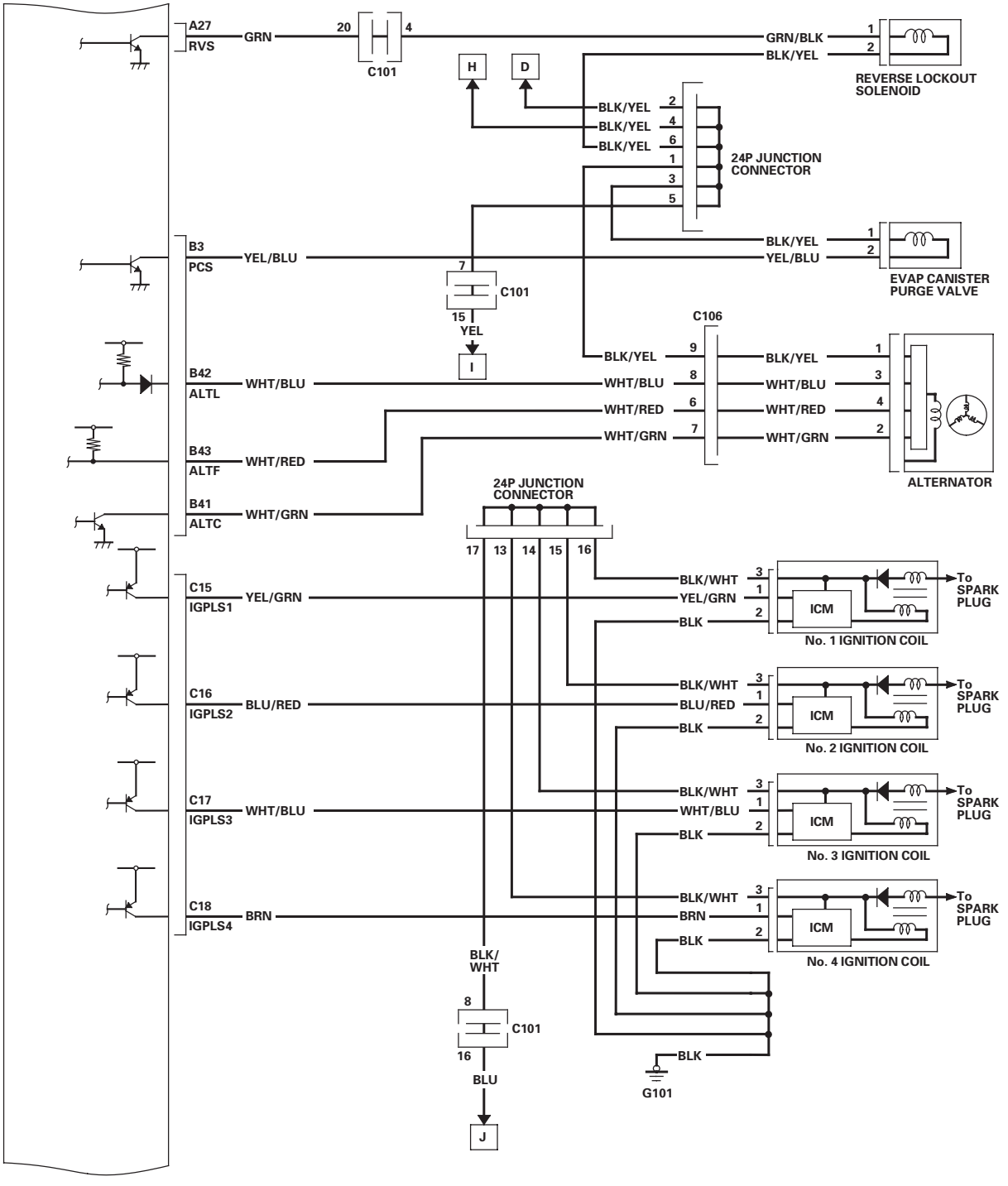


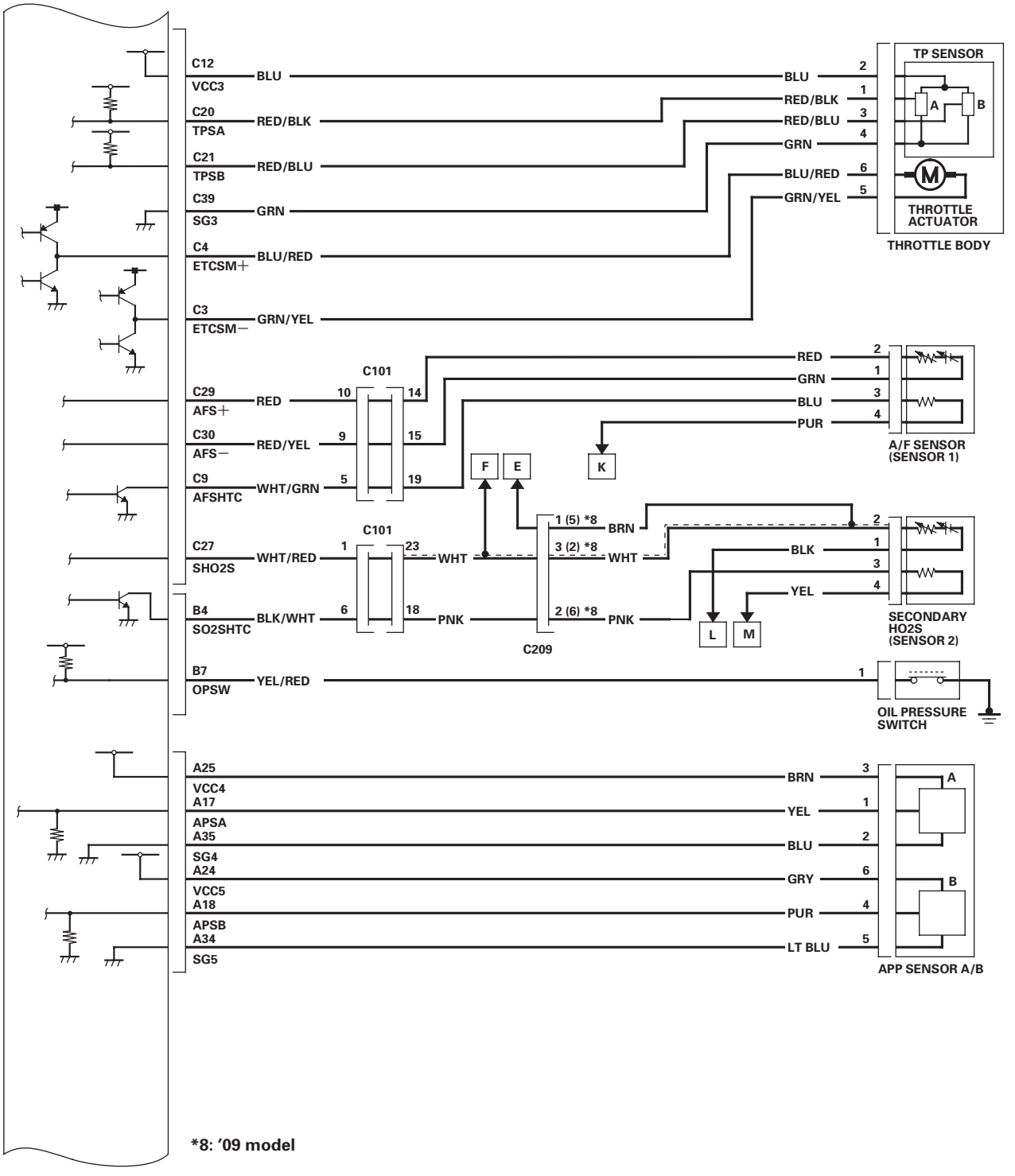

B30
VG+
RED/BLK
B32
VG−
BLK/BLU
1
2
3
4
5
MAF SENSOR
IAT SENSOR
BLK/YEL
GRN/BLK
RED/YEL
24P JUNCTION CONNECTOR
12
10
9
11
D
B
B33
SG2
GRN/BLK
B31
IAT
RED/YEL
GRN/BLK
RED/WHT
2
1
ECT SENSOR 1
B23
ECT1
RED/WHT
B36
PG1
BLK
B1
PG2
BLK
C2
PGMETCS
BLK
G101
AA
AB
C
C101
C40
LG1
BRN/YEL
C44
LG2
BRN/YEL
BRN/YEL
BRN/YEL
BRN/YEL
18
19
20
21
6
5
BRN
BRN
E
F
G
G101

(cont'd)

System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



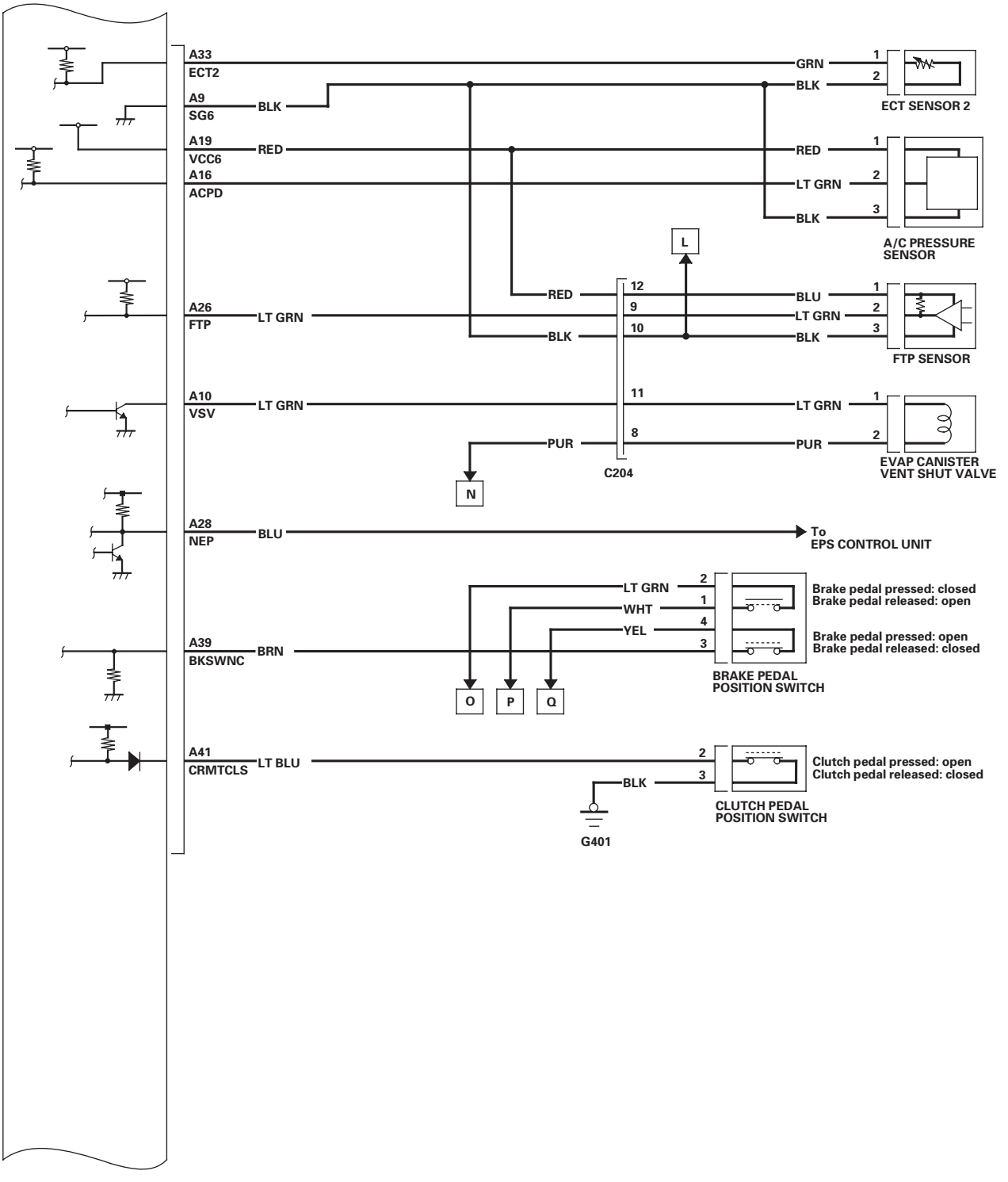


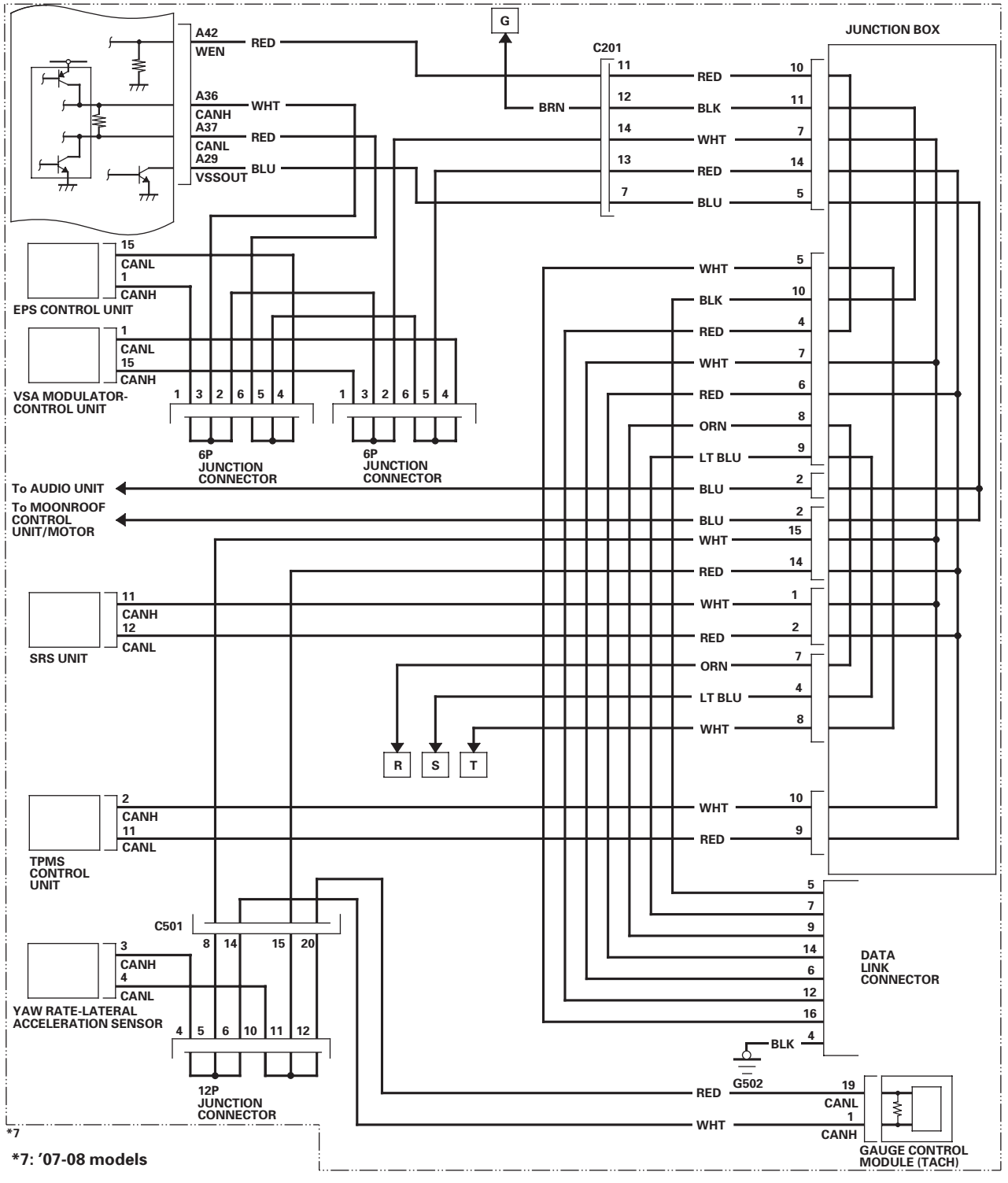
*8: '09 model

(cont'd)

System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)

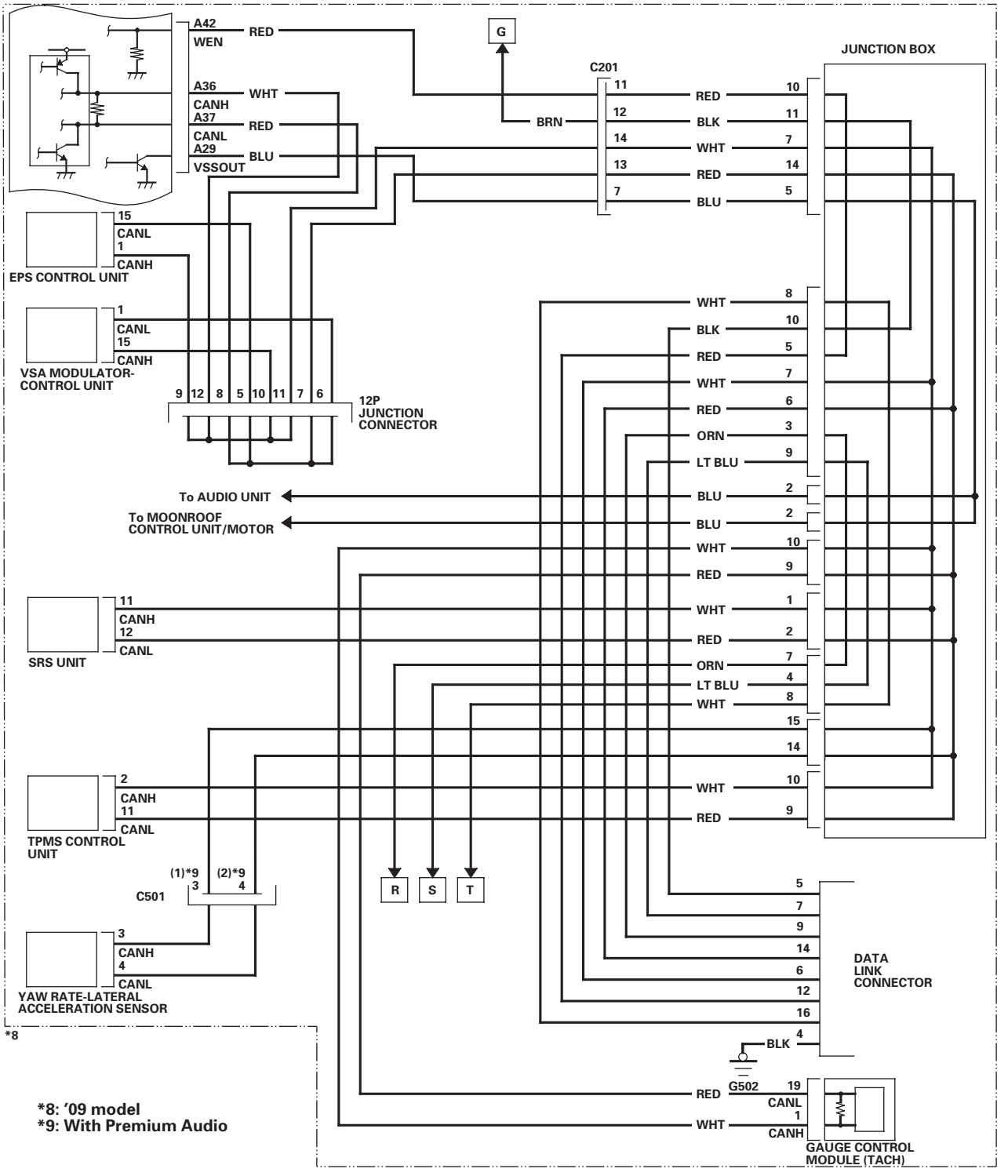



A42
WEN
RED
A36
CANH
A37
CANL
A29
VSSOUT
WHT
RED
BLU
G
BRN
C201
11
12
14
13
7
RED
BLK
WHT
RED
BLU
JUNCTION BOX
10
11
7
14
5
15
CANL
1
CANH
EPS CONTROL UNIT
1
CANL
15
CANH
VSA MODULATOR-
CONTROL UNIT
1 3 2 6 5 4
1 3 2 6 5 4
6P
JUNCTION
CONNECTOR
6P
JUNCTION
CONNECTOR
To AUDIO UNIT
To MOONROOF
CONTROL
UNIT/MOTOR
WHT
BLK
RED
WHT
RED
ORN
LT BLU
BLU
BLU
WHT
RED
WHT
RED
ORN
LT BLU
WHT
5
10
4
7
6
8
9
2
2
15
14
1
2
7
4
8
11
CANH
12
CANL
SRS UNIT
R
S
T
2
CANH
11
CANL
TPMS
CONTROL
UNIT
WHT
RED
10
9
C501
8 14 15 20
3
CANH
4
CANL
YAW RATE-LATERAL
ACCELERATION SENSOR
4 5 6 10 11 12
12P
JUNCTION
CONNECTOR
5
7
9
14
6
12
16
4
DATA
LINK
CONNECTOR
BLK
G502
RED
WHT
19
CANL
1
CANH
GAUGE CONTROL
MODULE (TACH)
*7
*7: '07-08 models

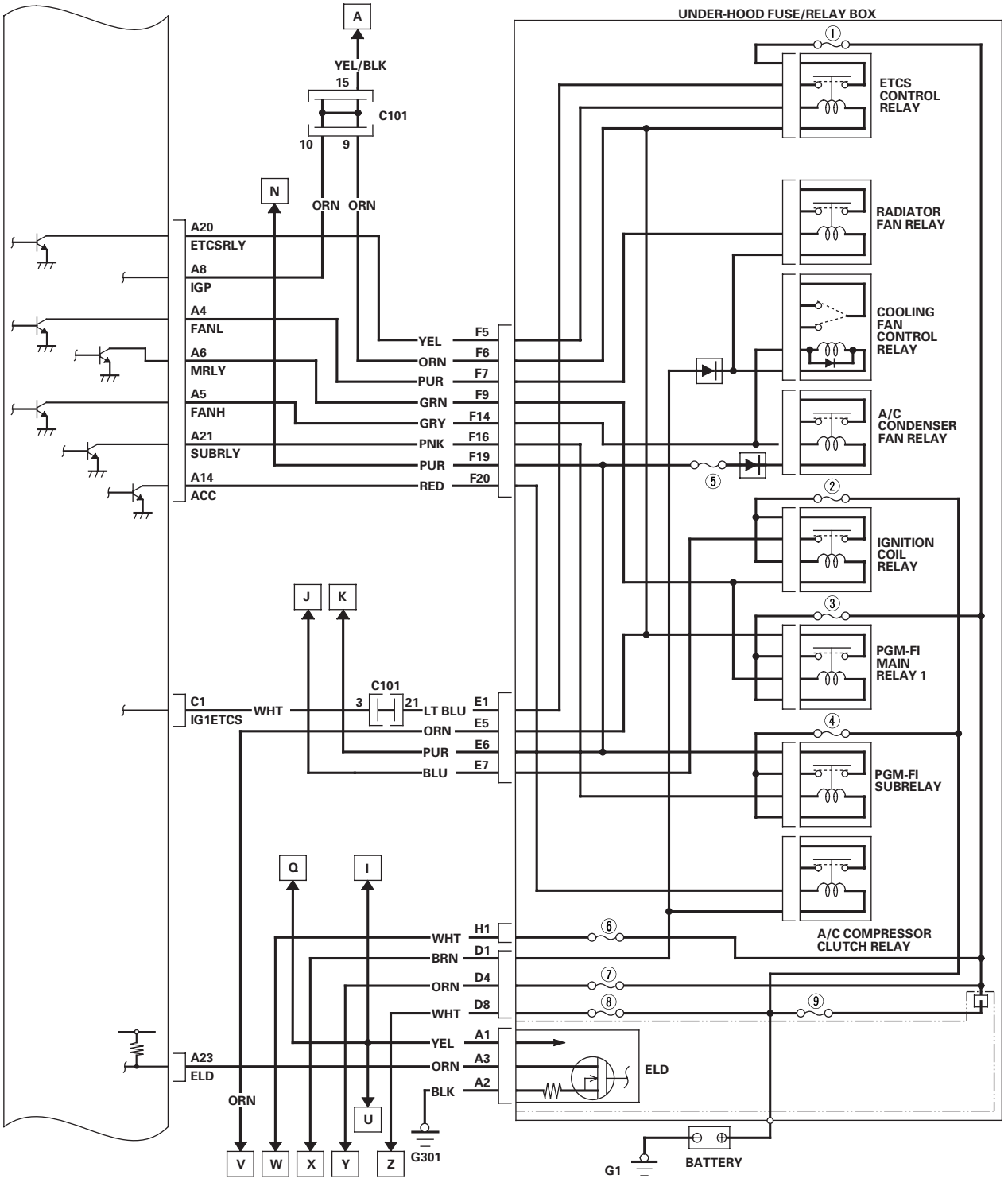
(cont'd)

System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



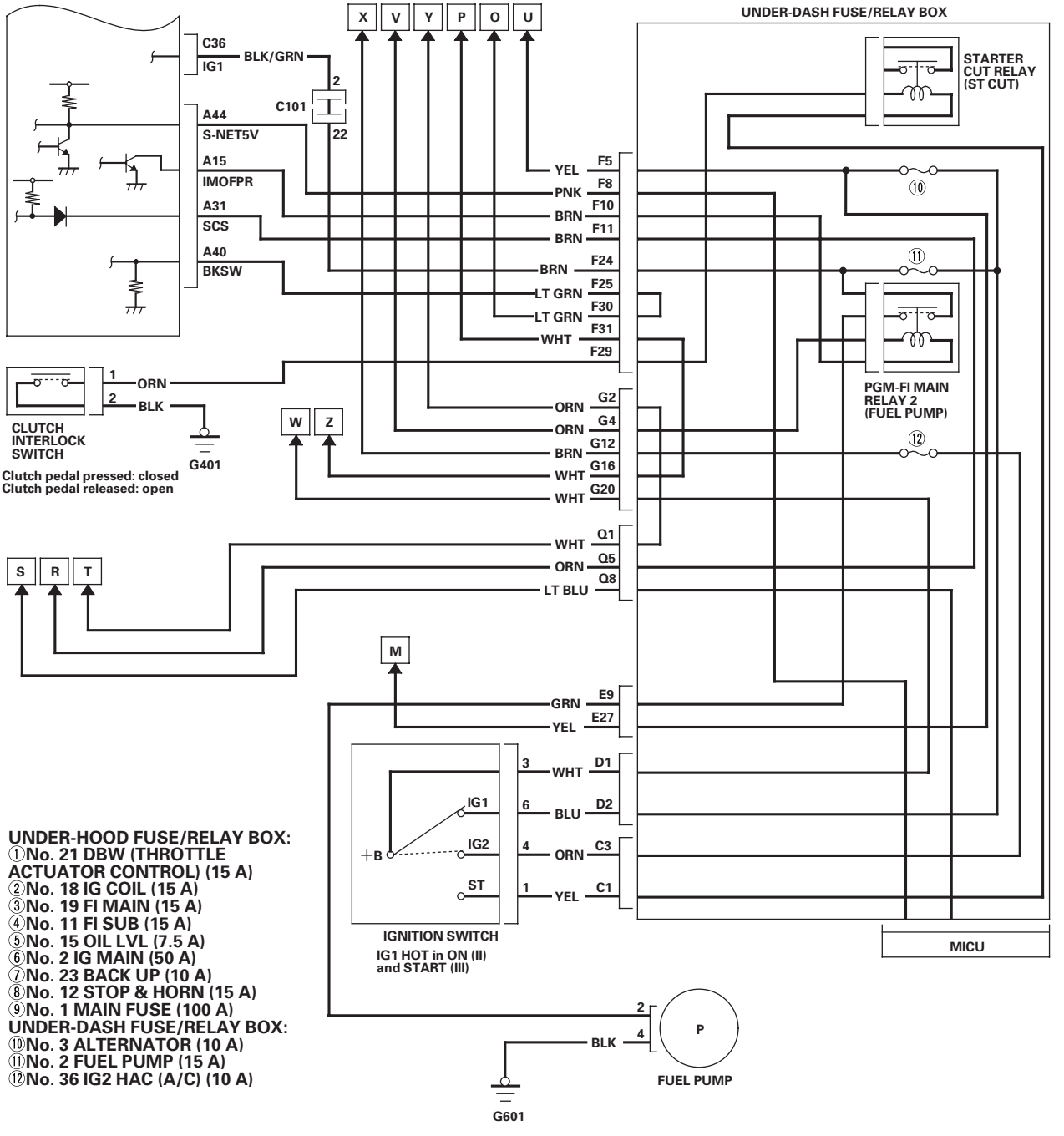
*8: '09 model
*9: With Premium Audio


UNDER-HOOD FUSE/RELAY BOX
A
YEL/BLK
15
C101
10
9
N
ORN
ORN
A20
ETCSRLY
A8
IGP
A4
FANL
A6
MRLY
A5
FANH
A21
SUBRLY
A14
ACC
YEL
ORN
PUR
GRN
GRY
PNK
PUR
RED
F5
F6
F7
F9
F14
F16
F19
F20
ETCS CONTROL RELAY
RADIATOR FAN RELAY
COOLING FAN CONTROL RELAY
A/C CONDENSER FAN RELAY
IGNITION COIL RELAY
PGM-FI MAIN RELAY 1
PGM-FI SUBRELAY
A/C COMPRESSOR CLUTCH RELAY
J
K
C101
3
21
C1
IG1ETCS
WHT
LT BLU
ORN
PUR
BLU
E1
E5
E6
E7
Q
I
WHT
BRN
ORN
WHT
H1
D1
D4
D8
YEL
ORN
BLK
A1
A3
A2
A23
ELD
ELD
ORN
U
V
W
X
Y
Z
G301
G1
BATTERY

(cont'd)

System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



How to Set Readiness Codes

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain readiness codes that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the ECM/PCM has been reset, these readiness codes are reset to incomplete. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch to ON (II), but do not start the engine. The MIL will come on for 15—20 seconds. If it then goes off, the readiness codes are set to complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see page 11-8). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

Catalytic Converter Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch to LOCK (0) or ACC (I) during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.
- Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.
- The readiness code will not switch to complete until all the enable criteria are met.
- If a fault in the secondary HO2S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.

Enable Criteria

- ECT SENSOR 1 at 70 ℃ (158 ℉) or more.
- IAT SENSOR at —7 ℃ (20 ℉) or more.
- Vehicle speed (VSS) above 40 km/h (25 mph).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.

2. Start the engine.

3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 8 km (5 miles), the readiness code should switch to complete.

4. If the readiness code is still not set to complete, check for a Temporary DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

(cont'd)

How to Set Readiness Codes (cont'd)

Evaporative Emission (EVAP) Control System Monitor and Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

- Battery voltage is more than 10.5 V.
- Engine at idle.
- ECT SENSOR 1 and ECT SENSOR 2 between 80 ℃ (176 ℉) and 100 ℃ (212 ℉).
- MAP SENSOR less than 46.6 kPa (350 mmHg, 14 in.Hg).
- Vehicle speed (VSS) 0 km/h (0 mph).
- IAT SENSOR between 0 ℃ (32 ℉) and 100 ℃ (212 ℉).

Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Select EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
   - If the result is normal, readiness is complete.
   - If the result is not normal, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

Air Fuel Ratio (A/F) Sensor Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch to LOCK (0) or ACC (I) during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 60 ℃ (140 ℉) or more.

Procedure

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 5 seconds. After about 5.6 km (3.5 miles), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the air fuel ratio (A/F) sensor in the DTCs MENU with the HDS.
   - If the screen shows complete, readiness is complete.
   - If the screen shows not complete, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST MENU. Check the ECT SENSOR 1 in the ALL DATA LIST with the HDS. If the ECT SENSOR 1 is less than 60 ℃ (140 ℉), run the engine until it is more than 60 ℃ (140 ℉), then repeat the procedure.

Air Fuel Ratio (A/F) Sensor Heater Monitor Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Procedure

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.

2. If the readiness code is still not set to complete, check for a Temporary DTC. If there is no DTC, repeat the procedure.

Misfire Monitor and Readiness Code

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

Fuel System Monitor and Readiness Code

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

Comprehensive Component Monitor and Readiness Code

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

EGR Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch to LOCK (0) or ACC (I) during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 80 ℃ (176 ℉) or more.

Procedure

1. Connect the HDS to the DLC.

2. Start the engine.

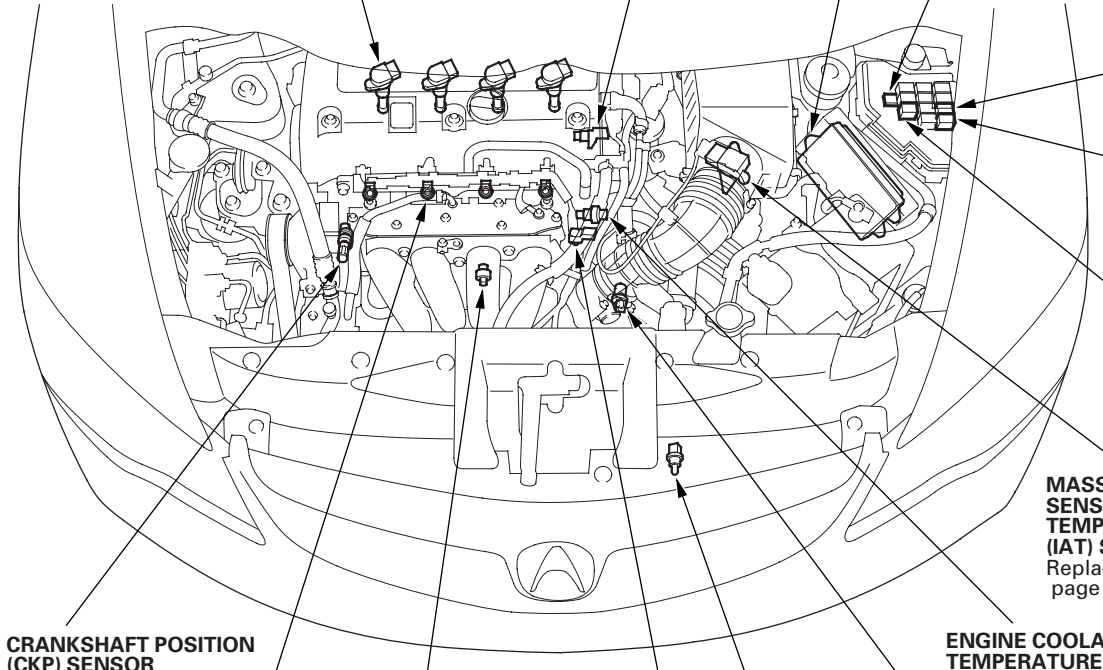
3. Drive at a steady speed with the A/T in D position or M/T in 4th gear, at 80—100 km/h (50—62 mph) or above for more than 10 seconds.

4. With the A/T in D position or M/T in 4th gear, decelerate from 100 km/h (62 mph) or above by completely releasing the throttle for at least 5 seconds. If the engine is stopped during this procedure, go to step 3 and do the procedure again.

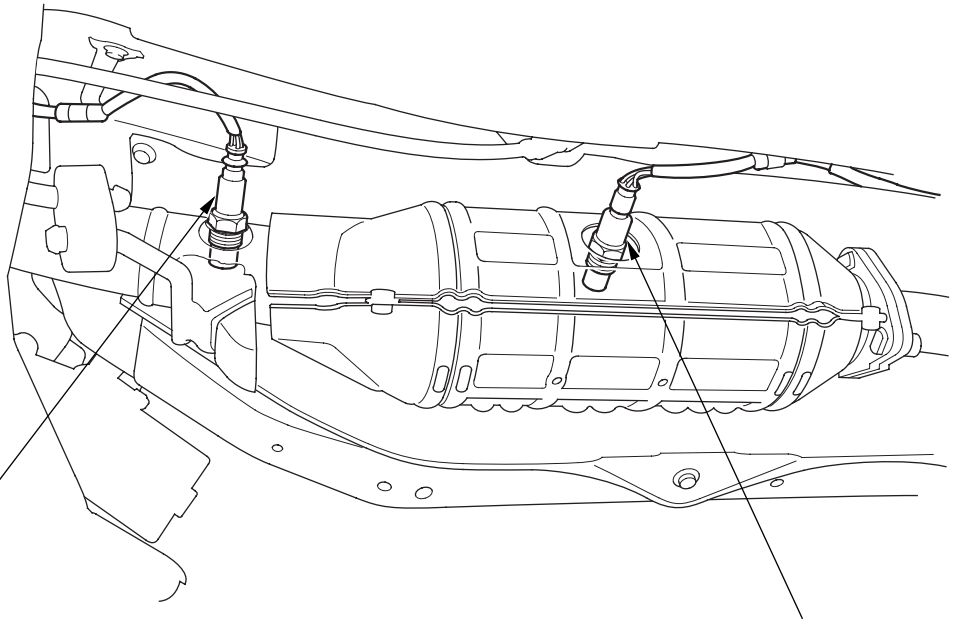
5. Check the OBD status screen for DTC P0401 in the DTC's MENU with the HDS.

   - If it is PASSED, readiness is complete.
   - If it is not PASSED, go to step 3 and retest.

Component Location Index

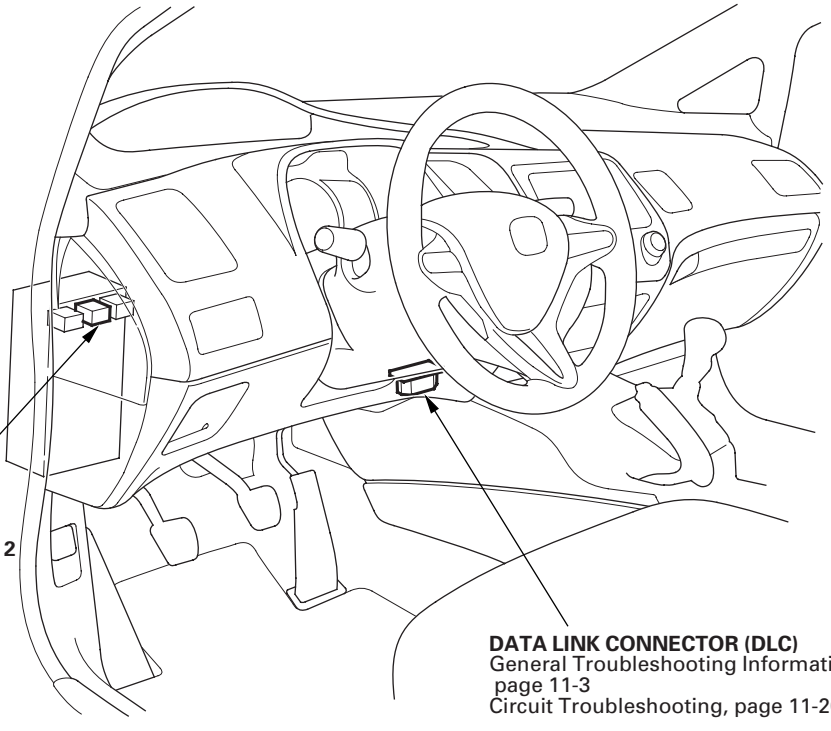


* : This illustration shows K20Z2 engine



AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
Replacement, page 11-221

SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
Replacement, page 11-221



PGM-FI MAIN RELAY 2 (FUEL PUMP)

DATA LINK CONNECTOR (DLC)
General Troubleshooting Information, page 11-3
Circuit Troubleshooting, page 11-204

DTC Troubleshooting

DTC P0101: MAF Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P1128, P1129, P2228, and/or P2229 are stored at the same time as DTC P0101, troubleshoot those DTCs first, then recheck for DTC P0101.

1. Check for poor connections or damage to these parts:

   - PCV hose
   - Intake air duct
   - Air cleaner
   - Purge (PCS) line
   - Brake booster
   - Brake booster hose

   Are the parts OK?

   YES—Go to step 2.

   NO—Repair or replace the damaged part(s), then go to step 17.

2. Check for damage or looseness at the air duct in the air cleaner.

   Is it OK?

   YES—Go to step 3.

   NO—Reconnect or replace the air duct in the air cleaner, then go to step 15.

3. Check for a dirty air cleaner element.

   Is it dirty?

   YES—Replace the air cleaner element (see page 11-346), then go to step 15.

   NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Turn the ignition switch to ON (II).

6. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is there about 0.2 gm/s or 0.5 V?

   YES—Go to step 7.

   NO—Go to step 13.

7. Start the engine.

8. Vary the engine speed between 2,000 rpm and 3,000 rpm.

9. Check the MAF SENSOR in the DATA LIST with the HDS.

   Does the reading change?

   YES—Go to step 10.

   NO—Go to step 13.

10. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

11. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR

12. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

    Does the screen indicate FAILED?

    YES—Go to step 13.

    NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 11 and recheck.

13. Turn the ignition switch to LOCK (0).

14. Replace the MAF sensor/IAT sensor (see page 11-224).

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • MAP SENSOR
    • MAF SENSOR

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0101 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

    NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

DTC P0102: MAF Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), and wait 2 seconds.

2. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is about 0 gm/s or 0.1 V or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 4.

   NO—Repair short in the wire between the MAF sensor/IAT sensor and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 20.

5. Disconnect the MAF sensor/IAT sensor 5P connector.

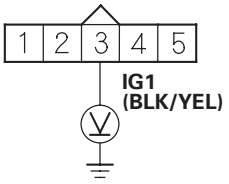
6. Turn the ignition switch to ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

7. Measure the voltage between MAF sensor/IAT sensor 5P connector terminal No. 3 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

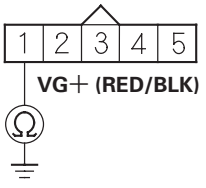
YES—Go to step 8.

NO—Repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the MAF sensor/IAT sensor, then go to step 20.

8. Turn the ignition switch to LOCK (0).

9. Measure the resistance between MAF sensor/IAT sensor 5P connector terminal No. 1 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 190—210 kΩ?

YES—Go to step 14.

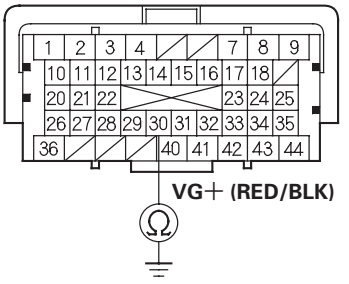
NO—Go to step 10.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector B (44P).

12. Check for continuity between ECM/PCM connector terminal B30 and body ground.

ECM/PCM CONNECTOR B (44P)



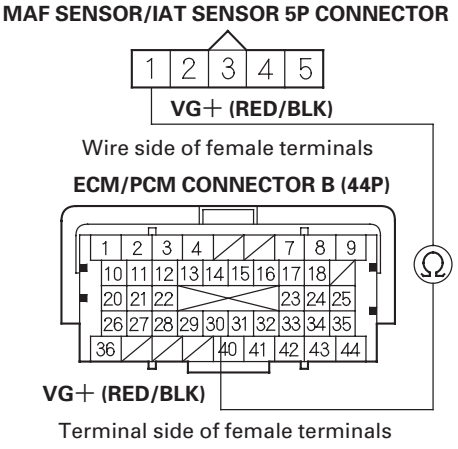
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B30) and the MAF sensor/IAT sensor, then go to step 21.

NO—Go to step 13.

13. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 1 and ECM/PCM connector terminal B30.



Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the ECM/PCM (B30) and the MAF sensor/IAT sensor, then go to step 21.

14. Substitute a known-good MAF sensor/IAT sensor (see page 11-224).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine. Hold the engine speed at 2,000 rpm without load (A/T in P or N, M/T in neutral).

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0102 indicated?

    YES—Go to step 27.

    NO—Replace the original MAF sensor/IAT sensor (see page 11-224), then go to step 20.

20. Turn the ignition switch to LOCK (0).

21. Reconnect all connectors.

22. Turn the ignition switch to ON (II).

23. Reset the ECM/PCM with the HDS.

24. Do the ECM/PCM idle learn procedure (see page 11-310).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0102 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

26. Reconnect all connectors.

27. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0102 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0103: MAF Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), and wait 2 seconds.

2. Check the MAF SENSOR in the DATA LIST with the HDS.

   Is about 202 gm/s, or 4.89 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

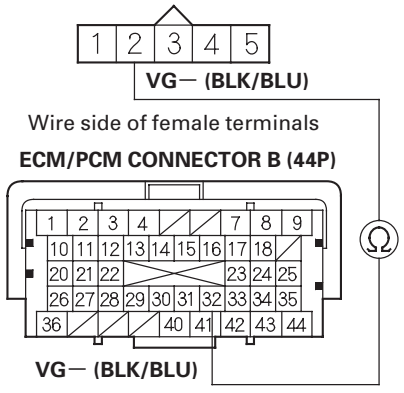
4. Jump the SCS line with the HDS.

5. Disconnect the MAF sensor/IAT sensor 5P connector.

6. Disconnect ECM/PCM connector B (44P).

7. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and ECM/PCM connector terminal B32.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Is there continuity?

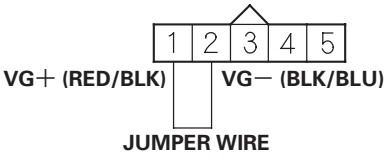
YES—Go to step 8.

NO—Repair open in the wire between the ECM/PCM (B32) and the MAF sensor/IAT sensor, then go to step 15.

8. Reconnect ECM/PCM connector B (44P).

9. Connect MAF sensor/IAT sensor 5P connector terminals No. 1 and No. 2 with a jumper wire.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

10. Turn the ignition switch to ON (II).

11. Clear the DTC with the HDS.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0103 indicated?

    YES—Go to step 20.

    NO—Go to step 13.

13. Turn the ignition switch to LOCK (0).

14. Replace the MAF sensor/IAT sensor (see page 11-224).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Reset the ECM/PCM with the HDS.

18. Do the ECM/PCM idle learn procedure (see page 11-310).

(cont'd)

DTC Troubleshooting (cont'd)

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0103 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Turn the ignition switch to LOCK (0).

21. Reconnect all connectors.

22. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0103 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0107: MAP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (26 mmHg, 1.0 in.Hg), or 0.23 V or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Disconnect the MAP sensor 3P connector.

5. Turn the ignition switch to ON (II).

6. Check the MAP SENSOR in the DATA LIST with the HDS.

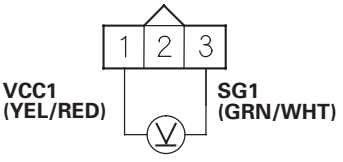
   Is about 3 kPa (26 mmHg, 1.0 in.Hg), or 0.23 V or less indicated?

   YES—Go to step 12.

   NO—Go to step 7.

7. Measure the voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

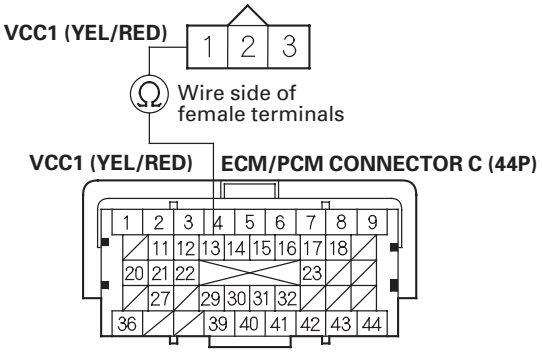
Is there about 5 V?

YES—Go to step 16.

NO—Go to step 8.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector C (44P).
11. Check for continuity between ECM/PCM connector terminal C13 and MAP sensor 3P connector terminal No. 1.

MAP SENSOR 3P CONNECTOR



Terminal side of female terminals

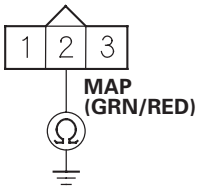
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the ECM/PCM (C13) and the MAP sensor, then go to step 18.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (44P).
15. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C11) and the MAP sensor, then go to step 18.

NO—Go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Replace the MAP sensor (see page 11-224).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-310).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0107 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0108: MAP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

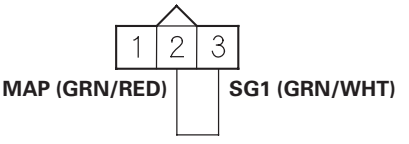
1. Turn the ignition switch to ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (1,197 mmHg, 47.1 in.Hg), or 4.49 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch to ON (II).

7. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (1,197 mmHg, 47.1 in.Hg), or 4.49 V or more indicated?

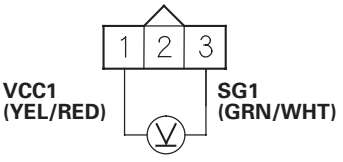
   YES—Go to step 8.

   NO—Go to step 18.

8. Remove the jumper wire from the MAP sensor 3P connector.

9. Measure the voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 14.

NO—Go to step 10.

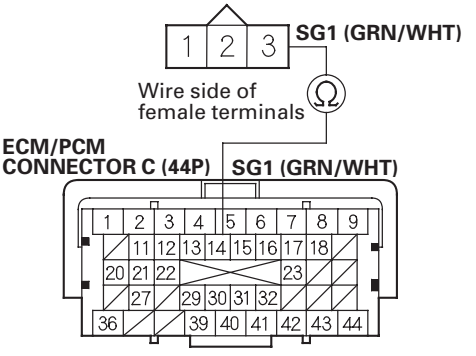
10. Turn the ignition switch to LOCK (0).

11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connector C (44P).

13. Check for continuity between ECM/PCM connector terminal C14 and MAP sensor 3P connector terminal No. 3.

MAP SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

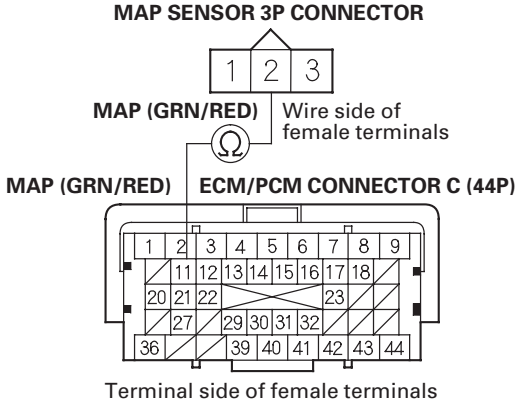
YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (C14) and the MAP sensor, then go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C11 and MAP sensor 3P connector terminal No. 2.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (C11) and the MAP sensor, then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the MAP sensor (see page 11-224).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-310).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0108 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0108 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0111: IAT Sensor Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the IAT sensor.

   Are the connections and the terminals OK?

   YES—Go to step 2.

   NO—Repair the connections or the terminals, then go to step 15.

2. Remove the MAF sensor/IAT sensor (see page 11-224).

3. Allow the IAT sensor to cool to ambient temperature.

4. Note the ambient temperature.

5. Connect the MAF sensor/IAT sensor to its 5P connector, but do not install the sensor onto the air cleaner.

6. Turn the ignition switch to ON (II).

7. Note the value of the IAT SENSOR quickly in the DATA LIST with the HDS.

8. Compare the value of IAT SENSOR and the ambient temperature.

   Does the value of IAT SENSOR differ 3 °C (5.4 °F) or more from the ambient temperature?

   YES—Go to step 13.

   NO—Go to step 9.

9. Disconnect the MAF sensor/IAT sensor from its 5P connector.

10. Using a heat gun, blow hot air on the MAF sensor/ IAT sensor for a few seconds. Do not apply the heat longer than a few seconds or you will damage the sensor.

11. Connect the MAF sensor/IAT sensor to its 5P connector, but do not install the sensor onto the air cleaner.

12. Check the IAT SENSOR in the DATA LIST with the HDS.

    Does the IAT SENSOR change 33 °C (59 °F) or more from the ambient temperature?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

    NO—Go to step 13.

13. Turn the ignition switch to LOCK (0).

14. Replace the MAF sensor/IAT sensor (see page 11-224).

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0111 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0112: IAT Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

   YES—Go to step 3.

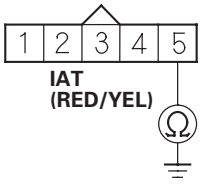
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch to ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 5 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the MAF sensor/IAT sensor and the ECM/PCM (B31), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace the MAF sensor/IAT sensor (see page 11-224).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0112 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.

19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0112 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0113: IAT Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about −40 °C (−40 °F) or less, or 4.92 V or higher indicated?

   YES—Go to step 3.

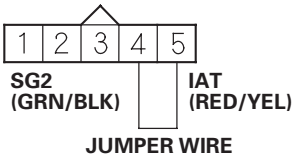
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Disconnect the MAF sensor/IAT sensor 5P connector.

5. Connect MAF sensor/IAT sensor 5P connector terminals No. 4 and No. 5 with a jumper wire.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch to ON (II).

7. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about −40 °C (−40 °F) or less, or 4.92 V or higher indicated?

   YES—Go to step 8.

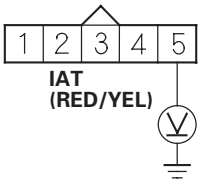
   NO—Go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from the MAF sensor/IAT sensor 5P connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between MAF sensor/IAT sensor 5P connector terminal No. 5 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

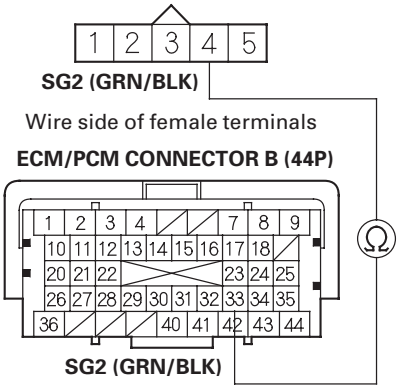
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 4 and ECM/PCM connector terminal B33.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

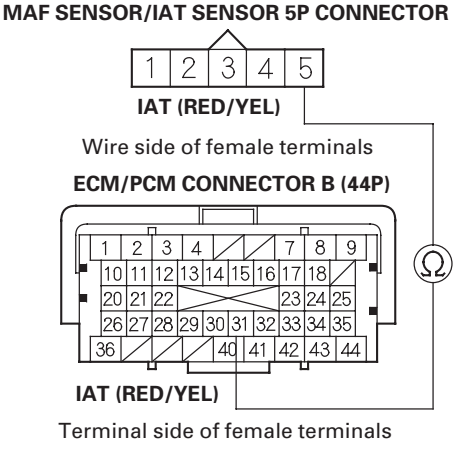
NO—Repair open in the wire between the ECM/PCM (B33) and the MAF sensor/IAT sensor, then go to step 22.

16. Turn the ignition switch to LOCK (0).

17. Jump the SCS line with the HDS.

18. Disconnect ECM/PCM connector B (44P).

19. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 5 and ECM/PCM connector terminal B31.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B31) and the MAF sensor/IAT sensor, then go to step 22.

20. Turn the ignition switch to LOCK (0).

21. Replace the MAF sensor/IAT sensor (see page 11-224).

22. Reconnect all connectors.

23. Turn the ignition switch to ON (II).

24. Reset the ECM/PCM with the HDS.

25. Do the ECM/PCM idle learn procedure (see page 11-310).

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0113 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0113 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0116: ECT Sensor 1 Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 80 °C (176 °F) or more, or 0.78 V or less indicated?

   YES—Go to step 6.

   NO—Go to step 3.
3. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Does ECT SENSOR 1 change 10 °C (18 °F) or more?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

   NO—Go to step 11.
6. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
7. Turn the ignition switch to LOCK (0).
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch to ON (II).
10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Does ECT SENSOR 1 change 10 °C (18 °F) or more?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

    NO—Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 1 (see page 11-225).
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-310).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0116 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0117: ECT Sensor 1 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

   YES—Go to step 3.

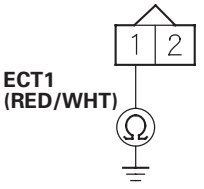
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect ECT sensor 1 2P connector.
5. Turn the ignition switch to ON (II).
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 1 and the ECM/PCM (B23), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 1 (see page 11-225).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.

19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0118: ECT Sensor 1 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about −40 °C (−40 °F) or less, or 4.92 V or more indicated?

   YES—Go to step 3.

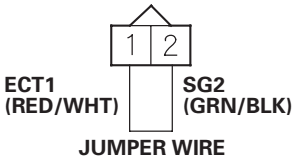
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Disconnect ECT sensor 1 2P connector.

5. Connect ECT sensor 1 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch to ON (II).

7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about −40 °C (−40 °F) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.

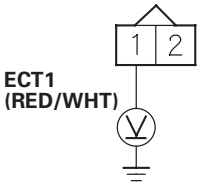
8. Turn the ignition switch to LOCK (0).

9. Remove the jumper wire from ECT sensor 1 2P connector.

10. Turn the ignition switch to ON (II).

11. Measure the voltage between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 12.

NO—Go to step 16.

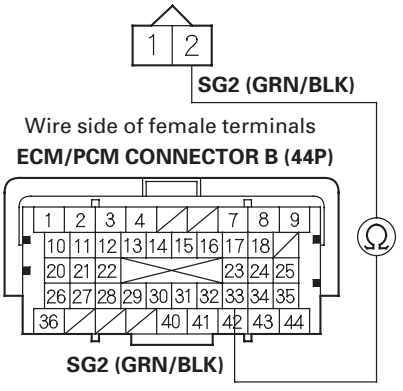
12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect ECM/PCM connector B (44P).

15. Check for continuity between ECT sensor 1 2P connector terminal No. 2 and ECM/PCM connector terminal B33.

ECT SENSOR 1 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

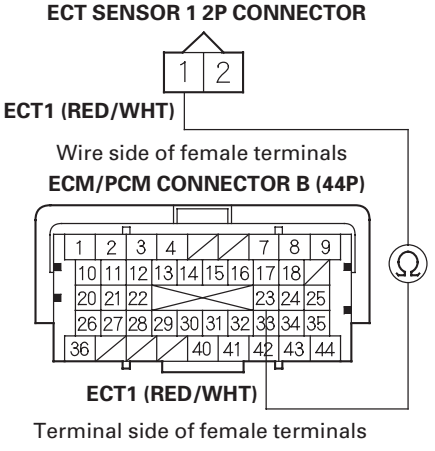
YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B33) and ECT sensor 1, then go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (44P).
19. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and ECM/PCM connector terminal B23.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B23) and ECT sensor 1, then go to step 22.

20. Turn the ignition switch to LOCK (0).
21. Replace ECT sensor 1 (see page 11-225).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-310).
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0118 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0118 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0125: ECT Sensor 1 Malfunction/Slow Response

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle for 5 minutes or more.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about − 18 °C (0 °F) or less indicated?

   YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and terminals are OK, replace ECT sensor 1 (see page 11-225), then go to step 8.

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Allow the engine to cool to 40 °C (104 °F) or less.
5. Make sure the temperature difference between ECT SENSOR 1 and ECT SENSOR 2 is about 10 °C (50 °F) in the DATA LIST with the HDS.
6. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 70 °C (158 °F).

   Does ECT SENSOR 2 also show about 70 °C (158 °F)?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■
7. Check the thermostat (see page 10-5).

   Is the thermostat OK?

   YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and terminals are OK, replace ECT sensor 1 (see page 11-225), then go to step 8.

   NO—Replace the thermostat (see page 10-10), then go to step 8.
8. Turn the ignition switch to LOCK (0).
9. Allow the engine to cool to 40 °C (104 °F) or less.
10. Make sure the temperature difference between ECT SENSOR 1 and ECT SENSOR 2 is about 10 °C (50 °F) in the DATA LIST with the HDS.
11. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 70 °C (158 °F).

    Does ECT SENSOR 2 also show about 70 °C (158 °F)?

    YES—Go to step 1 and recheck.

    NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P0128: Cooling System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Make sure the blower switch is OFF.
4. Check the FAN CTRL in the DATA LIST with the HDS.

   Is it OFF?

   YES—Go to step 5.

   NO—Wait until the FAN CTRL is off, then go to step 5.
5. Check the radiator fan operation.

   Does the radiator fan keep running?

   YES—Check the radiator fan high speed circuit (see page 10-26), and the radiator fan relay (see page 22-70). If the circuit and the relay are OK, go to step 19.

   NO—Go to step 6.
6. Let the engine cool until the coolant temperature is 40 ℃ (104 ℉) or less.
7. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
8. Start the engine, and let it idle.
9. Let the engine idle until ECT SENSOR 1 goes up 22 ℃ (40 ℉) or more from the recorded temperature.
10. Check ECT SENSOR 2 in the DATA LIST with the HDS.
11. Compare the recorded value of ECT SENSOR 2 and the present value of ECT SENSOR 2.

    Did temperature rise 8 ℃ (14 ℉) or more from the recorded temperature?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■

    NO—Test the thermostat (see page 10-5), then go to step 12.
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Let the engine cool until the coolant temperature is between −6 ℃ (21 ℉) and 40 ℃ (104 ℉).
15. Do the ECM/PCM idle learn procedure (see page 11-310).
16. Test-drive at a steady speed between 24—120 km/h (15—75 mph) for 10 minutes.
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES—Check the cooling system (see page 10-2), then go to step 1.

    NO—Go to step 18.
18. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check the cooling system (see page 10-2), then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

20. Let the engine cool until the coolant temperature is between —6 ℃ (21 ℉) and 40 ℃ (104 ℉).

21. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

22. Test-drive at a steady speed between 24—120 km/h (15—75 mph) for 10 minutes.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P0133: A/F Sensor (Sensor 1) Malfunction/Slow Response

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 3rd or 4th
   - Drive the vehicle at 40 km/h (25 mph) or less for 5 minutes, then drive at a steady speed between 41—130 km/h (26—81 mph).

5. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch to LOCK (0).

7. Replace the A/F sensor (Sensor 1) (see page 11-221).

8. Turn the ignition switch to ON (II).

9. Reset the ECM/PCM with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

10. Do the ECM/PCM idle learn procedure (see page 11-310).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

12. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 3rd or 4th
    - Drive the vehicle at 40 km/h (25 mph) or less for 5 minutes, then drive at a steady speed between 41—130 km/h (26—81 mph).

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0133 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0133 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P0134: A/F Sensor (Sensor 1) Heater System Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel and clear the DTC with the HDS.
- If DTC P0135 is stored at the same time as DTC P0134, troubleshoot DTC P0135 first, then recheck for DTC P0134.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0134 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Replace the A/F sensor (Sensor 1) (see page 11-221).

7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0134 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1.

    NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P0134 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0135: A/F Sensor (Sensor 1) Heater Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0135 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 11 FI SUB (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

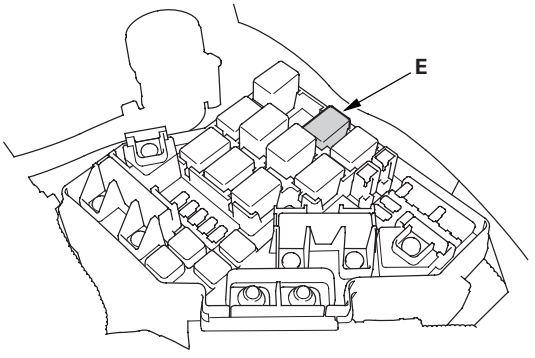
   YES—Go to step 7.

   NO—Go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

7. Test the PGM-FI subrelay (E) in the under-hood fuse/relay box (see page 22-70).



Is the PGM-FI subrelay OK?

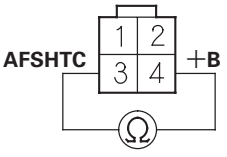
YES—Go to step 8.

NO—Replace the PGM-FI subrelay, then go to step 24.

8. Disconnect the A/F sensor (Sensor 1) 4P connector.

9. At the sensor side, measure the resistance between A/F sensor (Sensor 1) 4P connector terminals No. 3 and No. 4.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

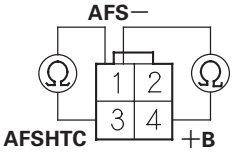
Is there 2.0—2.7 Ω at room temperature?

YES—Go to step 10.

NO—Go to step 23.

10. At the sensor side, check for continuity between A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 3, and between terminals No. 1 and No. 4 individually.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 24.

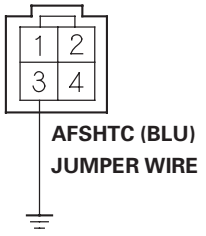
NO—Go to step 11.

11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connector C (44P).

13. Connect A/F sensor (Sensor 1) 4P connector terminal No. 3 to body ground with a jumper wire.

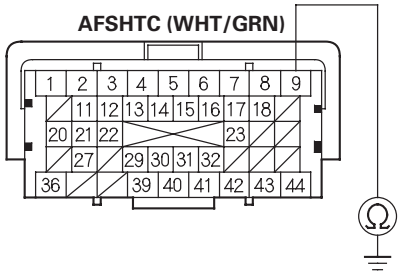
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

14. Check for continuity between ECM/PCM connector terminal C9 and body ground.

ECM/PCM CONNECTOR C (44P)



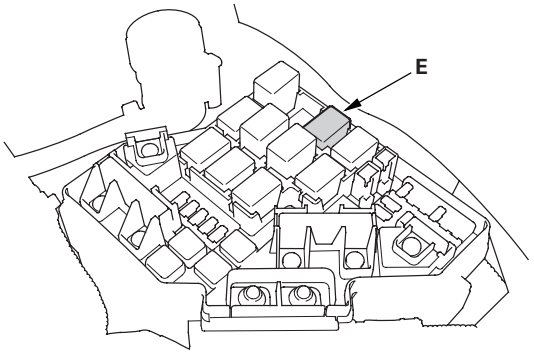
Terminal side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (C9) and the A/F sensor (Sensor 1), then go to step 25.

15. Remove the PGM-FI subrelay (E) from the under-hood fuse/relay box.

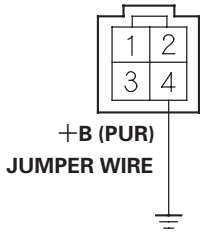


(cont'd)

DTC Troubleshooting (cont'd)

16. Connect A/F sensor (Sensor 1) 4P connector terminal No. 4 to body ground with a jumper wire.

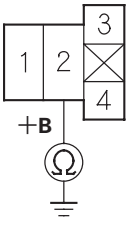
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

17. Check for continuity between PGM-FI subrelay 4P connector terminal No. 2 and body ground.

PGM-FI SUBRELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

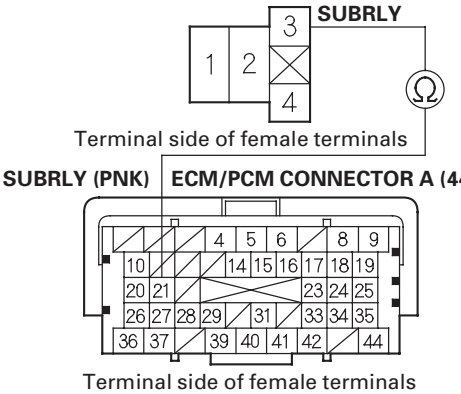
YES—Go to step 18.

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the PGM-FI subrelay, then go to step 25.

18. Disconnect ECM/PCM connector A (44P).

19. Check for continuity between PGM-FI subrelay 4P connector terminal No. 3 and ECM/PCM connector terminal A21.

PGM-FI SUBRELAY 4P CONNECTOR



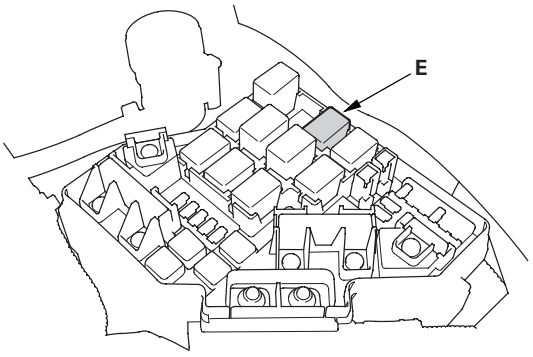
Terminal side of female terminals

Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the ECM/PCM (A21) and the PGM-FI subrelay, then go to step 25.

20. Remove the PGM-FI subrelay (E) from the under-hood fuse/relay box.

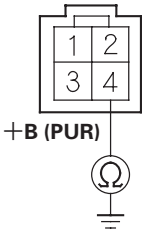


21. Disconnect the A/F sensor (Sensor 1) 4P connector.

22. Disconnect the EVAP canister vent shut valve 2P connector.

23. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Repair short in the wire between the PGM-FI subrelay, the EVAP canister vent shut valve, and the A/F sensor (Sensor 1). Also replace the No. 11 FI SUB (15 A) fuse, then go to step 25.

NO—Replace the under-hood fuse/relay box (see page 22-65), then go to step 25.

24. Replace the A/F sensor (Sensor 1) (see page 11-221).

25. Reconnect all connectors.

26. Turn the ignition switch to ON (II).

27. Reset the ECM/PCM with the HDS.

28. Do the ECM/PCM idle learn procedure (see page 11-310).

29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

DTC Troubleshooting (cont'd)

31. Reconnect all connectors.

32. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

33. Start the engine, and let it idle.

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0135 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0137: Secondary HO2S (Sensor 2) Circuit Low Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk(*) applies to '07-09 models.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 (0.05) V or less?*

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Remove the center console (see page 20-92).

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.

8. Turn the ignition switch to ON (II).

9. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 (0.05) V or less?*

   YES—Go to step 10.

   NO—Go to step 14.

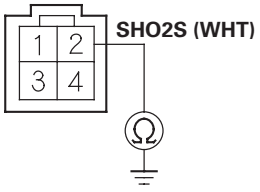
10. Turn the ignition switch to LOCK (0).

11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connector C (44P).

13. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 2 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C27) and the secondary HO2S (Sensor 2), then go to step 16.

NO—Go to step 24.

14. Turn the ignition switch to LOCK (0).

15. Replace the secondary HO2S (Sensor 2) (see page 11-221).

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Reset the ECM/PCM with the HDS.

19. Do the ECM/PCM idle learn procedure (see page 11-310).

20. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

21. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
- A/T in D, M/T in 4th
- Engine speed between 1,500—3,000 rpm
- Drive about 1 minute or more

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0137 indicated?

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

24. Reconnect all connectors.

25. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

26. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

27. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Engine speed between 1,500—3,000 rpm
    - Drive 1 minute or more

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0137 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 26. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 26. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 26.

DTC P0138: Secondary HO2S (Sensor 2) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.27 V or more?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. ■

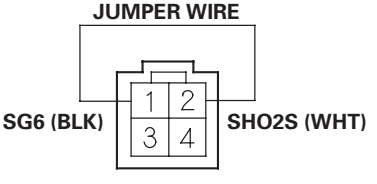
5. Turn the ignition switch to LOCK (0).

6. Remove the center console (see page 20-92).

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.

8. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

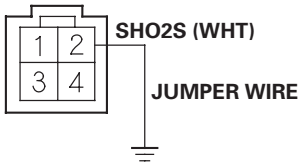
9. Turn the ignition switch to ON (II).
10. Check the HO2S S2 in the DATA LIST with the HDS.

    Does the voltage stay at 1.27 V or more?

    YES—Go to step 11.

    NO—Go to step 20.
11. Turn the ignition switch to LOCK (0).
12. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
13. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 2 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

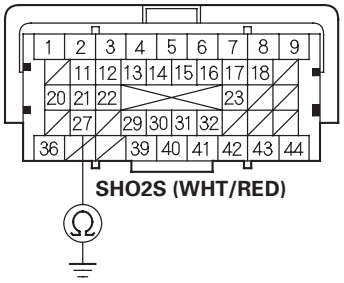
14. Turn the ignition switch to ON (II).
15. Check the HO2S S2 in the DATA LIST with the HDS.

    Does the voltage stay at 1.27 V or more?

    YES—Go to step 16.

    NO—Repair open in the wire between the ECM/PCM (A9) and the secondary HO2S (Sensor 2), then go to step 22.
16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector C (44P).
19. Check for continuity between ECM/PCM connector terminal C27 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

    Is there continuity?

    YES—Go to step 30.

    NO—Repair open in the wire between the ECM/PCM (C27) and the secondary HO2S (Sensor 2), then go to step 22.
20. Turn the ignition switch to LOCK (0).
21. Replace the secondary HO2S (Sensor 2) (see page 11-221).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-310).

(cont'd)

DTC Troubleshooting (cont'd)

26. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

27. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Engine speed between 1,500—3,000 rpm
    - Drive about 1 minute or more

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0138 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 26.

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

32. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

33. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Engine speed between 1,500—3,000 rpm
    - Drive about 1 minute or more

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0138 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 32.

DTC P0139: Secondary HO2S (Sensor 2) Slow Response

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - Vehicle speed at 56 km/h (35 mph)
   - Drive about 15 seconds
5. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Replace the secondary HO2S (Sensor 2) (see page 11-221).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Vehicle speed at 56 km/h (35 mph)
    - Drive about 15 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0139 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P0139 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC Troubleshooting (cont'd)

DTC P0141: Secondary HO2S (Sensor 2) Heater Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0141 indicated?

   YES—Go to step 5.

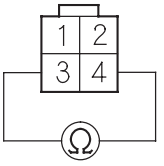
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 7.

   NO—Repair short in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 23.
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. At the secondary HO2S (Sensor 2) side, measure the resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

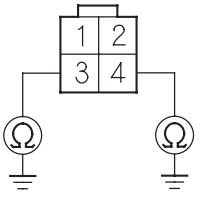
Is there 5.4— 7.3 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 22.

9. At the secondary HO2S (Sensor 2) side, check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

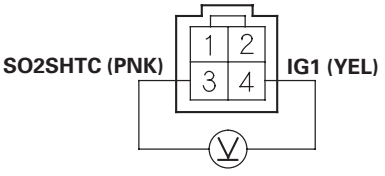
YES—Go to step 22.

NO—Go to step 10.

10. Turn the ignition switch to ON (II).

11. Measure the voltage between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES—Go to step 12.

NO—Go to step 16.

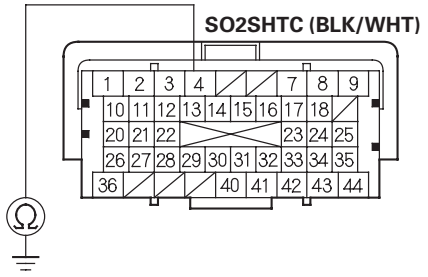
12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect ECM/PCM connector B (44P).

15. Check for continuity between ECM/PCM connector terminal B4 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

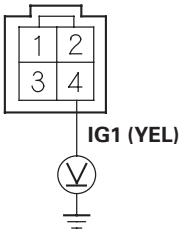
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B4) and the secondary HO2S (Sensor 2), then go to step 23.

NO—Go to step 29.

16. Measure the voltage between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES—Go to step 17.

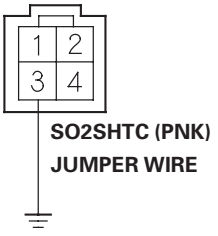
NO—Repair open in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse, then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector B (44P).
20. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.

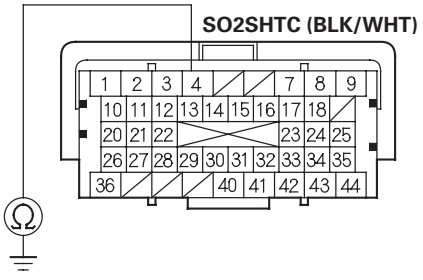
SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

21. Check for continuity between ECM/PCM connector terminal B4 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the ECM/PCM (B4) and the secondary HO2S (Sensor 2), then go to step 23.

22. Replace the secondary HO2S (Sensor 2) (see page 11-221).
23. Reconnect all connectors.
24. Turn the ignition switch to ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see page 11-310).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

29. Reconnect all connectors.

30. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

31. Start the engine, and let idle.

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 31. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 31. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0171: Fuel System Too Lean

DTC P0172: Fuel System Too Rich

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If any of the DTCs listed below are indicated at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.

P0101, P0102, P0103: Mass air flow (MAF) sensor
P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P0133, P1157, P1172, P2195, P2238, P2252, P2A00: Air fuel ratio (A/F) sensor (Sensor 1)
P0134, P0135: Air fuel ratio (A/F) sensor (Sensor 1) heater
P0137, P0138, P0139, P2270, P2271: Secondary HO2S (Sensor 2)
P0141: Secondary HO2S (Sensor 2) heater
P0401*, P0404*, P0406*, P2413*: Exhaust gas recirculation (EGR) system
P0443, P0496: EVAP canister purge valve
P2646, P2647, P2648, P2649: VTEC system
*: K20Z2 engine

1. Check the fuel pressure (see page 11-325).

   Is the fuel pressure OK?

   YES—Go to step 2.

   NO—
   - If the pressure is too high, replace the fuel pressure regulator (see page 11-337), then go to step 7.
   - If the pressure is too low, check the fuel pump, the fuel feed pipe and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-337), then go to step 7.

(cont'd)

DTC Troubleshooting (cont'd)

2. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster
   - Brake booster hose
   - Intake air duct

   Are the parts OK?

   YES—Go to step 3.

   NO—Repair or replace the part(s) with leaks, then go to step 7.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Check for these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in N, M/T in neutral
   - All electrical loads off

5. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

   Did the engine speed vary more than 100 rpm from 2,500 rpm?

   YES—Repeat step 5.

   NO—Go to step 6.

6. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

   Is there about 6.0— 8.6 (K20Z2 engine) or 5.7— 8.3 (K20Z3 engine) gm/s?

   YES—Check the engine valve clearances and adjust them if needed; K20Z2 engine (see page 6-12), K20Z3 engine (see page 6-14). If the valve clearances are OK, replace the injectors (see page 11-219), then go to step 7.

   NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 7.

7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

10. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

11. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Drive at a steady speed between 24—120 km/h (15—75 mph) for 15 minutes

    NOTE: DTC P0171 and/or P0172 may take up to 80 minutes of test driving to set. Using the HDS, monitor or the air fuel feed back average (AF FB AVE). If the AF FB AVE stays within 0.80—1.25, there is no problem at this time.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0171 or P0172 indicated?

    YES—Go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0300: Random Misfire and Any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

Special Tools Required
- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose, adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the misfire is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some of the combination of P0301 through P0304) will be stored.
- If the misfire is frequent enough to damage the catalyst, the MIL will blink whenever the misfire occurs, and DTC P0300 (and some of the combination of P0301 through P0304) will be stored. When the misfire stops, the MIL will remain on.
- If any of the DTCs listed below are indicated at the same time as the random misfire DTCs, troubleshoot those DTCs first, then recheck for random misfire DTCs:

  P0101, P0102, P0103: Mass air flow (MAF) sensor
  P0107, P0108: Manifold absolute pressure (MAP) sensor
  P0171, P0172: Fuel system
  P0335, P0339: Crankshaft position (CKP) sensor
  P0365, P0369: Camshaft position (CMP) sensor B
  P0401*, P0404*, P0416*, P2413*: Exhaust gas recirculation (EGR) system
  P0506, P0507: Idle control system
  P2646, P2647, P2648, P2649: VTEC system
  *: K20Z2 engine

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral).

4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, then recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - APP SENSOR

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. if the screen indicates OUT OF CONDITION, go to step 6 and recheck.

(cont'd)

DTC Troubleshooting (cont'd)

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. ■

9. Turn the ignition switch to LOCK (0).

10. Check the fuel quality.

    Is the quality good?

    YES—Go to step 11.

    NO—Drain the tank, fill it with a known-good fuel, then go to step 25.

11. Inspect the spark plugs (see page 4-21). If the spark plugs are fouled or worn, replace them.

12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 14.

    NO—Go to step 25.

14. Check the fuel pressure (see page 11-325).

    Is the fuel pressure OK?

    YES—Go to step 15.

    NO—
    - If the fuel pressure is too high, replace the fuel pressure regulator (see page 11-337), then go to step 25.
    - If the fuel pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-337), then go to step 25.

15. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

16. Check for these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
    - A/T in P or N, M/T in neutral
    - All electrical loads off

17. Monitor the ENGINE SPDEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

    Did the engine speed vary more than 100 rpm from 2,500 rpm?

    YES—Repeat step 17.

    NO—Go to step 18.

18. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 6.0—8.6 (K20Z2 engine) or 5.7—8.3 (K20Z3 engine) gm/s?

    YES—Go to step 19.

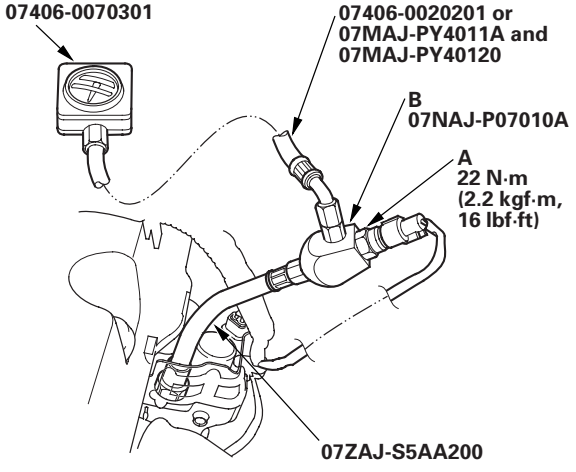
    NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 25.

19. Turn the ignition switch to LOCK (0).

20. Remove the cowl cover and the under cowl panel (see page 20-163).

21. Remove the rocker arm oil pressure switch (A), and attach the special tools as shown, then attach the rocker arm oil pressure switch to the pressure gauge attachment (B).

    NOTE: Install the parts in the reverse order of removal with a new O-ring.



22. Reconnect the rocker arm oil pressure switch 2P connector.

23. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

24. Check the oil pressure at engine speeds of 1,000 rpm and 2,000 rpm.

    Is the oil pressure below 49 kPa (0.5 kgf/cm^2, 7 psi)?

    YES—Check for air in the fuel line, then go to step 25.

    NO—Inspect the VTEC system, then go to step 25.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Clear the CKP pattern with the HDS.

28. Do the ECM/PCM idle learn procedure (see page 11-310).

29. Do the CKP pattern learn procedure (see page 11-4).

30. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR

31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0300, P0301, P0302, P0303, or P0304 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil(s), the injector(s), and the ECM/PCM, then go to troubleshooting DTC P0301, P0302, P0303, or P0304 (see page 11-118).

    NO—Go to step 32.

32. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 31, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

DTC Troubleshooting (cont'd)

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, and recheck.
5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Go to step 6.
6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If he screen indicates OUT OF CONDITION, go to step 6 and recheck.
8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. Check for the fuel and ignition system circuit connectors for poor connections or loose terminals. ■
9. Turn the ignition switch to LOCK (0).
10. Remove the engine cover; K20Z2 engine (see step 1 on page 9-3), K20Z3 engine (see step 1 on page 9-7).
11. Start the engine, and listen for a clicking sound at the injector of the problem cylinder.

    Does the injector click?

    YES—Go to step 12.

    NO—Go to step 42.

12. Turn the ignition switch to LOCK (0).

13. Exchange the ignition coil from the problem cylinder with one from another cylinder.

14. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • REL TP SENSOR
    • CLV (calculated load value)
    • APP SENSOR

15. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 16.

    NO—Intermittent misfire due to poor contact at an ignition coil connector(s). (no misfire at this time). Check for poor connections or loose terminals at the ignition coils. ■

16. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was exchanged?

    YES—Replace the faulty ignition coil (see page 4-21), then go to step 60.

    NO—Go to step 17.

17. Turn the ignition switch to LOCK (0).

18. Exchange the spark plug from the problem cylinder with one from another cylinder.

19. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • REL TP SENSOR
    • CLV (calculated load value)
    • APP SENSOR

20. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 21.

    NO—Intermittent misfire due to spark plug fouling (no misfire at this time). ■

21. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the spark plug was exchanged?

    YES—Replace the faulty spark plug, then go to step 60.

    NO—Go to step 22.

22. Turn the ignition switch to LOCK (0).

23. Exchange the injector from the problem cylinder with one from the another cylinder.

24. Start the engine, and let it idle for 2 minutes.

25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • REL TP SENSOR
    • CLV (calculated load value)
    • APP SENSOR

26. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 27.

    NO—Intermittent misfire due to bad contact at an injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector(s). ■

(cont'd)

DTC Troubleshooting (cont'd)

27. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the injector was exchanged?

    YES—Replace the faulty injector (see page 11-219), then go to step 60.

    NO—Go to step 28.

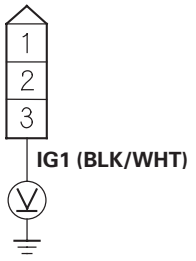
28. Turn the ignition switch to LOCK (0).

29. Disconnect the ignition coil 3P connector from the problem cylinder.

30. Turn the ignition switch to ON (II).

31. Measure the voltage between ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

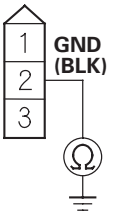
YES—Go to step 32.

NO—Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 60.

32. Turn the ignition switch to LOCK (0).

33. Check for continuity between ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the ignition coil and G101, then go to step 60.

34. Turn the ignition switch to LOCK (0).

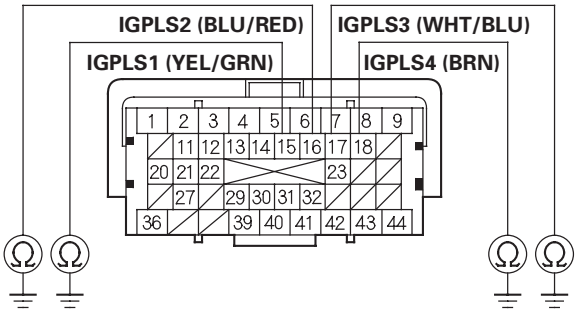
35. Jump the SCS line with the HDS.

36. Disconnect ECM/PCM connector C (44P).

37. Check for continuity between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C15	YEL/GRN
No. 2	P0302	C16	BLU/RED
No. 3	P0303	C17	WHT/BLU
No. 4	P0304	C18	BRN

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

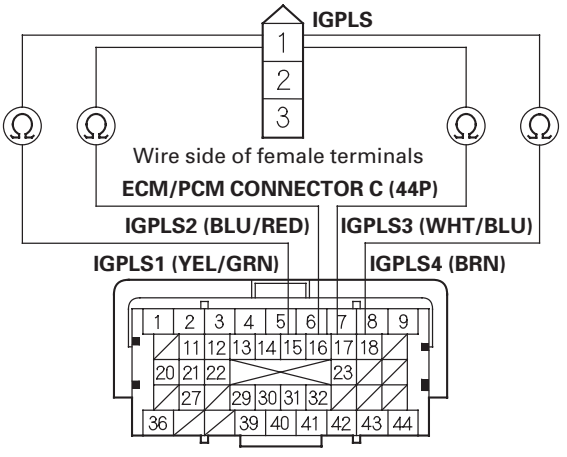
YES—Repair short in the wire between the ECM/PCM and the ignition coil, then go to step 60.

NO—Go to step 38.

38. Check for continuity between appropriate ignition coil 3P connector terminal No. 1 and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C15	YEL/GRN
No. 2	P0302	C16	BLU/RED
No. 3	P0303	C17	WHT/BLU
No. 4	P0304	C18	BRN

IGNITION COIL 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 39.

NO—Repair open in the wire between the ECM/PCM and the ignition coil, then go to step 60.

(cont'd)

DTC Troubleshooting (cont'd)

39. Reconnect all connectors.

40. Do an engine compression and a cylinder leakdown test (see page 6-7).

    Did the engine pass both tests?

    YES—Go to step 41.

    NO—Repair the engine, then go to step 60.

41. Do the VTEC rocker arm test; K20Z2 engine (see page 6-8), K20Z3 engine (see page 6-9).

    Did the engine pass the test?

    YES—Go to step 42.

    NO—Repair the VTEC rocker arm; K20Z2 engine (see page 6-46), K20Z3 engine (see page 6-47), then go to step 60.

42. Turn the ignition switch to LOCK (0).

43. Jump the SCS line with the HDS.

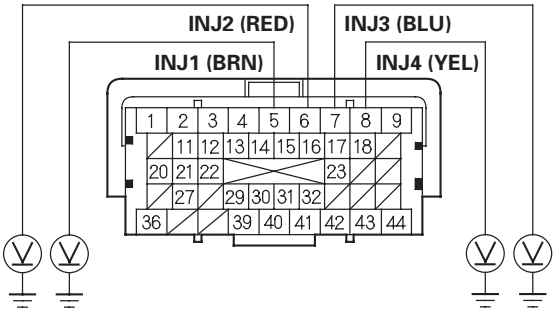
44. Disconnect ECM/PCM connector C (44P).

45. Turn the ignition switch to ON (II).

46. Measure the voltage between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 54.

NO—Go to step 47.

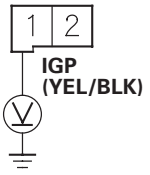
47. Turn the ignition switch to LOCK (0).

48. Disconnect the injector 2P connector from the problem cylinder.

49. Turn the ignition switch to ON (II).

50. Measure the voltage between injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 51.

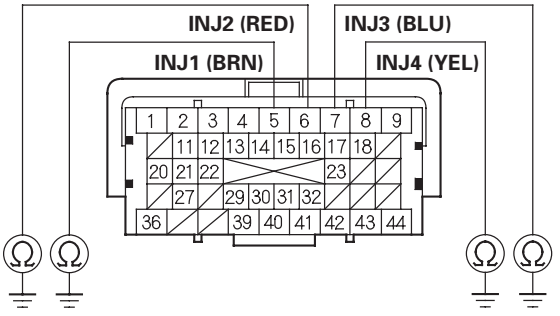
NO—Repair open in the wire between the injector and PGM-FI main relay 1, then go to step 60.

51. Turn the ignition switch to LOCK (0).

52. Check for continuity between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM and the injector, then go to step 60.

NO—Go to step 53.

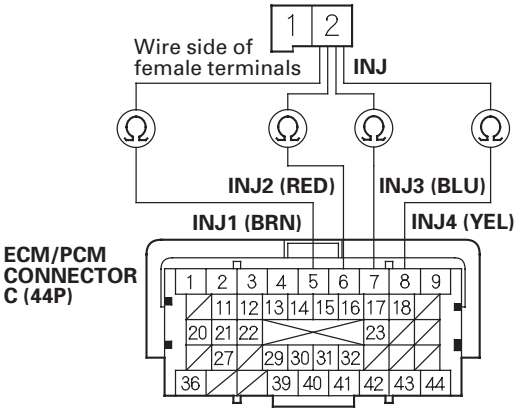
(cont'd)

DTC Troubleshooting (cont'd)

53. Check for continuity between appropriate injector 2P connector terminal No. 2 and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

INJECTOR 2P CONNECTOR



Terminal side of female terminals

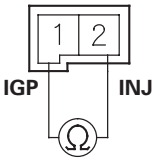
Is there continuity?

YES—Go to step 54.

NO—Repair open in the wire between the ECM/PCM and the injector, then go to step 60.

54. At injector side, measure the resistance between injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10— 13 Ω ?

YES—Go to step 55.

NO—Replace the injector (see page 11-219), then go to step 60.

55. Install a known-good injector from the problem cylinder.

56. Reconnect all connectors.

57. Start the engine, and let it idle for 2 minutes.

58. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- APP SENSOR

59. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 70.

    NO—Replace the original injector (see page 11-219), then go to step 60.

60. Turn the ignition switch to LOCK (0).

61. Reconnect all connectors.

62. Turn the ignition switch to ON (II).

63. Reset the ECM/PCM with the HDS.

64. Clear the CKP pattern with the HDS (see page 11-4).

65. Do the ECM/PCM idle learn procedure (see page 11-310).

66. Do the CKP pattern learn procedure (see page 11-4).

67. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR

68. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, or P0304 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil(s), the injector(s), and the ECM/PCM, then go to the troubleshooting DTC P0300, P0301, P0302, P0303, or P0304 (see page 11-115).

    NO—Go to step 69.

69. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 68, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 67.

70. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

71. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - APP SENSOR

(cont'd)

DTC Troubleshooting (cont'd)

72. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, or P0304 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil(s), the injector(s), and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 71. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 73.

73. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 72, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 71. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 71.

DTC P0325: Knock Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed between 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed between 3,000—4,000 rpm for at least 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

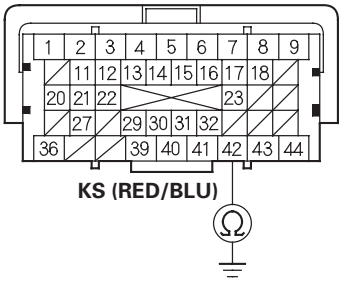
    Is DTC P0325 indicated?

    YES—Go to step 6.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the ECM/PCM. ■

6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor 1P connector (see page 11-223).
9. Disconnect ECM/PCM connector C (44P).
10. Check for continuity between ECM/PCM connector terminal C42 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

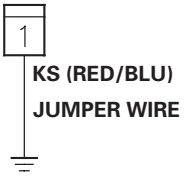
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C42) and the knock sensor, then go to step 14.

NO—Go to step 11.

11. Connect the knock sensor 1P connector terminal to body ground with a jumper wire.

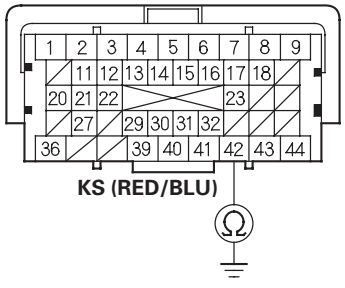
KNOCK SENSOR 1P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal C42 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (C42) and the knock sensor, then go to step 14.

13. Replace the knock sensor (see page 11-223).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Hold the engine speed between 3,000—4,000 rpm for at least 10 seconds.

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

YES—Go to step 21.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

21. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

22. Hold the engine speed between 3,000—4,000 rpm for at least 10 seconds.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0325 indicated?

    YES—Check for poor connections or loose terminals at the knock sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

DTC P0335: CKP Sensor No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine.

4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0335 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. ■

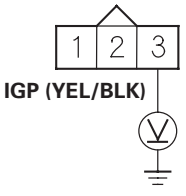
5. Turn the ignition switch to LOCK (0).

6. Disconnect the CKP sensor 3P connector.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

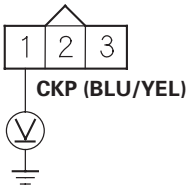
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CKP sensor and PGM-FI main relay 1, then go to step 19.

9. Measure the voltage between CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

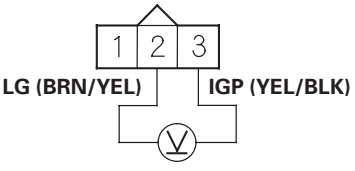
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CKP sensor 3P connector terminals No. 2 and No. 3.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 17.

NO—Repair open in the wire between the CKP sensor and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 19.

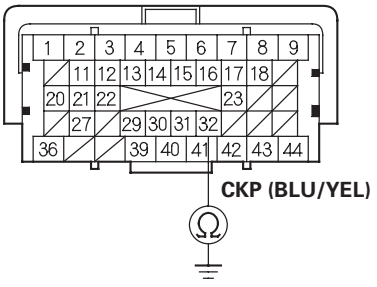
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ECM/PCM connector terminal C32 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

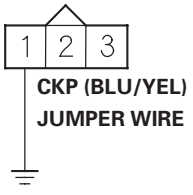
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C32) and the CKP sensor, then go to step 19.

NO—Go to step 15.

15. Connect CKP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

CKP SENSOR 3P CONNECTOR

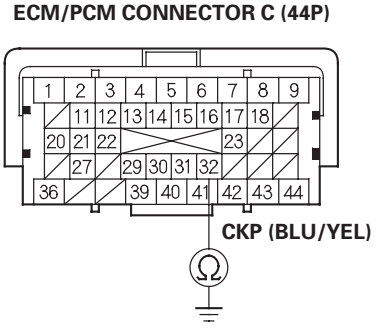


Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

16. Check for continuity between ECM/PCM connector terminal C32 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the ECM/PCM (C32) and the CKP sensor, then go to step 19.

17. Turn the ignition switch to LOCK (0).
18. Replace the CKP sensor (see page 11-222).
19. Reconnect all connectors.
20. Turn the ignition switch to ON (II).
21. Reset the ECM/PCM with the HDS.
22. Clear the CKP pattern with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-310).
24. Do the CKP pattern learn procedure (see page 11-4).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.
27. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0339: CKP Sensor Circuit Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CKP NOISE in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES—Go to step 7.

   NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   • ENGINE SPEED
   • VSS
6. Check the CKP NOISE in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. ■
7. Check for poor connections or loose terminals at these locations:

   • CKP sensor
   • ECM/PCM
   • Engine ground
   • Body ground

   Are the connections and terminals OK?

   YES—Go to step 8.

   NO—Repair or replace the connections or the terminals, then go to step 11.
8. Remove the cam chain case (see step 13 on page 6-19), then check for damage on the CKP sensor pulser plate.

   Is the pulser plate damaged?

   YES—Replace the CKP sensor pulser plate (see page 6-34), then go to step 11.

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Replace the CKP sensor (see page 11-222).
11. Turn the ignition switch to ON (II).
12. Reset the ECM/PCM with the HDS.
13. Clear the CKP pattern with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-310).
15. Do the CKP pattern learn procedure (see page 11-4).
16. Start the engine, and let it idle for 10 seconds.
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0339 indicated?

    YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0365: CMP Sensor B No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

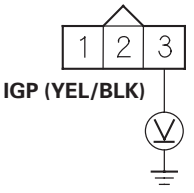
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0365 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the CMP sensor B 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between CMP sensor B 3P connector terminal No. 3 and body ground.

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

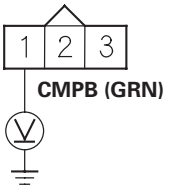
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between CMP sensor B and PGM-FI main relay 1, then go to step 18.

9. Measure the voltage between CMP sensor B 3P connector terminal No. 1 and body ground.

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

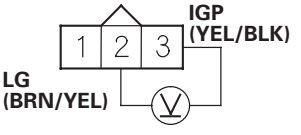
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between CMP sensor B and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 18.

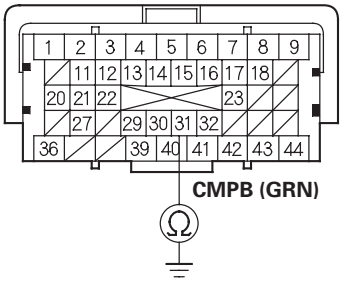
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ECM/PCM connector terminal C31 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

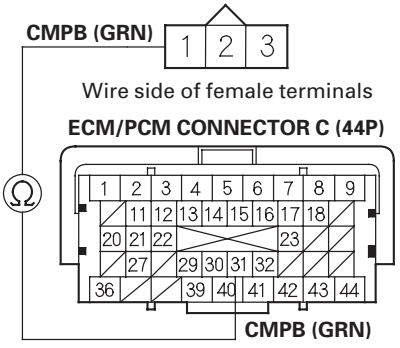
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C31) and CMP sensor B, then go to step 18.

NO—Go to step 15.

15. Check for continuity between CMP sensor B 3P connector terminal No. 1 and ECM/PCM connector terminal C31.

CMP SENSOR B 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the ECM/PCM (C31) and CMP sensor B, then go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Replace CMP sensor B (see page 11-222).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-310).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0365 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0365 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0369: CMP Sensor B Circuit Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP B NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
6. Check the CMP B NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM. ■
7. Check for poor connections or loose terminals at these locations:

    • CMP sensor B
    • ECM/PCM
    • Engine ground
    • Body ground

    Are the connections and terminals OK?

    YES—Go to step 8.

    NO—Repair or replace the connections or the terminals, then go to step 11.

8. Check for damage on the CMP sensor B pulser plate (see page 6-41).

   Is the pulser plate damaged?

   YES—Replace the CMP sensor B pulser plate (see page 6-41), then go to step 11.

   NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Replace CMP sensor B (see page 11-222).

11. Turn the ignition switch to ON (II).

12. Reset the ECM/PCM with the HDS.

13. Do the ECM/PCM idle learn procedure (see page 11-310).

14. Start the engine, and let it idle for 10 seconds.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0369 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P050A: Cold Start Idle Air Control System Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050A indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.

3. Check for poor connections or a blockage at the intake air duct.

   Is it OK?

   YES—Go to step 4.

   NO—Reconnect or repair the intake air duct, then go to step 20.

4. Check for damage to the air cleaner housing.

   Is it OK?

   YES—Go to step 5.

   NO—Replace the air cleaner housing (see page 11-345), then go to step 20.

5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES—Replace the air cleaner element or remove debris (see page 11-346), then go to step 20.

   NO—Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

6. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

7. Clear the DTC with the HDS.

8. Start the engine, and let it idle for 10 seconds or more.

9. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

10. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the THROTTLE ACTUATOR CONTROL VALVE normal?

    YES—Go to step 11.

    NO—Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349), then go to step 20.

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

12. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.

13. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 6.0—8.6 (K20Z2 engine) or 5.7—8.3 (K20Z3 engine) gm/s?

    YES—Go to step 14.

    NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 20.

14. Turn the ignition switch to LOCK (0).

15. Allow the engine to cool to ambient temperature.

16. Note the ambient temperature.

17. Turn the ignition switch to ON (II).

18. Note the value of IAT SENSOR quickly in the DATA LIST with the HDS.

19. Compare the value of the IAT SENSOR and the ambient temperature.

    Does the value of the IAT SENSOR differ 3 ℃ (5.4 ℉) or more from the ambient temperature?

    YES—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 20.

    NO—Check for dirt, carbon, or damage in the throttle bore. If there is dirt or carbon, clean the throttle body (see page 11-344), then go to step 20. If there is damage in the throttle bore, replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349), then go to step 20.

20. Turn the ignition switch to ON (II).

21. Reset the ECM/PCM with the HDS.

22. Do the ECM/PCM idle learn procedure (see page 11-310).

23. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

24. Start the engine, and let it idle for 10 seconds or more.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050A indicated?

    YES—Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM, then go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 23.

DTC P050B: Cold Start Ignition Timing Control System Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050B indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.

3. Check for poor connections or a blockage at the intake air duct.

   Is it OK?

   YES—Go to step 4.

   NO—Reconnect or repair the intake air duct, then go to step 25.

4. Check for damage to the air cleaner housing.

   Is it OK?

   YES—Go to step 5.

   NO—Replace the air cleaner housing (see page 11-345), then go to step 25.

5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES—Replace the air cleaner element or remove debris (see page 11-346), then go to step 25.

   NO—Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

6. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

7. Clear the DTC with the HDS.

8. Start the engine, and let it idle for 10 seconds or more.

9. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body, the CKP sensor, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

10. Check the ignition timing (see page 4-20).

    Is the ignition timing OK?

    YES—Go to step 12.

    NO—Go to step 11.

11. Check for damage at the CKP sensor (see page 11-222) and the CKP sensor pulser plate (see page 6-34).

    Is the CKP sensor and/or the CKP sensor pulser plate damaged?

    YES—Replace the CKP sensor (see page 11-222) and/or the CKP sensor pulser plate (see page 6-34), then go to step 6.

    NO—Go to step 32.

12. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the THROTTLE ACTUATOR CONTROL VALVE normal?

    YES—Go to step 13.

    NO—Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349), then go to step 25.

13. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

14. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.

15. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 6.0—8.6 (K20Z2 engine) or 5.7—8.3 (K20Z3 engine) gm/s?

    YES—Go to step 16.

    NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 25.

16. Turn the ignition switch to LOCK (0).

17. Drain the coolant (see page 10-8).

18. Remove ECT sensor 1 (see page 11-225), and ECT sensor 2 (see page 11-225).

19. Allow the sensors to cool to ambient temperature.

20. Note the ambient temperature.

21. Connect ECT sensor 1 and ECT sensor 2 to their 2P connectors, but do not install them on the engine.

22. Turn the ignition switch to ON (II).

23. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.

24. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does either sensor differ more than 3 ℃ (5.4 ℉) from the ambient temperature?

    YES—Replace the sensor that differed more than 3 ℃ (5.4 ℉) from the ambient temperature, then go to step 25.

    NO—Check and repair any problems with the following items. Repair or replace them if needed, then go to step 25. If every item is OK, go to step 32.

    - Engine compression and cylinder leakdown
    - VTEC system
    - Engine oil
    - A/C system
    - Power steering

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

28. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

29. Start the engine, and let it idle for 10 seconds or more.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050B indicated?

    YES—Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 28.

32. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

33. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

34. Start the engine, and let it idle for 10 seconds or more.

35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050B indicated?

    YES—Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 36.

(cont'd)

DTC Troubleshooting (cont'd)

36. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 33.

DTC P0562: Charging System Low Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If any high current load accessories are installed, this DTC can be set.
- If DTC P16BB and/or P16BC is stored at the same time as DTC P0562, troubleshoot DTC P16BB and/or P16BC first, then recheck for DTC P0562.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine.

4. Check under these conditions:

   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam

5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0562 indicated?

   YES—Replace the alternator (see page 4-34), then go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-67). ■

7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

10. Start the engine.

11. Check under these conditions:

    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam

12. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0562 indicated?

    YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0563: ECM/PCM Power Source Circuit Unexpected Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0).

4. Wait 10 seconds.

5. Turn the ignition switch to ON (II).

6. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0563 indicated?

    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM. ■

7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

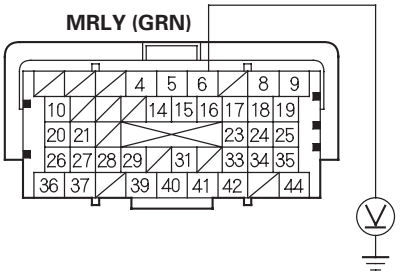
9. Disconnect ECM/PCM connector A (44P).

(cont'd)

DTC Troubleshooting (cont'd)

10. Measure the voltage between ECM/PCM connector terminal A6 and body ground.

ECM/PCM CONNECTOR A (44P)



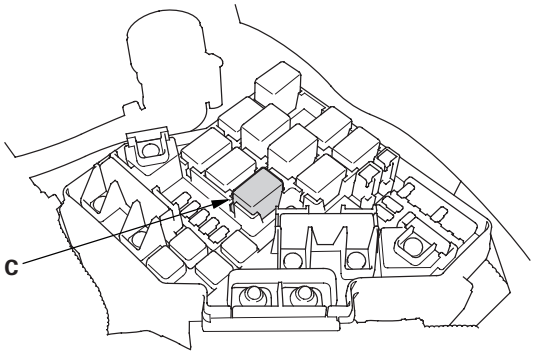
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 13.

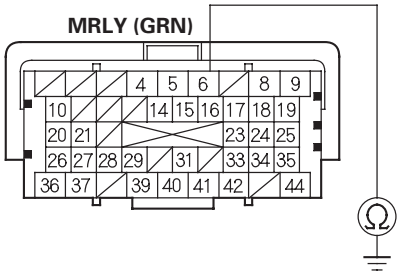
NO—Go to step 11.

11. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



12. Check for continuity between ECM/PCM connector terminal A6 and body ground.

ECM/PCM CONNECTOR A (44P)



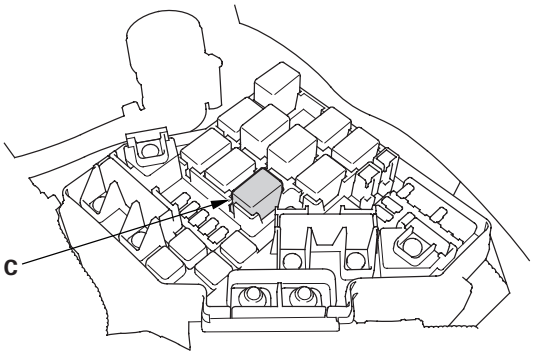
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A6) and PGM-FI main relay 1, then go to step 16.

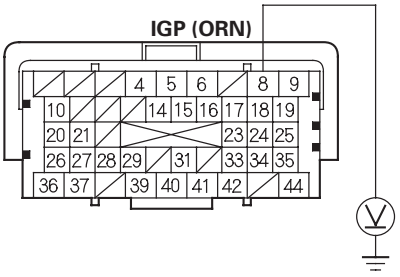
NO—Go to step 15.

13. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



14. Measure the voltage between ECM/PCM connector terminal A8 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the ECM/PCM (A8) and PGM-FI main relay 1, then go to step 16.

NO—Go to step 15.

15. Test PGM-FI main relay 1 (see page 22-70).

Is PGM-FI main relay 1 OK?

YES—Go to step 23.

NO—Replace PGM-FI main relay 1, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Reset the ECM/PCM with the HDS.

19. Do the ECM/PCM idle learn procedure (see page 11-310).

20. Turn the ignition switch to LOCK (0).

21. Wait 10 seconds.

22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0602: ECM/PCM Programming Error

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is indicated when a ECM/PCM update is not completed.
- Do not turn the ignition switch to LOCK (0) or ACC (I) while updating the ECM/PCM. If you do, the ECM/PCM can be damaged.

1. Do the ECM/PCM update procedure (see page 11-227).

2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0602 indicated?

   YES—Replace the original ECM/PCM (see page 11-228). ■

   NO—The update is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0603: ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error ('06-08 models)

DTC P062F: ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error ('09 model)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the '06-08 models.
- Information marked with a double asterisk (**) applies to the '09 model.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0603 (P062F)** indicated?*

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■

4. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0603 (P062F)** indicated?*

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0606: ECM/PCM Processor Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II).
5. Wait 40 seconds.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0606 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. ■
7. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
8. Turn the ignition switch to LOCK (0).
9. Turn the ignition switch to ON (II).
10. Wait 40 seconds.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0606 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 8. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P060A: PCM (A/T system) Internal Control Module Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P060A indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P060A indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0630: VIN Not Programmed or Mismatch

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is stored only when the ECM/PCM does not have the VIN information of the vehicle. Use the HDS to input the missing VIN information.
- Information marked with an asterisk (*) applies to the '06-08 models.
- Information marked with a double asterisk (**) applies to the '09 model.

1. Turn the ignition switch to ON (II).
2. Check the VIN with the HDS.

   Does the HDS show the vehicle's VIN?

   YES—Go to step 5.

   NO—Go to step 3.
3. Input the VIN to the ECM/PCM with the HDS.

   Does the screen show COMPLETE?

   YES—Go to step 5.

   NO—Go to step 4.
4. Check for DTCs with the HDS.

   Is DTC P0603 (P062F)** indicated?*

   YES—Go to the DTC P0603* (P062F)** troubleshooting (see page 11-144). ■

   NO—Go to step 9.
5. Clear the DTC with the HDS.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II), and wait 5 seconds.
8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0630 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
9. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0630 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0685: ECM/PCM Power Control Circuit/ Internal Circuit Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the problem doesn't return after you clear the DTC, or if this DTC is stored intermittently, check for loose terminals at the IGP line connectors before replacing the ECM/PCM.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 30 seconds.
4. Turn the ignition switch to LOCK (0).
5. Start the engine, and let it idle for 30 seconds.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II).
8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0685 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. ■
9. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
10. Start the engine, and let it idle for 30 seconds.
11. Turn the ignition switch to LOCK (0).
12. Start the engine, and let it idle for 30 seconds.
13. Turn the ignition switch to LOCK (0).
14. Turn the ignition switch to ON (II).
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0685 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 10. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0720: Output Shaft (Countershaft) Speed Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0722 indicated?

   YES—Troubleshoot for DTC P0722 in the A/T system (see page 14-111).

   NO—Go to step 3.
3. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
   - Transmission in D
   - ENGINE SPEED between 2,000—4,500 rpm
   - Drive for several minutes, then decelerate (with throttle fully closed) for 5 seconds or more
5. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0720 indicated?

   YES—Go to step 6.

   NO—Go to step 7.
6. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0722 indicated?

   YES—Troubleshoot for DTC P0722 in the A/T system (see page 14-111).

   NO— If the PCM was updated, substitute a known-good PCM (see page 11-7). If the PCM was substituted, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1.
7. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). ■

   NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 4. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 4.

DTC P0720: Output Shaft (Countershaft) Speed Sensor Circuit Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to K20Z3 engine

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.

2. Test-drive several minutes.

3. Check the C SHAFT SPD in the DATA LIST with the HDS.

   Is any vehicle speed indicated?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM.■

   NO—Go to step 4.

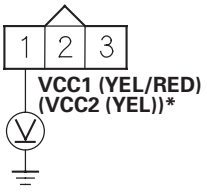
4. Turn the ignition switch to LOCK (0).

5. Disconnect the output shaft (countershaft) speed sensor 3P connector.

6. Turn the ignition switch to ON (II).

7. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

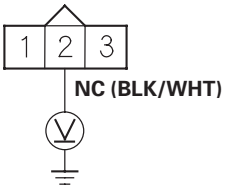
Is there about 5 V?

YES—Go to step 8.

NO—Repair open in the wire between the ECM (C13) (B18)* and the output shaft (countershaft) speed sensor, then go to step 18.

8. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 9.

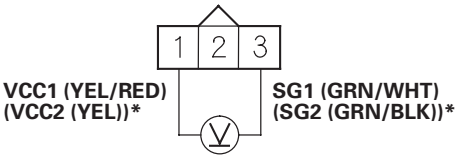
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

9. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminals No. 1 and No. 3.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

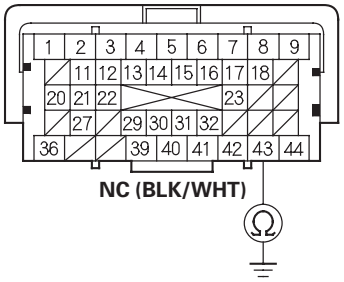
Is there about 5 V?

YES—Go to step 16.

NO—Repair open in the wire between the ECM (C14) (B33)* and the output shaft (countershaft) speed sensor, then go to step 18.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector C (44P).
13. Check for continuity between ECM connector terminal C43 and body ground.

ECM CONNECTOR C (44P)



Terminal side of female terminals

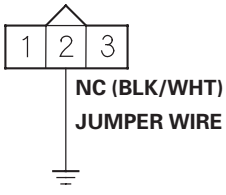
Is there continuity?

YES—Repair short in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

NO—Go to step 14.

14. Connect output shaft (countershaft) speed sensor 3P connector terminal No. 2 to body ground with a jumper wire.

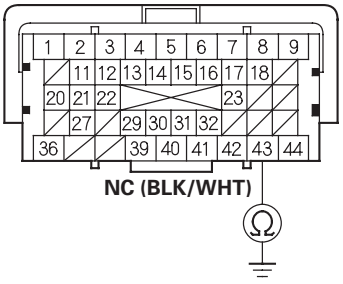
OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

15. Check for continuity between ECM connector terminal C43 and body ground.

ECM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace the output shaft (countershaft) speed sensor (see page 11-223).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM with the HDS.

21. Do the ECM idle learn procedure (see page 11-310).

22. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
- Transmission in 5th
- Engine speed between 2,000—3,000 rpm
- Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0720 indicated?

YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

25. Reconnect all connectors.

26. Update the ECM if it does not have the latest software (see page 11-227), or substitute a known-good ECM (see page 11-7).

27. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
    - Transmission in 5th
    - Engine speed between 2,000—3,000 rpm
    - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0720 indicated?

    YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P1109: BARO Sensor Circuit Out of Range High

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Reset the ECM/PCM with the HDS.

2. Start the engine.

3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

4. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1116: ECT Sensor 1 Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P1116, troubleshoot DTC P0111 first, then recheck for DTC P1116.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and terminals OK?

   YES—Go to step 2.

   NO—Repair the connections or the terminals, then go to step 27.

2. Turn the ignition switch to ON (II).

3. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P1116 and P2183 indicated at the same time?

   YES—Go to step 15.

   NO—Go to step 4.

4. Start the engine, and let it idle for 10 minutes.

5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 47 °C (117 °F) or less indicated?

   YES—Replace ECT sensor 1 (see page 11-225), then go to step 27.

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Drain the coolant (see page 10-8).

8. Remove ECT sensor 1 (see page 11-225).

9. Allow ECT sensor 1 to cool to ambient temperature.

10. Note the ambient temperature.

11. Connect ECT sensor 1 to its 2P connector, but do not install it on the engine.

12. Turn the ignition switch to ON (II).

13. Note the value of ECT SENSOR 1 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 1 and the ambient temperature.

    Does the value of ECT SENSOR 1 differ 3 °C (5.4 °F) or more from the ambient temperature?

    YES—Replace ECT sensor 1 (see page 11-225), then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■

15. Start the engine, and let it idle for 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 47 °C (117 °F) or less indicated?

    YES—Replace ECT sensor 1 (see page 11-225), then go to step 27.

    NO—Go to step 17.

17. Let the engine idle for 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 60 °C (140 °F) or less indicated?

    YES—Replace ECT sensor 2 (see page 11-225), then go to step 27.

    NO—Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0).
20. Drain the coolant (see page 10-8).
21. Remove ECT sensor 1 (see page 11-225) and ECT sensor 2 (see page 11-225).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 and ECT sensor 2 to their 2P connectors, but do not install them.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensors differ more than 3 ℃ (5.4 ℉) from the ambient temperature?

    YES—Replace the sensor that differed more than 3 ℃ (5.4 ℉) from the ambient temperature, then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■
27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-310).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1116 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1128: MAP Sensor Signal Lower Than Expected

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Before you begin, check for poor connections or a blockage at the intake air duct.

1. Turn the ignition switch to ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is less than 54.1 kPa (406 mmHg, 16.0 in.Hg) or 1.61 V held for more than 5 seconds?

   YES—Go to step 7.

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - Engine speed between 1,200—5,400 rpm
   - A/T in D, M/T in 3rd
   - Vehicle speed accelerated from 25—50 km/h (16—31 mph) under half throttle
6. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 7.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Replace the MAP sensor (see page 11-224).
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-310).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - Engine speed between 1,200—5,400 rpm
    - A/T in D, M/T in 3rd
    - Vehicle speed accelerated from 25—50 km/h (16—31 mph) under half throttle
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1128 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

    NO—Go to step 15.
15. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P1129: MAP Sensor Signal Higher Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for vacuum leaks in these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster
   - Brake booster hose

   Are there any vacuum leaks?

   YES—Repair or replace the part(s) with vacuum leaks, then go to step 9.

   NO—Go to step 2.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

3. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is more than 36.9 kPa (277 mmHg, 11.0 in.Hg) or 1.1 V held for more than for 5 seconds?

   YES—Go to step 7.

   NO—Go to step 4.

4. Clear the DTC with the HDS.

5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 5th
   - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds
   - During the drive, decelerate (with the throttle fully closed) for at least 2 seconds

6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 7.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch to LOCK (0).

8. Replace the MAP sensor (see page 11-224).

9. Turn the ignition switch to ON (II).

10. Reset the ECM/PCM with the HDS.

11. Do the ECM/PCM idle learn procedure (see page 11-310).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

13. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 5th
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds
    - During the drive, decelerate (with the throttle fully closed) for at least 2 seconds

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1129 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

    NO—Go to step 15.

15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC P1157: A/F Sensor (Sensor 1) AFS Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait 1 minute.
4. Check for Temporary DTCs or DTCs with the HDS.

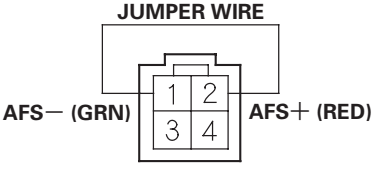
    Is DTC P1157 indicated?

    YES—Go to step 5.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector C (44P).
9. Connect A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



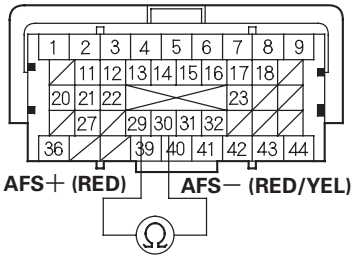
Terminal side of male terminals

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminals C29 and C30.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

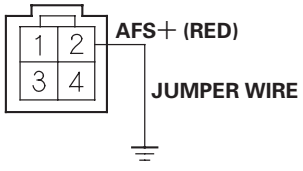
YES—Go to step 14.

NO—Go to step 11.

11. Remove the jumper wire from the A/F sensor (Sensor 1) 4P connector.

12. Connect A/F sensor (Sensor 1) 4P connector terminal No. 2 to body ground with a jumper wire.

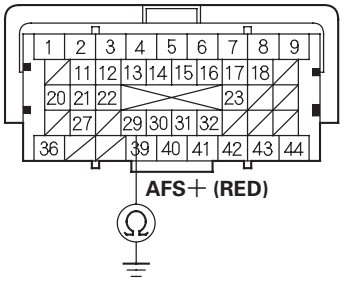
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

13. Check for continuity between ECM/PCM connector terminal C29 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to step 15.

NO—Repair open in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 15.

14. Replace the A/F sensor (Sensor 1) (see page 11-221).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Reset the ECM/PCM with the HDS.

18. Do the ECM/PCM idle learn procedure (see page 11-310).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1157 indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connections and the terminal fits are OK, go to step 21.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

22. Start the engine, and let it idle.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1157 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1172: A/F Sensor (Sensor 1) Circuit Out of Range High

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Monitor the OBD STATUS for DTC P1172 in the DTCs MENU with the HDS.

    Does the screen indicate FAILED?

    YES—Go to step 5.

    NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

5. Turn the ignition switch to LOCK (0).

6. Replace the A/F sensor (Sensor 1) (see page 11-221).

7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

10. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

(cont'd)

DTC Troubleshooting (cont'd)

11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1172 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P1172 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

DTC P1297: ELD Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II).
6. Check the ELD in the DATA LIST with the HDS.

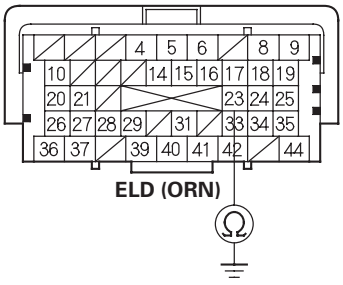
   Is 72 A or more indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).

10. Check for continuity between ECM/PCM connector terminal A23 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A23) and the ELD, then go to step 13.

NO—Go to step 20.

11. Turn the ignition switch to LOCK (0).
12. Replace the ELD (see page 11-226).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
17. Start the engine.
18. Turn on the headlights.
19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1297 indicated?

    YES—Check for poor connections or loose terminals at the ELD and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Reconnect all connectors.
21. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
22. Start the engine.
23. Turn on the headlights.
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1297 indicated?

    YES—Check for poor connections or loose terminals at the ELD and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P1298: ELD Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

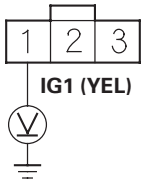
1. Turn the ignition switch to ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 0.2 A or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

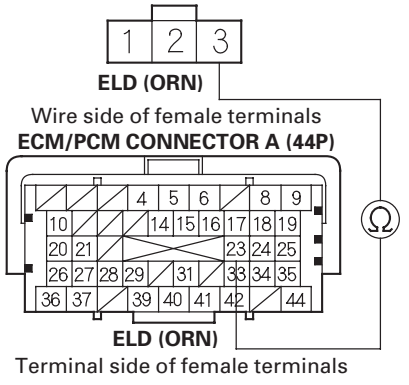
Is there battery voltage?

YES—Go to step 7.

NO—Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the ELD, then go to step 13.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between ELD 3P connector terminal No. 3 and ECM/PCM connector terminal A23.

ELD 3P CONNECTOR



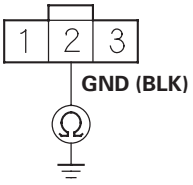
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A23) and the ELD, then go to step 13.

11. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the ELD and G301 (see page 22-22), then go to step 13.

12. Replace the ELD (see page 11-226).

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Go to step 18.

NO—Troubleshooting complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Check for poor connections or loose terminals at the ELD and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P1549: Charging System High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If a high voltage battery (24 V, etc.) connected to the vehicle, this DTC can be stored.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C off
   - Headlights off
   - Rear window defogger off
5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1549 indicated?

   YES—Replace the alternator (see page 4-34), then go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box. ■
7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-310).
10. Start the engine.
11. Check under these conditions:
    - A/C off
    - Headlights off
    - Rear window defogger off
12. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1549 indicated?

    YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P16BB: Alternator B Terminal Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BB indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-67). ■
7. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box (+B line).

   Are the connections and the terminals OK?

   YES—Go to step 8.

   NO—Repair the connectors or the terminals, then go to step 9.
8. Check for an open in the wire (+B line) between the alternator and the under-hood fuse/relay box (+B line).

   Is the harness OK?

   YES—Replace the alternator (see page 4-34), then go to step 9.

   NO—Repair open in the wire (+B line) between the alternator and the under-hood fuse/relay box (+B line), then go to step 9.
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-310).
12. Start the engine.
13. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
14. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BB indicated?

    YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P16BC: Alternator FR Terminal Circuit/ IGP Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at the alternator 4P connector.

   Are the connections and the terminal OK?

   YES—Go to step 2.

   NO—Repair the connections or the terminals, then go to step 18.

2. Check the alternator mounting surfaces for corrosion.

   Are the mounting surfaces corroded?

   YES—Remove the alternator (see page 4-34). Clean all mounting surface and reinstall the alternator, then go to step 18.

   NO—Go to step 3.

3. Turn the ignition switch to ON (II).

4. Clear the DTC with the HDS.

5. Start the engine.

6. Check under these conditions:

   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam

7. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BC indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator. ■

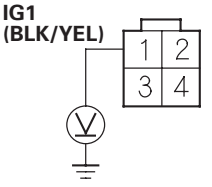
9. Turn the ignition switch to LOCK (0).

10. Disconnect the alternator 4P connector.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between alternator 4P connector terminal No. 1 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

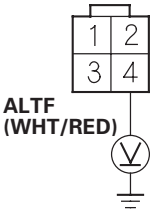
Is there battery voltage?

YES—Go to step 13.

NO—Repair open in the wire between the alternator (IG1 line) and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 18.

13. Measure the voltage between alternator 4P connector terminal No. 4 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the alternator (see page 4-34), then go to step 18.

NO—Go to step 14.

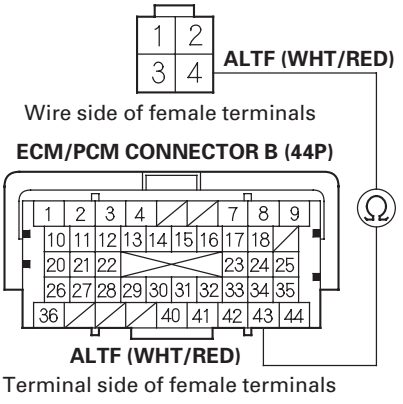
14. Turn the ignition switch to LOCK (0).

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector B (44P).

17. Check for continuity between alternator 4P connector terminal No. 4 and ECM/PCM connector terminal B43.

ALTERNATOR 4P CONNECTOR



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B43) and the alternator, then go to step 18.

18. Turn the ignition switch to LOCK (0).

19. Reconnect all connectors.

20. Turn the ignition switch to ON (II).

21. Reset the ECM/PCM with the HDS.

22. Do the ECM/PCM idle learn procedure (see page 11-310).

23. Start the engine.

24. Check under these conditions:

- A/C on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Rear window defogger on
- Headlights on high beam

(cont'd)

DTC Troubleshooting (cont'd)

25. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BC indicated?

    YES—Check for poor connections or loose terminals at the alternator and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Start the engine.

30. Check under these conditions:

    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam

31. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BC indicated?

    YES—Check for poor connections or loose terminals at the alternator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2183: ECT Sensor 2 Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P2183, troubleshoot DTC P0111 first, then recheck for DTC P2183.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

   Are the connections and the terminals OK?

   YES—Go to step 2.

   NO—Repair the connections or the terminals, then go to step 27.

2. Turn the ignition switch to ON (II).

3. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P1116 and P2183 indicated at the same time?

   YES—Go to step 15.

   NO—Go to step 4.

4. Start the engine, and let it idle for 10 minutes.

5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 60 °C (140 °F) or less indicated?

   YES—Replace ECT sensor 2 (see page 11-225), then go to step 27.

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Drain the coolant (see page 10-8).

8. Remove ECT sensor 2 (see page 11-225).

9. Allow ECT sensor 2 to cool to ambient temperature.

10. Note the ambient temperature.

11. Connect ECT sensor 2 to the 2P connector, but do not install it on the radiator.

12. Turn the ignition switch to ON (II).

13. Note the value of ECT SENSOR 2 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 2 and the ambient temperature.

    Does ECT SENSOR 2 differ 3 °C (5.4 °F) or more from the ambient temperature?

    YES—Replace ECT sensor 2 (see page 11-225), then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■

15. Start the engine, and let it idle for 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 47 °C (117 °F) or less indicated?

    YES—Replace ECT sensor 1 (see page 11-225), then go to step 27.

    NO—Go to step 17.

17. Let the engine idle for 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 60 °C (140 °F) or less, or 1.50 V or more indicated?

    YES—Replace ECT sensor 2 (see page 11-225), then go to step 27.

    NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Drain the coolant (see page 10-8).

21. Remove ECT sensor 1 (see page 11-225) and ECT sensor 2 (see page 11-225).

22. Allow the sensors to cool to ambient temperature.

23. Note the ambient temperature.

24. Connect the ECT sensors to their 2P connectors, but do not install them.

25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.

26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensors differ more than 3 °C (5.4 °F) from the ambient temperature?

    YES—Replace the sensor that differed more than 3 °C (5.4 °F) from the ambient temperature.

    - ECT sensor 1 (see page 11-225)
    - ECT sensor 2 (see page 11-225)

    After replacing the sensor, go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■

(cont'd)

DTC Troubleshooting (cont'd)

27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-310).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2183 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2184: ECT Sensor 2 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch to ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

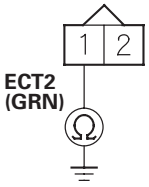
   Is about 180 °C (356 °F) or more, or 0.08 V or less indicated?

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).

10. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 2 and the ECM/PCM (A33), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 2 (see page 11-225).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2185: ECT Sensor 2 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

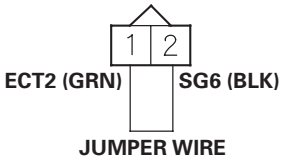
1. Turn the ignition switch to ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about −40 °C (−40 °F) or less, or 4.92 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the ECT sensor 2 2P connector.
5. Connect ECT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

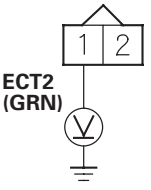
6. Turn the ignition switch to ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about −40 °C (−40 °F) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from ECT sensor 2 2P connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 12.

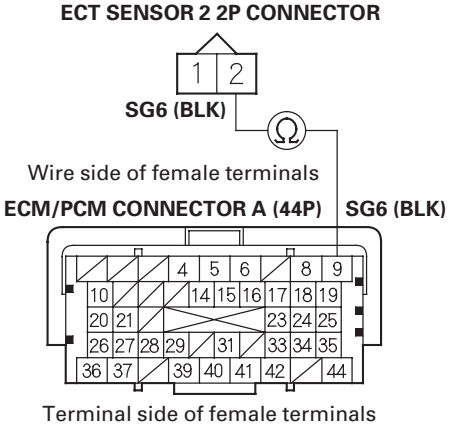
NO—Go to step 16.

12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect ECM/PCM connector A (44P).

15. Check for continuity between ECT sensor 2 2P connector terminal No. 2 and ECM/PCM connector terminal A9.



Is there continuity?

YES—Go to step 27.

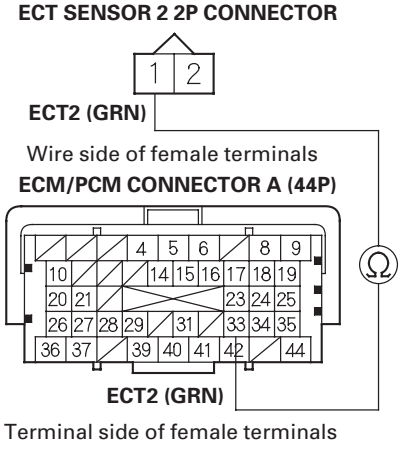
NO—Repair open in the wire between the ECM/PCM (A9) and ECT sensor 2, then go to step 22.

16. Turn the ignition switch to LOCK (0).

17. Jump the SCS line with the HDS.

18. Disconnect ECM/PCM connector A (44P).

19. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and ECM/PCM connector terminal A33.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (A33) and ECT sensor 2, then go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

20. Turn the ignition switch to LOCK (0).
21. Replace ECT sensor 2 (see page 11-225).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-310).
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2185 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2185 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2195: A/F Sensor (Sensor 1) Signal Stuck Lean

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel and clear the DTC with the HDS.
- If DTC P2101, P2118, P2135, P2138, P2176, or a combination of P2122 and P2127, P2122, and P2138, or P2127 and P2138 are stored at the same time, troubleshoot them first, then recheck for DTC P2195.

1. Check the installation of the A/F sensor (Sensor 1).

   Is the A/F sensor loose or disconnected from the exhaust pipe?

   YES—Go to step 6.

   NO—Go to step 2.
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Start the engine, and let it idle for 2 minutes.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2195 indicated?

   YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 13.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

6. Turn the ignition switch to LOCK (0).

7. Reinstall the A/F sensor (Sensor 1) (see page 11-221).

8. Turn the ignition switch to ON (II).

9. Reset the ECM/PCM with the HDS.

10. Do the ECM/PCM idle learn procedure (see page 11-310).

11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

13. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

14. Start the engine, and let it idle for 2 minutes.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 14. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 14. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P2227: BARO Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0107, P0108, P1128, and/or P1129 are stored at the same time as DTC P2227, troubleshoot those DTCs first, then recheck for DTC P2227.

1. Turn the ignition switch to ON (II), and wait 2 seconds.

2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 101 kPa (760 mmHg, 29.9 in.Hg), or about 2.9 V at sea level indicated?

   YES—Go to step 3.

   NO—Go to step 7.

3. Clear the DTC with the HDS.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - REL TP SENSOR between 12 deg and 20 deg for at least 2 seconds

6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 7.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

8. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

9. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - REL TP SENSOR between 12 deg and 20 deg for at least 2 seconds

10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2227 indicated?

    YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 8. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 8. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 8.

DTC P2228: BARO Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 53 kPa (397 mmHg, 15.6 in.Hg), or 1.31 V or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. ■
3. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2228 indicated?

   YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2229: BARO Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (1,200 mmHg, 47.2 in.Hg), or 4.49 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. ■
3. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2229 indicated?

   YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2238: A/F Sensor (Sensor 1) AFS+ Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

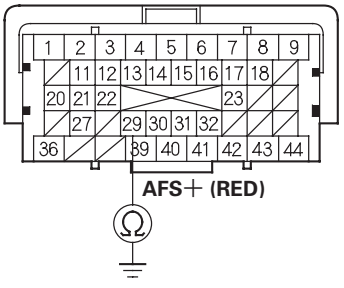
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2238 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■
4. Turn the ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the A/F sensor (Sensor 1) 4P connector.
7. Disconnect ECM/PCM connector C (44P).
8. Check for continuity between ECM/PCM connector terminal C29 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 10.

NO—Go to step 9.

9. Replace the A/F sensor (Sensor 1) (see page 11-221).
10. Reconnect all connectors.
11. Turn the ignition switch to ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see page 11-310).
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2238 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connector and terminal fits are OK, go to step 16.

    NO—Go to step 15.

15. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

16. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

17. Start the engine, and let it idle.

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2238 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 17. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 17. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2252: A/F Sensor (Sensor 1) AFS—Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine.

4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2252 indicated?

    YES—Go to step 5.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Jump the SCS line with the HDS.

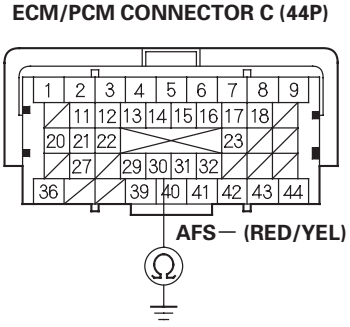
7. Disconnect the A/F sensor (Sensor 1) 4P connector.

8. Disconnect ECM/PCM connector C (44P).

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between ECM/PCM connector terminal C30 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to step 11.

NO—Go to step 10.

10. Replace the A/F sensor (Sensor 1) (see page 11-221).

11. Reconnect all connectors.

12. Turn the ignition switch to ON (II).

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-310).

15. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connections and the terminals fits are OK, go to step 17.

NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

17. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

18. Start the engine, and let it idle.

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 18. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 18. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2270: Secondary HO2S (Sensor 2) Circuit Signal Stuck Lean

DTC P2271: Secondary HO2S (Sensor 2) Circuit Signal Stuck Rich

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - Vehicle speed at 56 km/h (35 mph) or more for 1 minute
5. Monitor the OBD STATUS for DTC P2270 or P2271 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Replace the secondary HO2S (Sensor 2) (see page 11-221).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - Vehicle speed at 56 km/h (35 mph) or more for 1 minute
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2270 or P2271 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P2270 or P2271 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC Troubleshooting (cont'd)

DTC P2610: ECM/PCM Ignition Off Internal Timer Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2A00: A/F Sensor (Sensor 1) Circuit Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 3rd
   - Vehicle speed between 44—88 km/h (22—55 mph) for 5 minutes
   - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds, then decelerate (with the throttle fully closed) for 5 seconds
5. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Replace the A/F sensor (Sensor 1) (see page 11-221).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.

10. Do the ECM/PCM idle learn procedure (see page 11-310).

11. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 3rd
    - Vehicle speed between 44—88 km/h (22—55 mph) for 5 minutes
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds, then decelerate (with the throttle fully closed) for 5 seconds

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2A00 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

    NO—Go to step 13.

13. Monitor the OBD STATUS for DTC P2A00 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC U0028: F-CAN Malfunction (BUS-OFF (ECM/PCM))

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0028 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■

4. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

5. Turn the ignition switch to ON (II).

6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0028 indicated?

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC U0122: F-CAN Malfunction (ECM/PCM-VSA Modulator-Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC U0028 and U0122 indicated at the same time?

   YES—Go to the troubleshooting for DTC U0028. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0122 indicated?

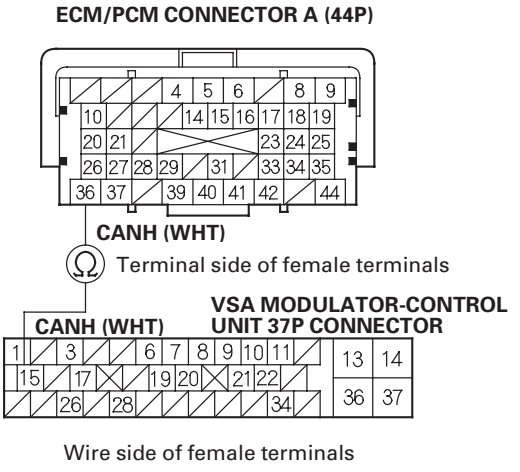
   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VSA modulator-control unit and the ECM/PCM. ■
5. Check for communication to the VSA system with the HDS.

   Does the HDS communicate with the VSA modulator-control unit?

   YES—Go to step 6.

   NO—Go to the DLC circuit troubleshooting (see page 11-204). ■
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect the VSA modulator-control unit 37P connector (see page 19-171).
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between ECM/PCM connector terminal A36 and VSA modulator-control unit 37P connector terminal No. 15.

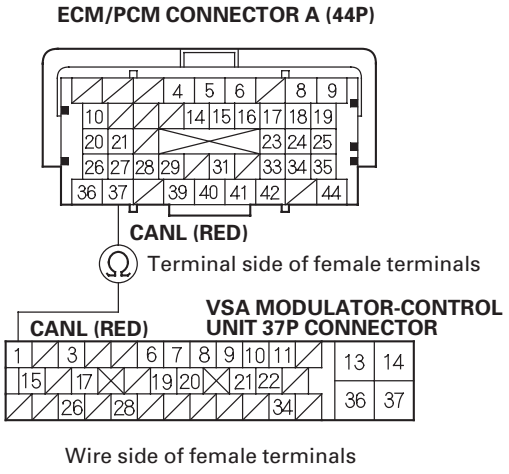


Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A36) and the VSA modulator-control unit, then go to step 12.

11. Check for continuity between ECM/PCM connector terminal A37 and VSA modulator-control unit 37P connector terminal No. 1.



Is there continuity?

YES—Substitute a known-good VSA modulator-control unit (see page 19-171), then go to step 12 and recheck. If DTC U0122 is not indicated, replace the original VSA modulator-control unit (see page 19-171), then go to step 12.

NO—Repair open in the wire between the ECM/PCM (A37) and the VSA modulator-control unit, then go to step 12.

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II).

14. Reset the ECM/PCM with the HDS.

15. Do the ECM/PCM idle learn procedure (see page 11-310).

16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0122 indicated?

YES—Check for poor connections or loose terminals at the VSA modulator-control unit and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC U0131: F-CAN Malfunction (ECM/PCM-EPS Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC U0028 and U0131 indicated at the same time?

   YES—Go to the troubleshooting for DTC U0028. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0131 indicated?

   YES—Go to step 5.

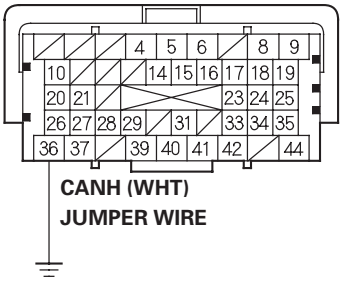
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EPS control unit and the ECM/PCM.
5. Check that the HDS communicates with the EPS system.

   Does the HDS communicate with the EPS control unit?

   YES—Go to step 6.

   NO—Go to the DLC circuit troubleshooting (see page 11-204).
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect EPS control unit connector D (28P) (see page 17-84).
9. Disconnect ECM/PCM connector A (44P)
10. Connect ECM/PCM connector terminal A36 to body ground with a jumper wire.

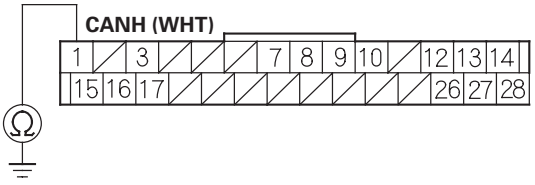
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

11. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

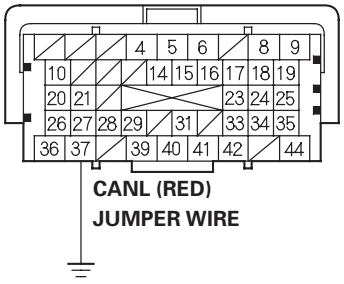
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the ECM/PCM (A36) and the EPS control unit, then go to step 14.

12. Connect ECM/PCM connector terminal A37 to body ground with a jumper wire.

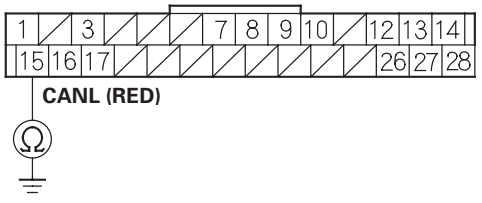
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

13. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good EPS control unit (see page 17-84), then go to step 14 and recheck. If no DTCs are indicated, replace the original EPS control unit (see page 17-84), then go to step 14.

NO—Repair open in the wire between the ECM/PCM (A37) and the EPS control unit, then go to step 14.

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0131 indicated?

YES—Check for poor connections or loose terminals at the EPS control unit and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC U0155: F-CAN Malfunction (ECM/PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0155 indicated?

   YES—Go to step 4.

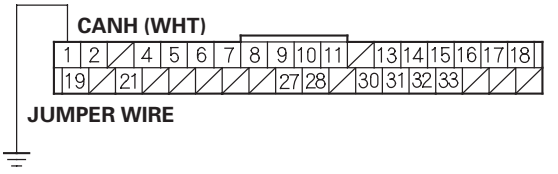
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the ECM/PCM. ■
4. Check for body electrical DTCs in the DTCs MENU with the HDS.

   Is DTC B1168, B1169, and/or B1178 indicated?

   YES—Go to step 5.

   NO—Do the gauge control module (tach) input test (see page 22-271). ■
5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Remove the gauge control module (tach) (see page 22-277).
8. Disconnect ECM/PCM connector A (44P).
9. Connect gauge control module (tach) 36P connector terminal No. 1 to body ground with a jumper wire.

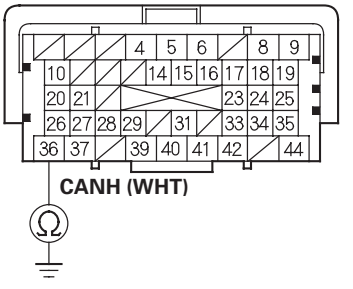
GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A36 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

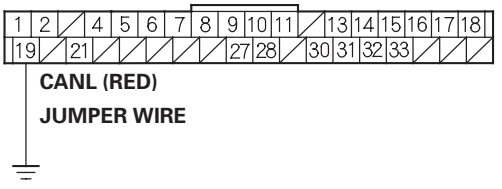
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A36) and the gauge control module (tach), then go to step 13.

11. Connect gauge control module (tach) 36P connector terminal No. 19 to body ground with a jumper wire.

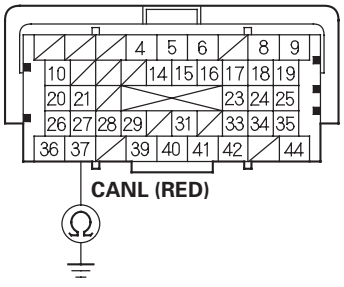
GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A37 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good gauge control module (tach) (see page 22-277), then go to step 14 and recheck. If no DTCs are indicated, replace the original gauge control module (tach) (see page 22-277), then go to step 13.

NO—Repair open in the wire between the ECM/PCM (A37) and the gauge control module (tach), then go to step 13.

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0155 indicated?

YES—Check for poor connections or loose terminals at the gauge control module (tach) and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC U0300: PGM-FI System and A/T System Program Version Mismatch

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Do not turn the ignition switch to LOCK (0) while updating the PCM. If you turn the ignition switch to LOCK (0) before completion, the PCM will be damaged.

1. Do the PCM update procedure (PGM-FI system and A/T system) (see page 11-227).

2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0300 indicated?

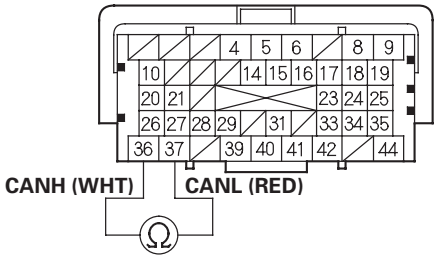
   YES—Replace the original PCM (see page 11-228). ■

   NO—The update is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

F-CAN Circuit Troubleshooting

1. Turn the ignition switch to LOCK (0).
2. Jump the SCS line with the HDS.
3. Disconnect ECM/PCM connector A (44P), then disconnect the HDS.
4. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 95—116 Ω (with ABS) or 91—111 Ω (with VSA system), or 88—107 Ω (with VSA system and TPMS)?

YES—Go to step 41.

NO—Go to step 5.

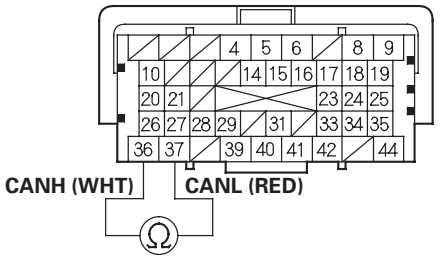
5. Disconnect the gauge control module (tach) 36P connector (see page 22-277).
6. Disconnect the ABS modulator-control unit 25P connector (see page 19-90) (or the VSA modulator-control unit 37P connector (see page 19-171) and the yaw rate-lateral acceleration sensor 4P connector (see page 19-169)).
7. Disconnect SRS unit connector A (28P) (see page 24-203).
8. Disconnect EPS control unit connector D (28P) (see page 17-84).
9. With TPMS: Disconnect the TPMS control unit 20P connector (see page 18-75).

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

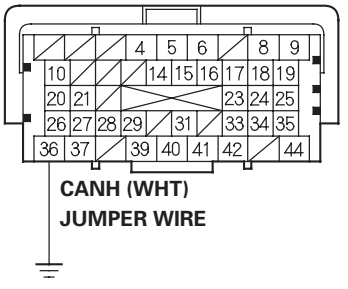
Is there continuity?

YES—Repair short in the wires between ECM/PCM connector terminals A36 and A37. ■

NO—Go to step 11.

11. Connect ECM/PCM connector terminal A36 to body ground with a jumper wire.

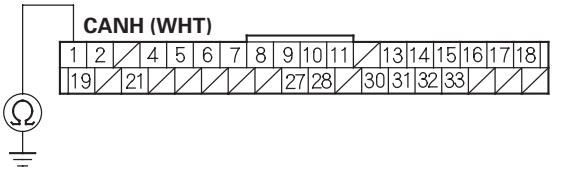
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

12. Check for continuity between gauge control module (tach) 36P connector terminal No. 1 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

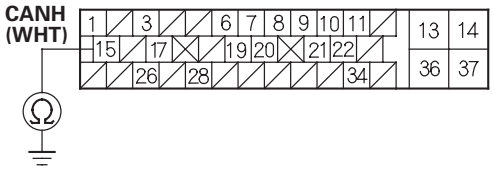
Is there continuity?

YES—
- With VSA system: Go to step 13.
- Without VSA system: Go to step 14.

NO—Repair open in the wire between the ECM/PCM (A36) and the gauge control module (tach). ■

13. Check for continuity between VSA modulator-control unit 37P connector terminal No. 15 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

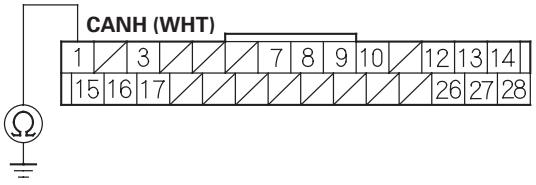
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the ECM/PCM (A36) and the VSA modulator-control unit. ■

14. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (A36) and the EPS control unit. ■

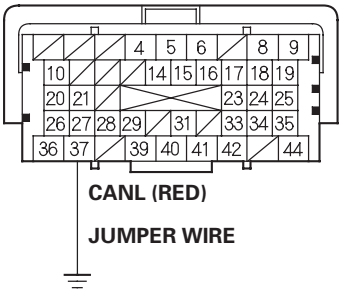
(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

15. Remove the jumper wire from ECM/PCM connector A (44P).

16. Connect ECM/PCM connector terminal A37 to body ground with a jumper wire.

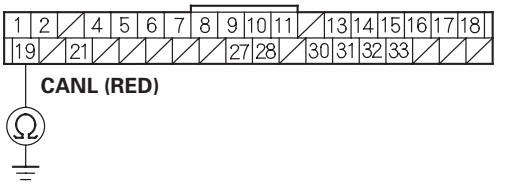
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

17. Check for continuity between gauge control module (tach) 36P connector terminal No. 19 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

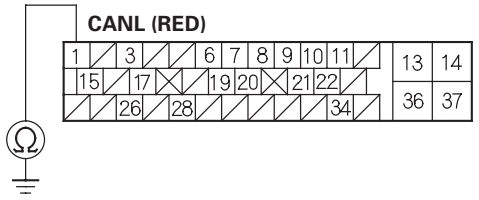
Is there continuity?

YES—
- With VSA system: Go to step 18.
- Without VSA system: Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A37) and the gauge control module (tach). ■

18. Check for continuity between VSA modulator-control unit 37P connector terminal No. 1 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

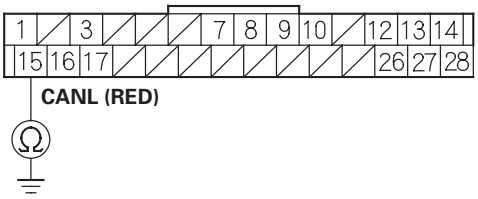
Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A37) and the VSA modulator-control unit. ■

19. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the ECM/PCM (A37) and the EPS control unit. ■

(cont'd)

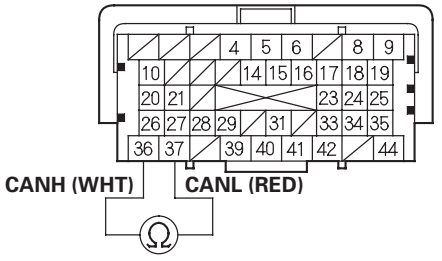
F-CAN Circuit Troubleshooting (cont'd)

20. Remove the jumper wire from ECM/PCM connector A (44P).

21. Reconnect the gauge control module (tach) 36P connector.

22. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 108 – 132 Ω ?

YES—
- With ABS: Go to step 23.
- With VSA system: Go to step 26.

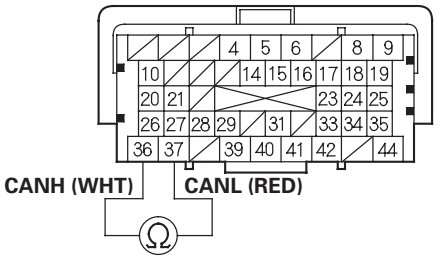
NO—Substitute a known-good gauge control module (tach) (see page 22-277). If the HDS identifies the vehicle, replace the original gauge control module (tach) (see page 22-277). ■

23. Disconnect the gauge control module (tach) 36P connector.

24. Reconnect the ABS modulator-control unit 25P connector.

25. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34 – 2.86 kΩ ?

YES—Disconnect the ABS modulator-control unit 25P connector, then go to step 33.

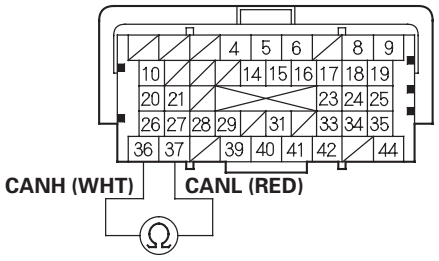
NO—Substitute a known-good ABS modulator-control unit (see page 19-90). If the HDS identifies the vehicle, replace the original ABS modulator-control unit (see page 19-90). ■

26. Disconnect the gauge control module (tach) 36P connector.

27. Reconnect the VSA modulator-control unit 37P connector.

28. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 29.

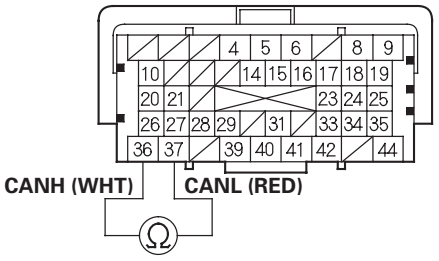
NO—Substitute a known-good VSA modulator-control unit (see page 19-171). If the HDS identifies the vehicle, replace the original VSA modulator-control unit (see page 19-171). ■

29. Disconnect the VSA modulator-control unit 37P connector.

30. Reconnect the yaw rate-lateral acceleration sensor 5P connector.

31. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 32.

NO—Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-169). If the HDS identifies the vehicle, replace the original yaw rate-lateral acceleration sensor (see page 19-169). ■

32. Disconnect the yaw rate-lateral acceleration sensor 5P connector.

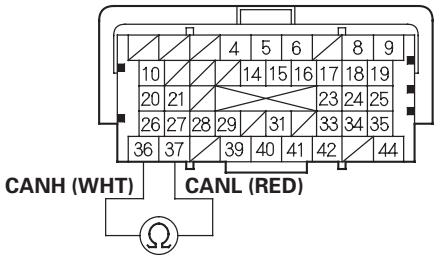
33. Reconnect SRS unit connector A (28P).

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

34. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 35.

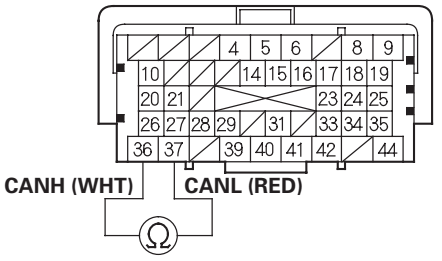
NO—Substitute a known-good SRS unit (see page 24-203). If the HDS identifies the vehicle, replace the original SRS unit (see page 24-203). ■

35. Disconnect SRS unit connector A (28P).

36. Reconnect EPS control unit connector D (28P).

37. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—
- With TPMS: Go to step 38.
- Without TPMS: Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

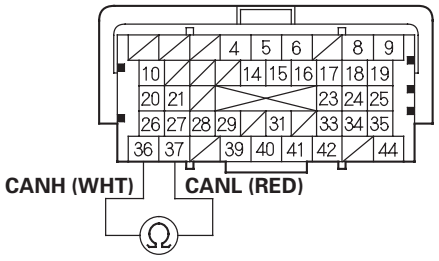
NO—Substitute a known-good EPS control unit (see page 17-84). If the HDS identifies the vehicle, replace the original EPS control unit (see page 17-84). ■

38. Disconnect EPS control unit connector D (28P).

39. Reconnect the TPMS control unit 20P connector.

40. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Substitute a known-good TPMS control unit (see page 18-75). If the HDS identifies the vehicle, replace the original TPMS control unit (see page 18-75). ■

41. Disconnect the gauge control module (tach) 36P connector (see page 22-277).

42. Disconnect the ABS modulator-control unit 25P connector (see page 19-90) (or the VSA modulator-control unit 37P connector (see page 19-171) and the yaw rate-lateral acceleration sensor 5P connector (see page 19-169)).

43. Disconnect SRS unit connector A (28P) (see page 24-203).

44. Disconnect EPS control unit connector D (28P) (see page 17-84).

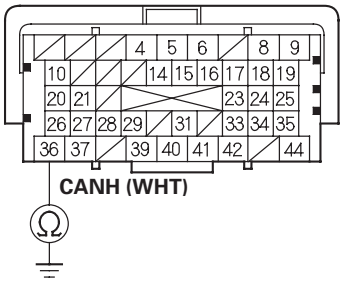
45. With TPMS: Disconnect the TPMS control unit 20P connector (see page 18-75).

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

46. Check for continuity between ECM/PCM connector terminal A36 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

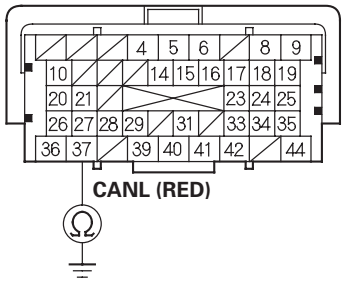
Is there continuity?

YES—Repair short in the wire between the ECM/PCM connector terminal A36 and the gauge control module (tach), the ABS modulator-control unit, the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, the SRS unit, the EPS control unit, the TPMS control unit (with TPMS), or the DLC. ■

NO—Go to step 47.

47. Check for continuity between ECM/PCM connector terminal A37 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between ECM/PCM connector terminal A37 and the gauge control module (tach), the ABS modulator-control unit, the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, the SRS unit, the EPS control unit, the TPMS control unit (with TPMS), or the DLC. ■

NO—Go to step 48.

48. Reconnect all connectors.

49. Connect the HDS to the DLC (see page 11-3).

50. Disconnect the gauge control module (tach) 36P connector.

51. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the gauge control module (tach) (see page 22-277). ■

    NO—
    • With ABS: Go to step 52.
    • With VSA system: Go to step 56.

52. Turn the ignition switch to LOCK (0).

53. Reconnect the gauge control module (tach) 36P connector.

54. Disconnect the ABS modulator-control unit 25P connector.

55. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the ABS modulator-control unit (see page 19-90). ■

    NO—Go to step 64.

56. Turn the ignition switch to LOCK (0).

57. Reconnect the gauge control module (tach) 36P connector.

58. Disconnect the VSA modulator-control unit 37P connector.

59. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the VSA modulator-control unit (see page 19-171). ■

    NO—Go to step 60.

60. Turn the ignition switch to LOCK (0).

61. Reconnect the VSA modulator-control unit 37P connector.

62. Disconnect the yaw rate-lateral acceleration sensor 5P connector.

63. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

    NO—Go to step 64.

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

64. Turn the ignition switch to LOCK (0).

65. Reconnect the ABS modulator-control unit 25P connector (or the yaw rate-lateral acceleration sensor 4P connector).

66. Disconnect SRS unit connector A (28P).

67. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the SRS unit (see page 24-203). ■

    NO—Go to step 68.

68. Turn the ignition switch to LOCK (0).

69. Reconnect SRS unit connector A (28P).

70. Disconnect EPS control unit connector D (28P).

71. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the EPS control unit (see page 17-84). ■

    NO—
    - With TPMS: Go to step 72.
    - Without TPMS: Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

72. Turn the ignition switch to LOCK (0).

73. Reconnect EPS control unit connector D (28P).

74. Disconnect the TPMS control unit 20P connector.

75. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the TPMS control unit (see page 18-75). ■

    NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

MIL Circuit Troubleshooting

1. Turn the ignition switch to ON (II).
2. Do the gauge self-diagnostic function (see page 22-241).

   Does the MIL indicator flash?

   YES—Go to step 3.

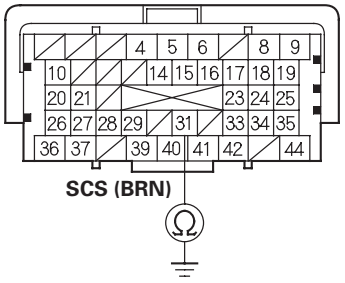
   NO—Substitute a known-good gauge control module (tach), and recheck. If the MIL circuit is OK, replace the original gauge control module (tach) (see page 22-277). ■
3. Connect the HDS to the DLC (see page 11-3).
4. Check the SCS in the DATA LIST with the HDS.

   Is a short indicated?

   YES—Go to step 5.

   NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect ECM/PCM connector A (44P), then disconnect the HDS.
7. Check for continuity between ECM/PCM connector terminal A31 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A31) and the SRS unit, the DLC. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

DLC Circuit Troubleshooting

NOTE: Make sure the HDS and the HDS DLC cable are not detective.

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the DLC (see page 11-3).

   NOTE: Make sure the HDS is properly connected to the DLC.
3. Turn the ignition switch to ON (II), and read the HDS.

   Does the HDS identify the vehicle?

   YES—Go to step 4.

   NO—Go to step 25.
4. Check for Temporary DTCs or DTCs in the PGM-FI system with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Turn the ignition switch to ON (II), and watch the SRS indicator.

   Does the SRS indicator stay on?

   YES—Go to the SRS system's general troubleshooting information (see page 24-22). ■

   NO—
   • With ABS: Go to step 7.
   • With VSA system: Go to step 9.
7. Turn the ignition switch to LOCK (0).
8. Turn the ignition switch to ON (II), and watch the ABS indicator.

   Does the ABS indicator stay on?

   YES—Go to the ABS's general troubleshooting information (see page 19-49). ■

   NO—Go to step 11.
9. Turn the ignition switch to LOCK (0).
10. Turn the ignition switch to ON (II), and watch the VSA indicator.

    Does the VSA indicator stay on?

    YES—Go to the VSA system's general troubleshooting information (see page 19-97). ■

    NO—Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Start the engine, and watch the EPS indicator.

    Does the EPS indicator stay on?

    YES—Go to the EPS system's general troubleshooting information (see page 17-19). ■

    NO—Go to step 13.

13. Turn the ignition switch to LOCK (0).

14. Turn the ignition switch to ON (II), and watch the immobilizer indicator.

    Does the immobilizer indicator stay on or flash?

    YES—Go to the immobilizer system's troubleshooting (see page 22-315). ■

    NO—
    • With TPMS: Go to step 15.
    • Without TPMS: Go to step 17.

15. Turn the ignition switch to LOCK (0).

16. Turn the ignition switch to ON (II), and watch the TPMS indicator.

    Does the TPMS indicator stay on?

    YES—Go to the TPMS's general troubleshooting information (see page 18-49). ■

    NO—Go to step 17.

17. Do the gauge self-diagnostic function (see page 22-241).

18. Check for B-CAN system DTCs without the HDS (see page 22-74).

    Are any B-CAN DTCs indicated?

    YES—Go to the indicated DTC's troubleshooting. ■

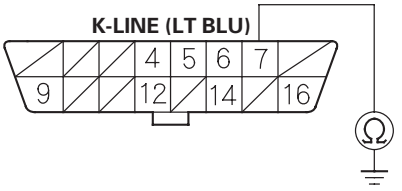
    NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Disconnect the HDS from the DLC.

21. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Go to step 23.

22. Continue to check for continuity between DLC terminal No. 7 and body ground, while disconnecting these parts, one at a time:

    • SRS unit connector A (28P)
    • ABS modulator-control unit 25P connector (with ABS)
    • VSA modulator-control unit 37P connector (with VSA system)
    • EPS control unit connector D (28P)
    • Immobilizer-keyless control unit 7P connector
    • TPMS control unit 20P connector (with TPMS)
    • Audio unit 17P connector
    • Under-dash fuse/relay box Q (16P) connector

    Does continuity go away when one of the above connectors is disconnected?

    YES—Replace the part that caused an open when it was disconnected. ■

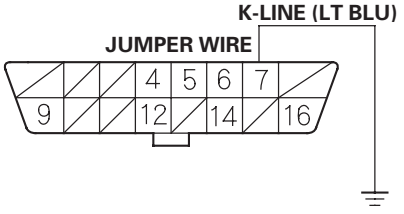
    NO—Repair short in the wire between the DLC (K-line) and the ABS modulator-control unit (with ABS), the VSA modulator-control unit (with VSA system), the SRS unit, the EPS control unit, the immobilizer-keyless control unit, the audio unit, the TPMS control unit (with TPMS), or the under-dash fuse/relay box. ■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

23. Connect DLC terminal No. 7 to body ground with a jumper wire.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

24. Check for continuity between body ground and these connector terminals:

Connector	Terminal
SRS unit A (28P)	No. 24 (LT BLU)
ABS modulator-control unit 25P (with ABS)	No. 10 (LT BLU)
VSA modulator-control unit 37P (with VSA system)	No. 26 (LT BLU)
EPS control unit D (28P)	No. 17 (LT BLU)
Immobilizer-keyless control unit 7P	No. 5 (LT BLU)
TPMS control unit 20P	No. 7 (LT BLU)
Audio unit 17P	No. 6 (LT BLU)
Under-dash fuse/relay box Q (16P)	No. 8 (LT BLU)

Is there continuity between the body ground and each of the terminals in the chart?

YES—Replace the part which cannot communicate with the HDS. ■

NO—Repair open in the wire between the DLC (K-line) and the appropriate connector. ■

25. Do the gauge self-diagnostic function (see page 22-241).

26. Check for B-CAN system DTCs without the HDS (see page 22-74).

Is DTC B1168, B1169, and/or B1178 indicated?

YES—Go to step 39.

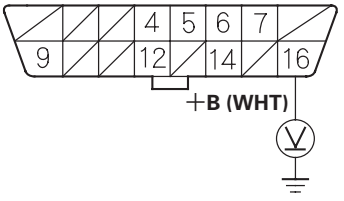
NO—Go to step 27.

27. Turn the ignition switch to LOCK (0).

28. Disconnect the HDS from the DLC.

29. Measure the voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

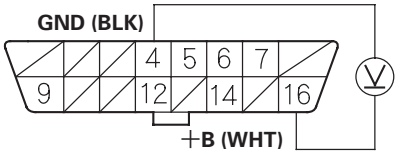
Is there battery voltage?

YES—Go to step 30.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 23 BACK UP (10 A) fuse in the under-hood fuse/relay box. ■

30. Measure the voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

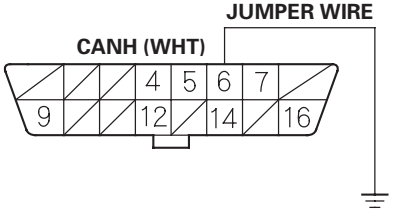
Is there battery voltage?

YES—Go to step 31.

NO—Repair open in the wire between DLC terminal No. 4 and body ground (G502) (see page 22-32). ■

31. Connect the HDS to the DLC (see page 11-3).
32. Jump the SCS line with the HDS.
33. Disconnect ECM/PCM connector A (44P).
34. Disconnect the HDS from the DLC.
35. Connect DLC terminal No. 6 to body ground with a jumper wire.

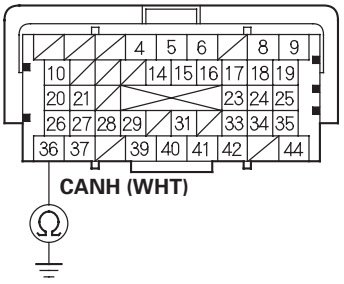
DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

36. Check for continuity between ECM/PCM connector terminal A36 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

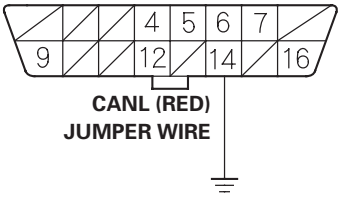
Is there continuity?

YES—Go to step 37.

NO—Repair open in the wire between the ECM/PCM (A36) and DLC terminal No. 6. ■

37. Connect DLC terminal No. 14 to body ground with a jumper wire.

DATA LINK CONNECTOR (DLC)

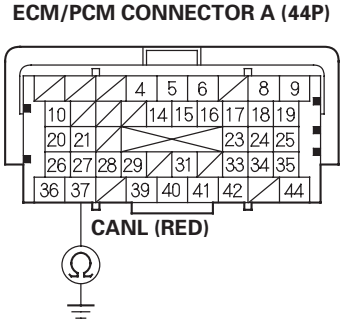


Terminal side of female terminals

(cont'd)

DLC Circuit Troubleshooting (cont'd)

38. Check for continuity between ECM/PCM connector terminal A37 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the ECM/PCM (A37) and DLC terminal No. 14. ■

39. Try to start the engine.

Does the engine start and idle smoothly?

YES—Go to the F-CAN circuit troubleshooting (see page 11-191). ■

NO—Go to step 40.

40. Turn the ignition switch to LOCK (0).

41. Check the No. 2 IG MAIN (50 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the No. 2 IG MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 42.

NO—Repair short in the wire between the No. 2 IG MAIN (50 A) fuse and the under-hood fuse/relay box. Also replace the No. 2 IG MAIN (50 A) fuse. ■

42. Inspect the No. 19 FI MAIN (15 A) fuse in the under-hood fuse/relay box.

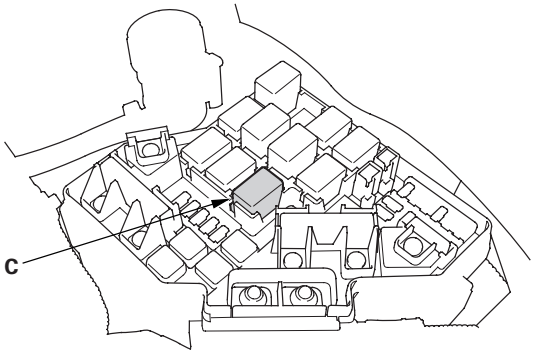
Is the fuse OK?

YES—Go to step 49.

NO—Go to step 43.

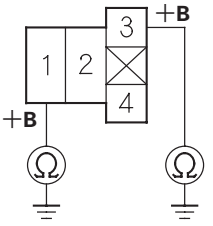
43. Remove the blown No. 19 FI MAIN (15 A) fuse from the under-hood fuse/relay box.

44. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



45. Check for continuity between body ground and PGM-FI main relay 1 4P connector terminals No. 1 and No. 3 individually.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the under-hood fuse/relay box (see page 22-65). Also replace the No. 19 FI MAIN (15 A) fuse. ■

NO—Go to step 46.

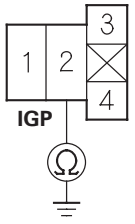
(cont'd)

DLC Circuit Troubleshooting (cont'd)

46. Disconnect each of the parts or connectors these parts, one at a time, while checking for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (44P)
    - Each injector 2P connector
    - Camshaft position (CMP) sensor B 3P connector
    - Crankshaft position (CKP) sensor 3P connector
    - Ignition coil relay
    - Electronic throttle control system (ETCS) control relay

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Does continuity go away when one of the above components is disconnected?

YES—Replace the part that made the short to body ground go away when disconnected. Reconnect all connectors, then update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). Also replace the No. 19 FI MAIN (15 A) fuse. ■

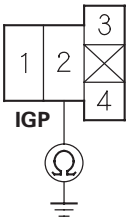
NO—Go to step 47.

47. Disconnect the connectors from these parts:

    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (44P)
    - Injectors
    - Camshaft position (CMP) sensor B
    - Crankshaft position (CKP) sensor
    - Ignition coil relay
    - Electronic throttle control system (ETCS) control relay

48. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PGM-FI main relay 1 and each part. Also replace the No. 19 FI MAIN (15 A) fuse. ■

NO—Replace PGM-FI main relay 1. Also replace the No. 19 FI MAIN (15 A) fuse. ■

49. Inspect the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.

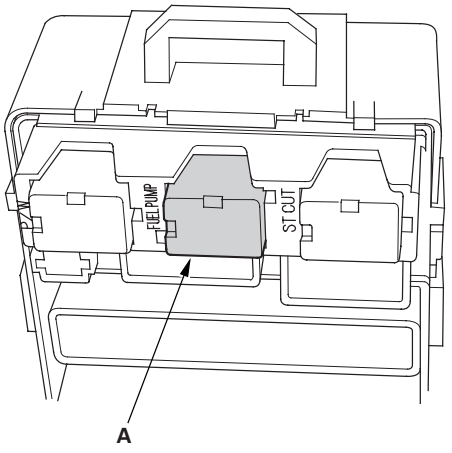
Is the fuse OK?

YES—Go to step 61.

NO—Go to step 50.

50. Remove the blown No. 2 FUEL PUMP (15 A) fuse from the under-dash fuse/relay box.

51. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



52. Test PGM-FI main relay 2 (FUEL PUMP) (see page 22-70).

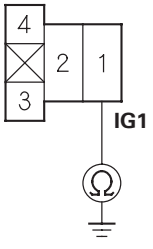
Is the relay OK?

YES—Go to step 53.

NO—Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

53. Check for continuity between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 54.

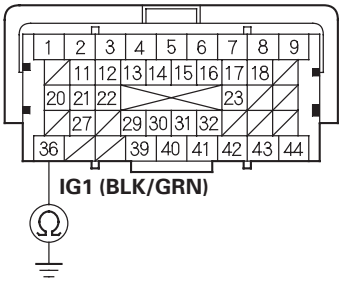
NO—Go to step 57.

54. Jump the SCS line with the HDS.

55. Disconnect ECM/PCM connector C (44P).

56. Check for continuity between ECM/PCM connector terminal C36 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM/PCM (C36), between the No. 2 FUEL PUMP (15 A) fuse and PGM-FI main relay 2 (FUEL PUMP), or between the No. 2 FUEL PUMP (15 A) fuse and the immobilizer control unit. Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

NO—Replace the No. 2 FUEL PUMP (15 A) fuse, and update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

57. Remove the rear seat cushion (see page 20-131).

58. Remove the rear floor upper cross-member and the access panel from the floor (see page 11-334).

59. Disconnect the fuel pump 4P connector.

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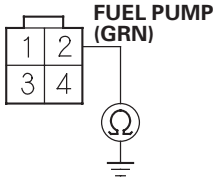
DLC Circuit Troubleshooting (cont'd)

60. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

FUEL PUMP 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

NO—Check the fuel pump, and replace it if needed (see page 11-338). Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

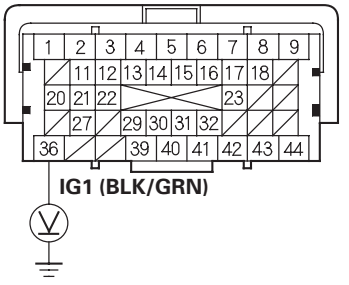
61. Jump the SCS line with the HDS.

62. Disconnect ECM/PCM connectors A (44P) and C (44P).

63. Turn the ignition switch to ON (II).

64. Measure the voltage between ECM/PCM connector terminal C36 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

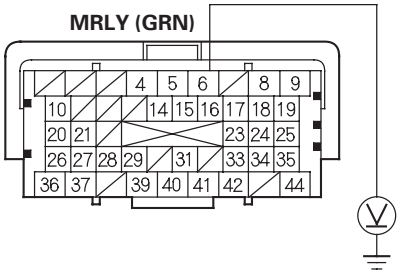
Is there battery voltage?

YES—Go to step 65.

NO—Repair open in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM/PCM (C36). ■

65. Measure the voltage between ECM/PCM connector terminal A6 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

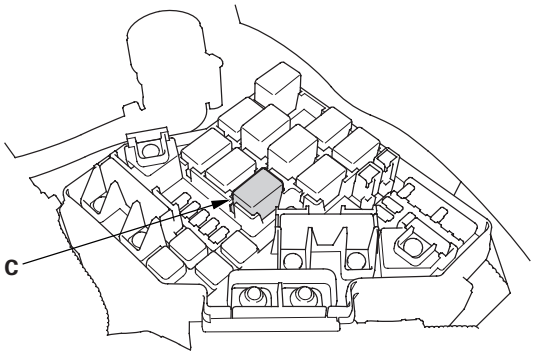
Is there battery voltage?

YES—Go to step 70.

NO—Go to step 66.

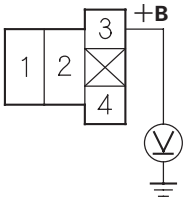
66. Turn the ignition switch to LOCK (0).

67. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



68. Measure the voltage between PGM-FI main relay 1 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 69.

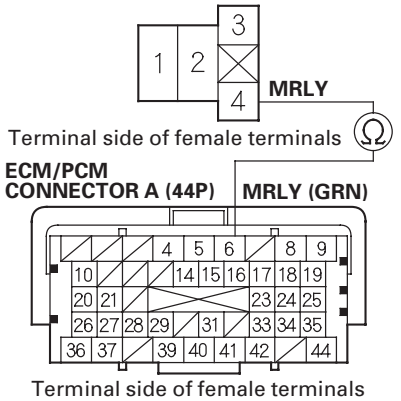
NO—Replace the under-hood fuse/relay box (see page 22-65). ■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

69. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 4 and ECM/PCM connector terminal A6.

PGM-FI MAIN RELAY 1 4P CONNECTOR



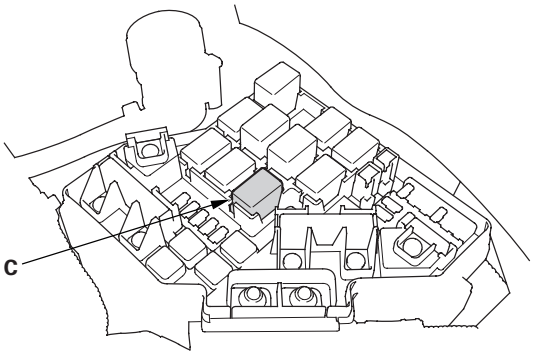
Is there continuity?

YES—Test PGM-FI main relay 1 (see page 22-70). If the relay is OK, update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the ECM/PCM (A6) and PGM-FI main relay 1. ■

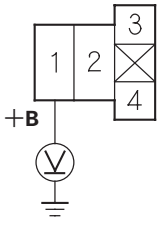
70. Turn the ignition switch to LOCK (0).

71. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



72. Measure the voltage between PGM-FI main relay 1 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

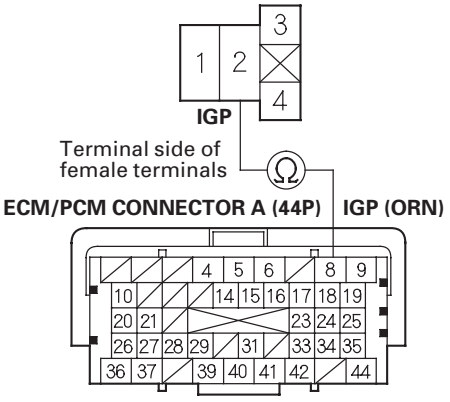
Is there battery voltage?

YES—Go to step 73.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

73. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and ECM/PCM connector terminal A8.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 74.

NO—Repair open in the wire between the ECM/PCM (A8) and PGM-FI main relay 1. ■

74. Test PGM-FI main relay 1 (see page 22-70).

Is PGM-FI main relay 1 OK?

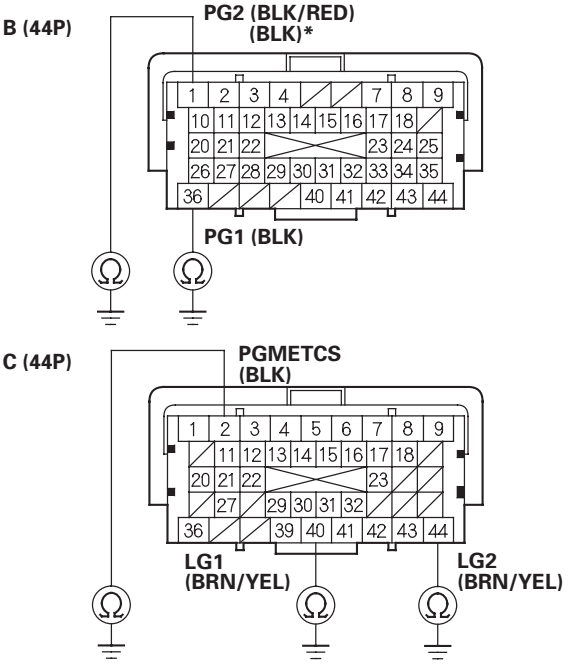
YES—Go to step 75.

NO—Replace PGM-FI main relay 1. ■

75. Disconnect ECM/PCM connector B (44P).

76. Check for continuity between body ground and ECM/PCM connector terminals B1, B36, C2, C40, and C44 individually.

ECM/PCM CONNECTORS



Terminal side of female terminals

***: '07-09 models**

Is there continuity?

YES—Go to step 77.

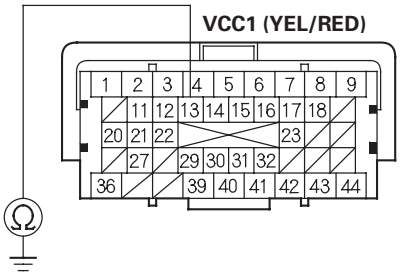
NO—Repair open in the wire between the ECM/PCM (B1, B36, C2, C40, C44) and G101; A/T model (see page 22-16), M/T model (see page 22-18). ■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

77. Check for continuity between ECM/PCM connector terminal C13 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 78.

NO—Go to step 79.

78. Continue to check for continuity between ECM/PCM connector terminal C13 and body ground, while disconnecting these connectors, one at a time:

- MAP sensor 3P connector
- Output shaft (countershaft) speed sensor 3P connector (K20Z2 engine)

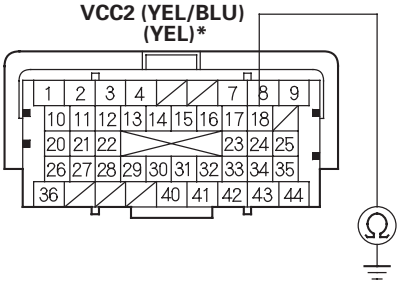
Does continuity go away when one of the above components is disconnected?

YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the ECM/PCM (C13) and the MAP sensor or the output shaft (countershaft) speed sensor (K20Z2 engine). ■

79. Check for continuity between ECM/PCM connector terminal B18 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

*** : K20Z3 engine**

Is there continuity?

YES—Go to step 80.

NO—Go to step 81.

80. Continue to check for continuity between ECM/PCM connector terminal B18 and body ground, while disconnecting these connectors, one at a time:

- EGR valve 6P connector (K20Z2 engine)
- Input shaft (mainshaft) speed sensor 3P connector (K20Z2 engine)
- Output shaft (countershaft) speed sensor 3P connector (K20Z3 engine)

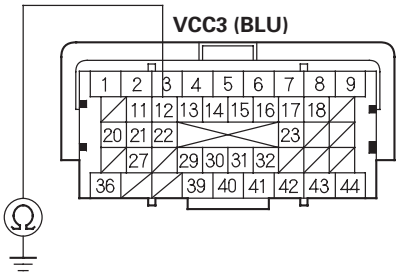
Does continuity go away when one of the above parts is disconnected?

YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the ECM/PCM (B18) and the EGR valve (K20Z2 engine), the input shaft (mainshaft) speed sensor (K20Z2 engine) or the output shaft (countershaft) speed sensor (K20Z3 engine). ■

81. Check for continuity between ECM/PCM connector terminal C12 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 82.

NO—Go to step 83.

82. Continue to check for continuity between ECM/PCM connector terminal C12 and body ground, while disconnecting the throttle body 6P connector.

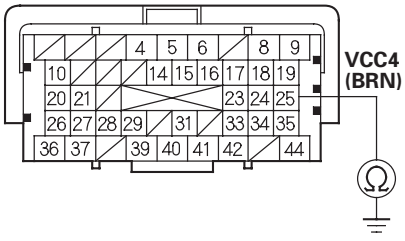
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C12) and the throttle body. ■

NO—Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349). ■

83. Check for continuity between ECM/PCM connector terminal A25 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 84.

NO—Go to step 85.

84. Continue to check for continuity between ECM/PCM connector terminal A25 and body ground, while disconnecting the APP sensor 6P connector.

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A25) and the APP sensor. ■

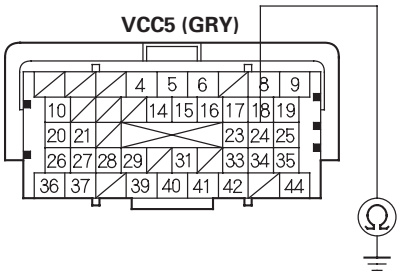
NO—Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270). ■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

85. Check for continuity between ECM/PCM connector terminal A24 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 86.

NO—Go to step 87.

86. Continue to check for continuity between ECM/PCM connector terminal A24 and body ground, while disconnecting the APP sensor 6P connector.

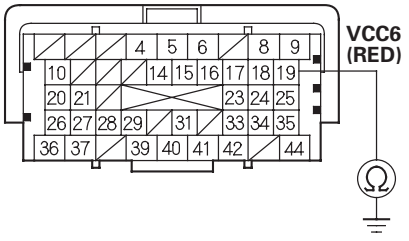
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A24) and the APP sensor. ■

NO—Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270). ■

87. Check for continuity between ECM/PCM connector terminal A19 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 88.

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

88. Continue to check for continuity between ECM/PCM connector terminal A19 and body ground, while disconnecting these parts, one at a time:

- A/C pressure sensor 3P connector
- FTP sensor 3P connector

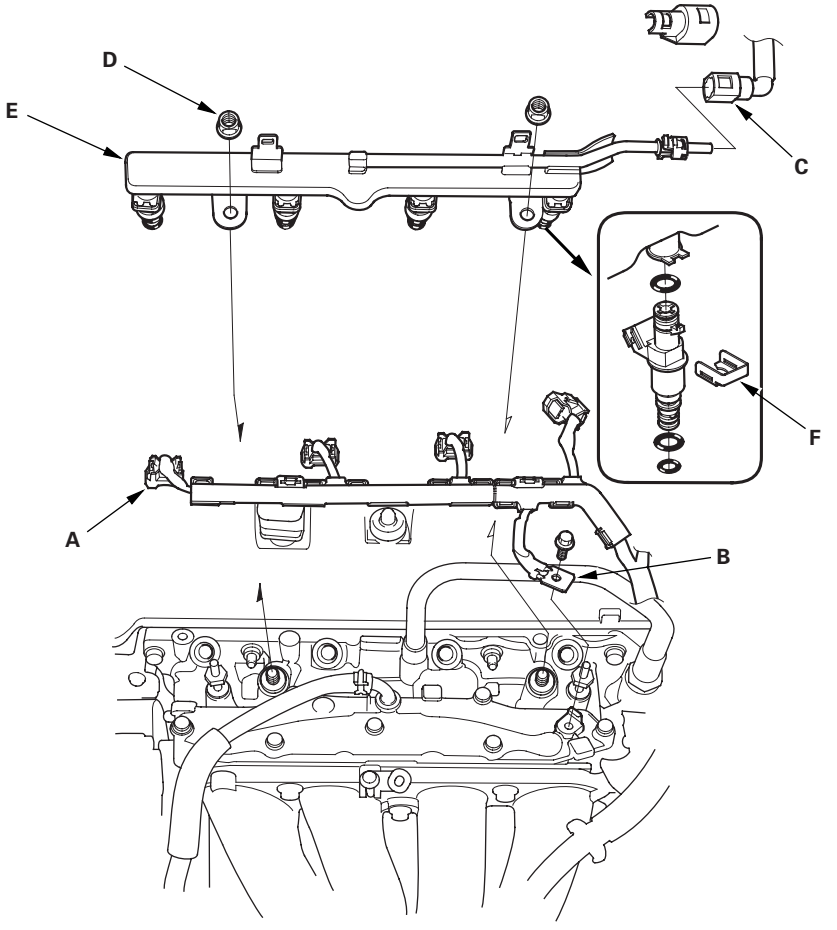
Does continuity go away when one of the above connectors is disconnected?

YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the ECM/PCM (A19) and the A/C pressure sensor or the FTP sensor. ■

Injector Replacement

1. Relieve fuel pressure (see page 11-322).
2. Remove the engine cover.
3. Disconnect the injector connectors (A) from the injectors.



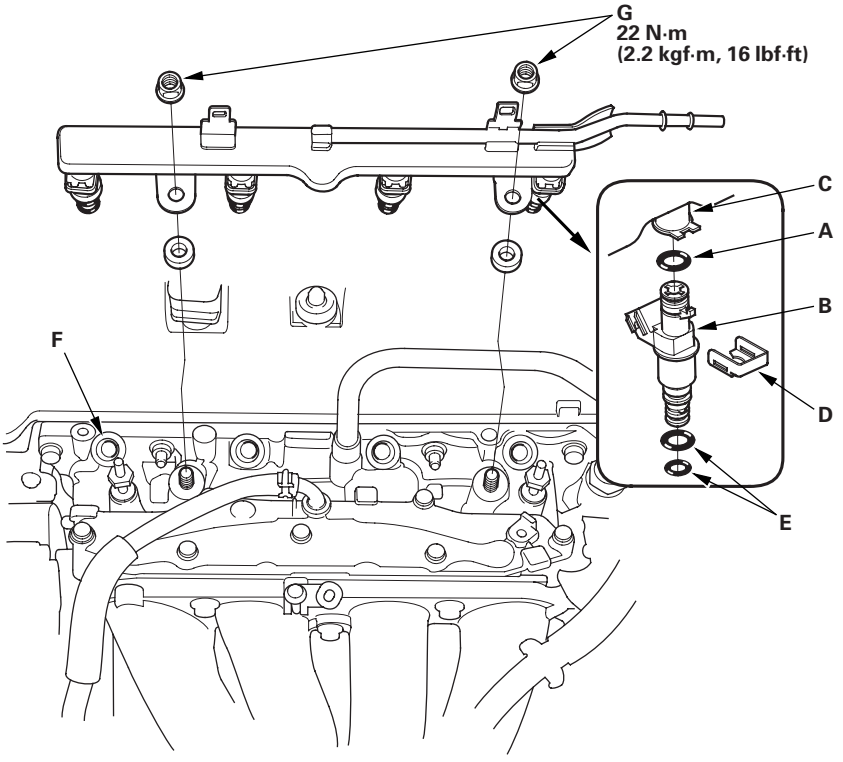
* : This illustration shows K20Z2 engine

4. Remove the ground cable bolt (G101) (B).
5. Disconnect the quick-connect fitting (C).
6. Remove the fuel rail mounting nuts (D) from the fuel rail (E).
7. Remove the fuel rail and the injectors from the injector base.
8. Remove the injector clips (F) from the injectors.
9. Remove the injectors from the fuel rail.

(cont'd)

Injector Replacement (cont'd)

10. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).



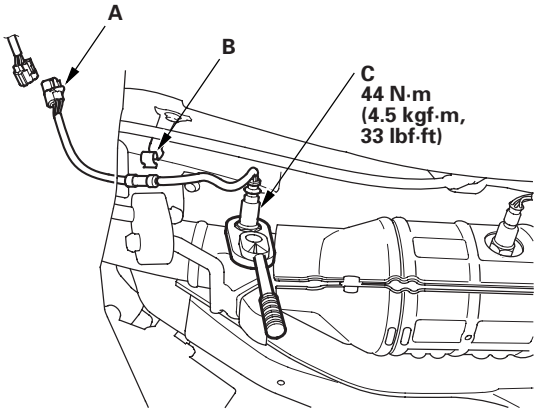
* : This illustration shows K20Z2 engine

11. Install the injector clips (D).
12. Coat the injector O-rings (E) with clean engine oil.
13. Install the fuel rail and the injectors in the injector base (F).
14. Install the fuel rail mounting nuts (G).
15. Connect the connectors on the injectors, and reinstall the ground cable bolt (G101).
16. Connect the quick-connect fittings.
17. Turn the ignition switch to ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel rail is pressurized. Repeat this two or three times, then check for fuel leakage.
18. Install the engine cover.

A/F Sensor Replacement

Special Tools Required
O2 sensor wrench, Snap-on YA8875 or SWR2, or equivalent, commercially available

1. Disconnect the A/F sensor 4P connector (A) and remove the clamp (B), then remove the A/F sensor (C).

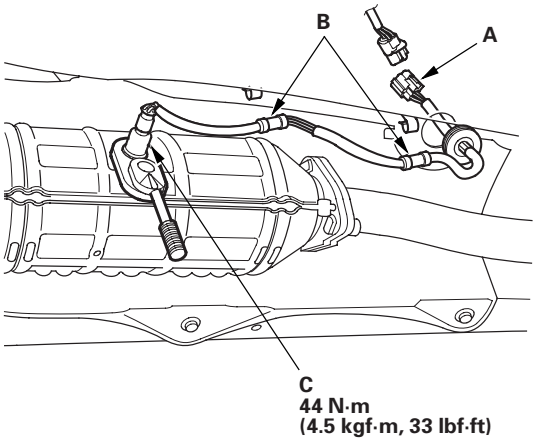


2. Install the parts in the reverse order of removal.

Secondary HO2S Replacement

Special Tools Required
O2 sensor wrench, Snap-on YA8875 or SWR2, or equivalent, commercially available

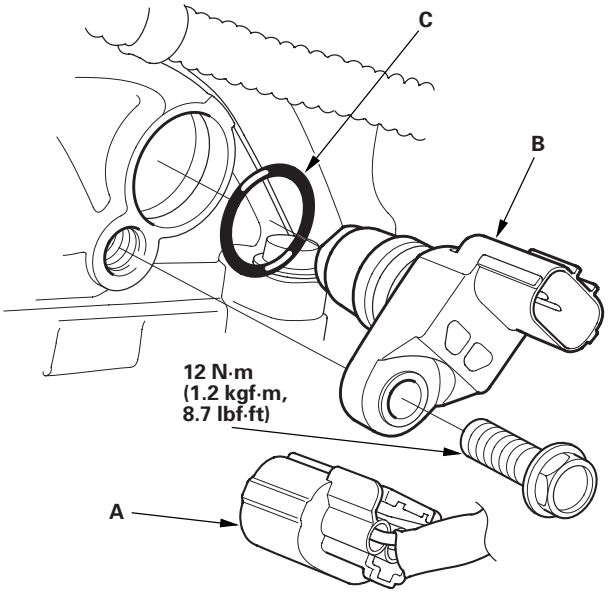
1. Disconnect the secondary HO2S 4P connector (A) and remove the clamps (B), then remove the secondary HO2S (C).



2. Install the parts in the reverse order of removal.

CMP Sensor B Replacement

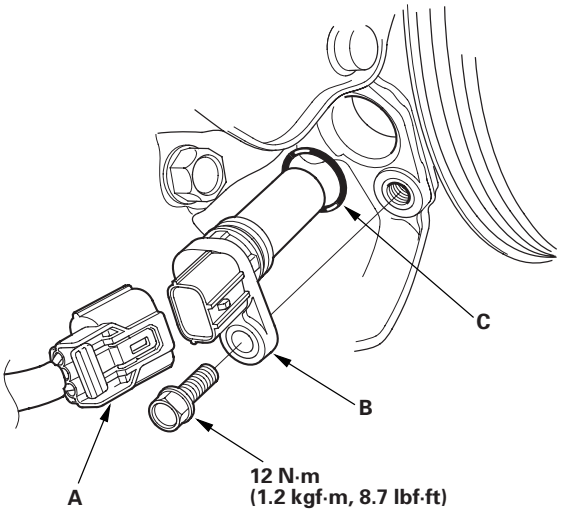
1. Remove the air cleaner (see page 11-345).
2. K20Z2 engine: Remove the EGR valve (see page 11-370).
3. Disconnect the CMP sensor B 3P connector (A).



4. Remove CMP sensor B.
5. Install the parts in the reverse order of removal with a new O-ring (C).

CKP Sensor Replacement

1. Disconnect the CKP sensor 3P connector (A).



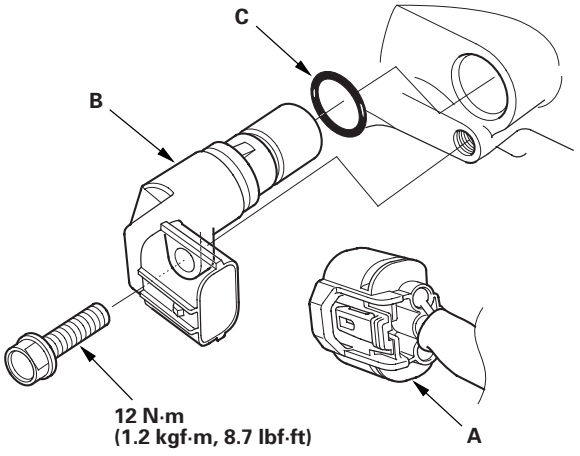
2. Remove the CKP sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).
4. Do the CKP pattern clear/CKP pattern learn procedure with the HDS (see page 11-4).

Output Shaft (Countershaft) Speed Sensor Replacement

M/T model

NOTE: For A/T model (see page 14-227).

1. Disconnect the output shaft (countershaft) speed sensor 3P connector (A).

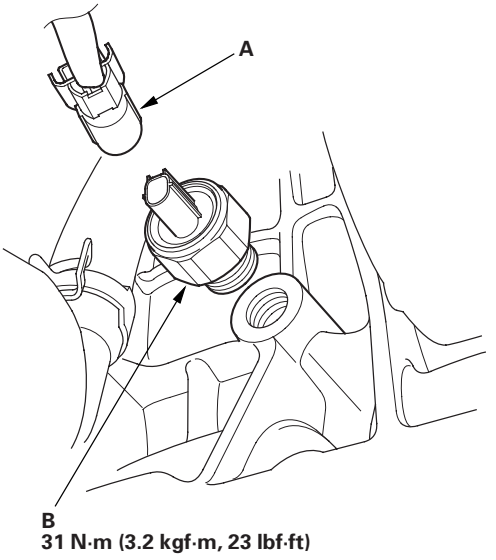


2. Remove the output shaft (countershaft) speed sensor (B).

3. Install the parts in the reverse order of removal with a new O-ring (C).

Knock Sensor Replacement

1. Disconnect the knock sensor 1P connector (A).

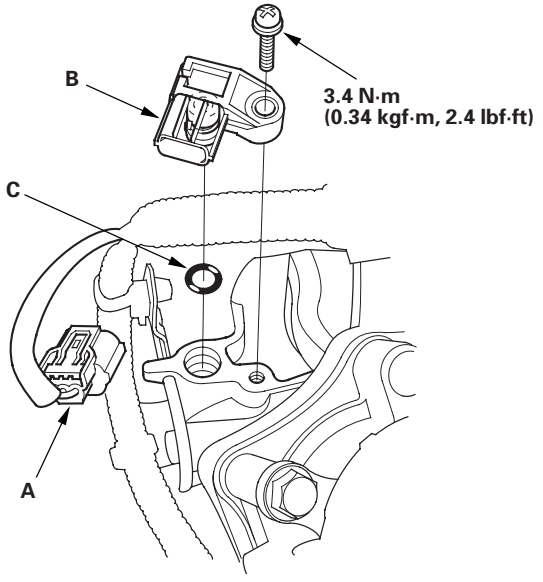


2. Remove the knock sensor (B).

3. Install the parts in the reverse order of removal.

MAP Sensor Replacement

1. Disconnect the MAP sensor 3P connector (A).

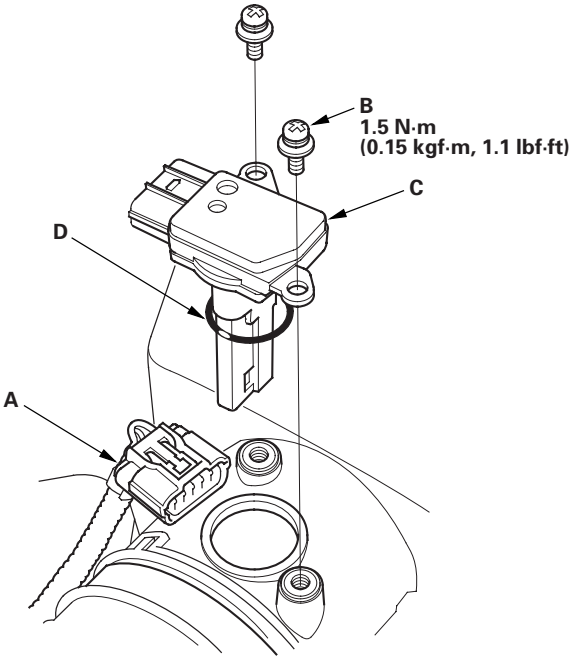


* : This illustration shows K20Z2 engine

2. Remove the MAP sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

MAF Sensor/IAT Sensor Replacement

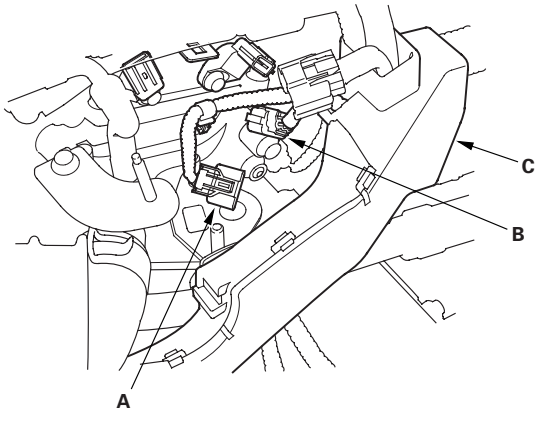
1. Disconnect the MAF sensor/IAT sensor 5P connector (A).



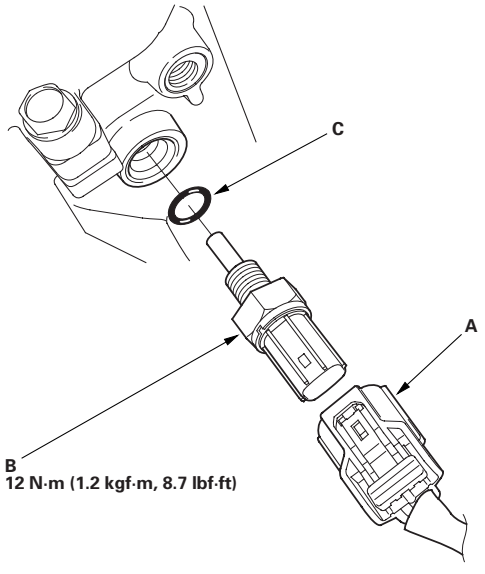
2. Remove the screws (B).
3. Remove the MAF sensor/IAT sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

ECT Sensor 1 Replacement

1. Drain the engine coolant (see page 10-8).
2. Remove the air cleaner (see page 11-345).
3. K20Z2 engine: Remove the EGR valve (see page 11-370).
4. Disconnect CMP sensor A 3P connector (A), and CMP sensor B 3P connector.



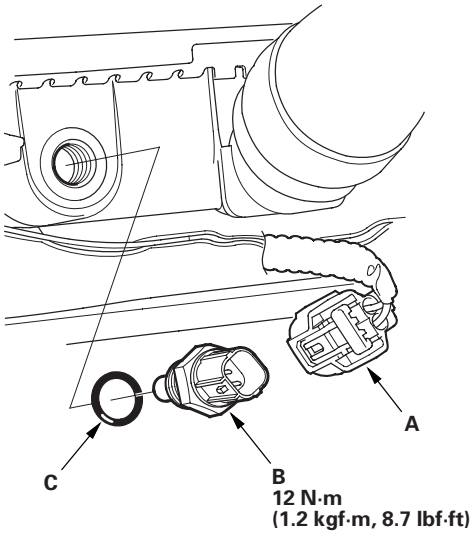
5. Remove the harness cover (C).
6. Disconnect the ECT sensor 1 2P connector (A).



7. Remove ECT sensor 1 (B).
8. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-8).

ECT Sensor 2 Replacement

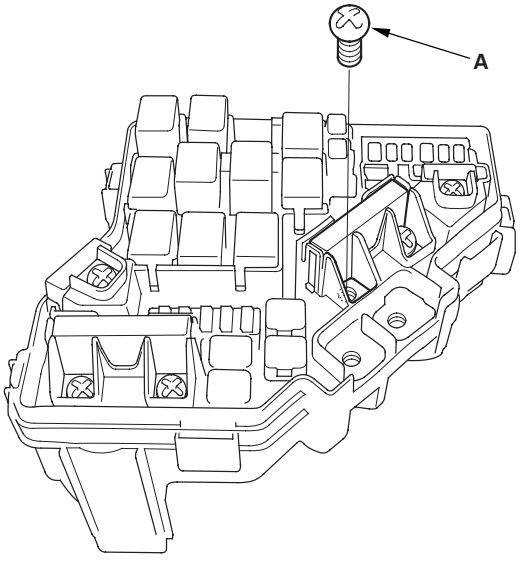
1. Drain the engine coolant (see page 10-8).
2. Remove the splash shield.
3. Disconnect the ECT sensor 2 2P connector (A), then remove ECT sensor 2 (B).



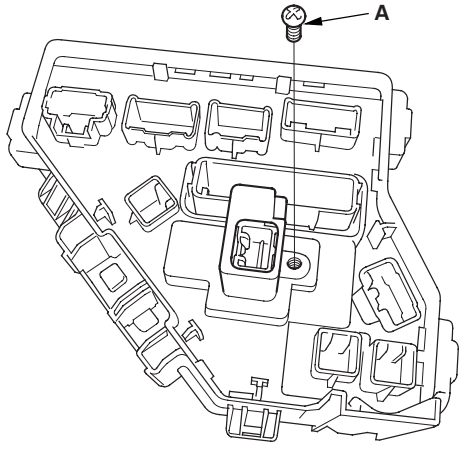
4. Install the parts in the reverse order of removal with a new O-ring (C).
5. Install the splash shield.
6. Refill the radiator with engine coolant (see page 10-8).

ELD Replacement

1. Remove the ECM/PCM (see page 11-228).
2. Remove the under-hood fuse/relay box (see page 22-65).
3. Remove the screw (A).

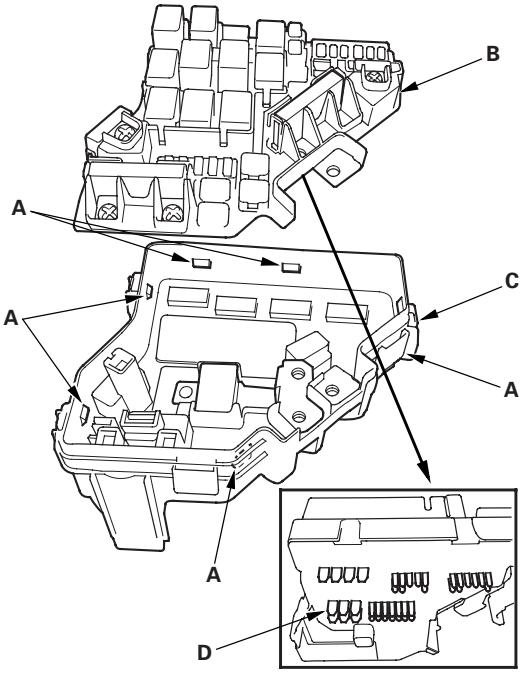


4. Turn the housing over, then remove the screw (A).

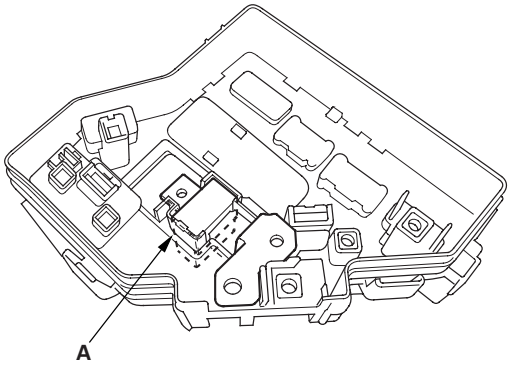


5. Turn the housing over again, using two flat-tip screwdrivers, release the tabs (A), and pry up the fuse/relay box base (B) from the fuse/relay box housing (C).

   NOTE: Make sure the terminals (D) are not bent or damaged.



6. Remove the ELD (A).



7. Install the parts in the reverse order of removal.

ECM/PCM Update

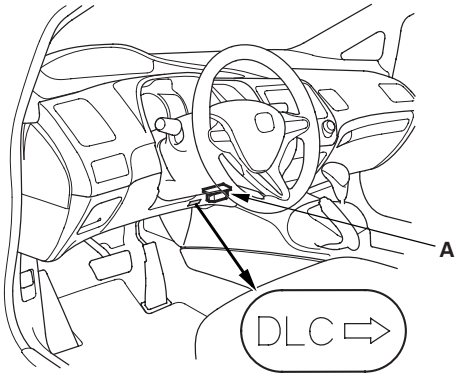
Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA 600 and iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

NOTE:
- Make sure the HDS/iN workstation has the latest HDS software version.
- Before you update the ECM/PCM, make sure the battery in the vehicle is fully charged, and connect a jumper battery (not a battery charger) to maintain system voltage.
- Never turn the ignition switch to LOCK (0) or ACC (I) during the update. If there is a problem with the update, leave the ignition switch to ON (II).
- To prevent ECM/PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof (if equipped), door locks, etc.) during the update.
- To ensure the latest program is installed, do an ECM/PCM update whenever the ECM/PCM is substituted or replaced.
- You cannot update an ECM/PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the ECM/PCM to become too hot to run the update. If the engine was running before this procedure, open the hood, and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in ON (II) when you disconnect the HIM from the data link connector (DLC). This will prevent ECM/PCM damage.

1. Turn the ignition switch to ON (II), but do not start the engine.

2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204). If you are returning from the DLC circuit troubleshooting, skip steps 4 to 5 and clean the throttle body after updating the ECM/PCM (see page 11-344).

4. Select the INSPECTION MENU with the HDS.

5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Exit the HDS diagnostic system, then select the update mode, and follow the screen prompts to update the ECM/PCM.

(cont'd)

ECM/PCM Update (cont'd)

7. If the software in the ECM/PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the ECM/PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system (A/T), make sure you update both.

   NOTE: If the ECM/PCM update system requires you to cool the ECM/PCM, follow the instructions on the screen. If you have a problem during the update (programming takes over 15 minutes, status bar goes over 100 %, D (A/T) or immobilizer indicator flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the ECM/PCM:
   - Leave the ignition switch in ON (II).
   - Connect a jumper battery (do not connect a battery charger).
   - Shut down the HDS.
   - Disconnect the HDS from the DLC.
   - Reboot the HDS.
   - Reconnect the HDS to the DLC, and do the update again.

8. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-344).

9. Do the ECM/PCM idle learn procedure (see page 11-310).

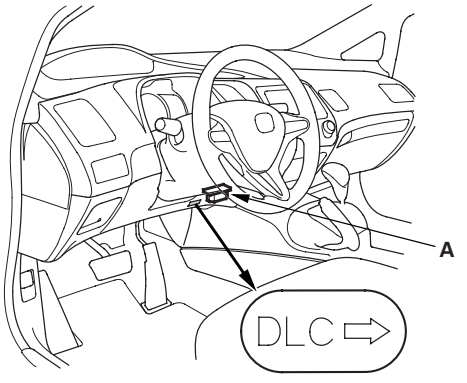
10. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

ECM/PCM Replacement

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA 600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).

ECM/PCM Update (cont'd)

7. If the software in the ECM/PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the ECM/PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system (A/T), make sure you update both.

   NOTE: If the ECM/PCM update system requires you to cool the ECM/PCM, follow the instructions on the screen. If you have a problem during the update (programming takes over 15 minutes, status bar goes over 100 %, D (A/T) or immobilizer indicator flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the ECM/PCM:
   - Leave the ignition switch in ON (II).
   - Connect a jumper battery (do not connect a battery charger).
   - Shut down the HDS.
   - Disconnect the HDS from the DLC.
   - Reboot the HDS.
   - Reconnect the HDS to the DLC, and do the update again.

8. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-344).

9. Do the ECM/PCM idle learn procedure (see page 11-310).

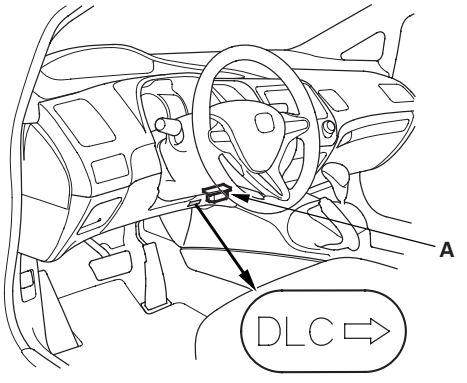
10. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

ECM/PCM Replacement

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA 600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204). If you are returning from DLC circuit troubleshooting, skip steps 4 through 9, 20 through 25, and 28 through 30, and do these procedures after replacing the ECM/PCM;

   - Replace the engine oil (see page 8-10) and the engine oil filter (see page 8-11).
   - Replace the ATF (A/T model) (see page 14-232).
   - Clean the throttle body (see page 11-344).

4. Select the PGM-FI system with the HDS.

5. Select the INSPECTION MENU with the HDS.

6. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue with this procedure.

7. Select the REPLACE ECM/PCM MENU, then select READ DATA, and follow the screen prompts.

   NOTE:
   - Doing this step copies (READS) the engine oil life data from the original ECM/PCM so you can later download (WRITES) it into the new ECM/PCM.
   - If READ DATA indicates FAILED, continue with this procedure.

8. A/T model: Select the A/T system with the HDS.

9. A/T model: Select the REPLACE TCM/PCM MENU, then select READ DATA and follow the screen prompts.

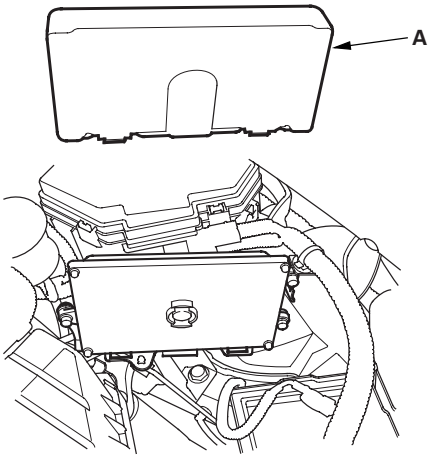
   NOTE:
   - Doing this step copies (READS) the ATF life data from the original PCM so you can later download (WRITES) it into the new PCM.
   - If READ DATA indicates FAILED, continue with this procedure.

10. Turn the ignition switch to LOCK (0).

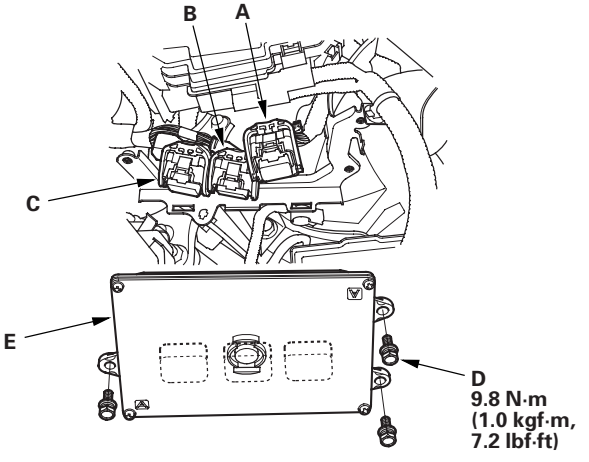
11. Jump the SCS line with the HDS.

12. Do the battery removal procedure (see page 22-69).

13. Remove the cover (A).



14. Remove the bolts (D), then remove the ECM/PCM (E).



15. Disconnect ECM/PCM connectors A, B, and C.

    NOTE: ECM/PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

(cont'd)

ECM/PCM Replacement (cont'd)

16. Install the parts in the reverse order of removal.
17. Do the battery installation procedure (see page 22-69).
18. Turn the ignition switch to ON (II).
19. Manually input the VIN to the ECM/PCM with the HDS.

    NOTE: DTC P0630 VIN Not Programmed or Mismatch may be stored because the VIN has not been programmed into the ECM/PCM; ignore it, and continue this procedure.

20. If the READ DATA (engine oil life) failed in step 7, go to step 23 (A/T) or step 26 (M/T). Otherwise, go to step 21.
21. Select the PGM-FI system with the HDS.
22. Select the REPLACE ECM/PCM MENU, then select WRITE DATA, and follow the screen prompts.

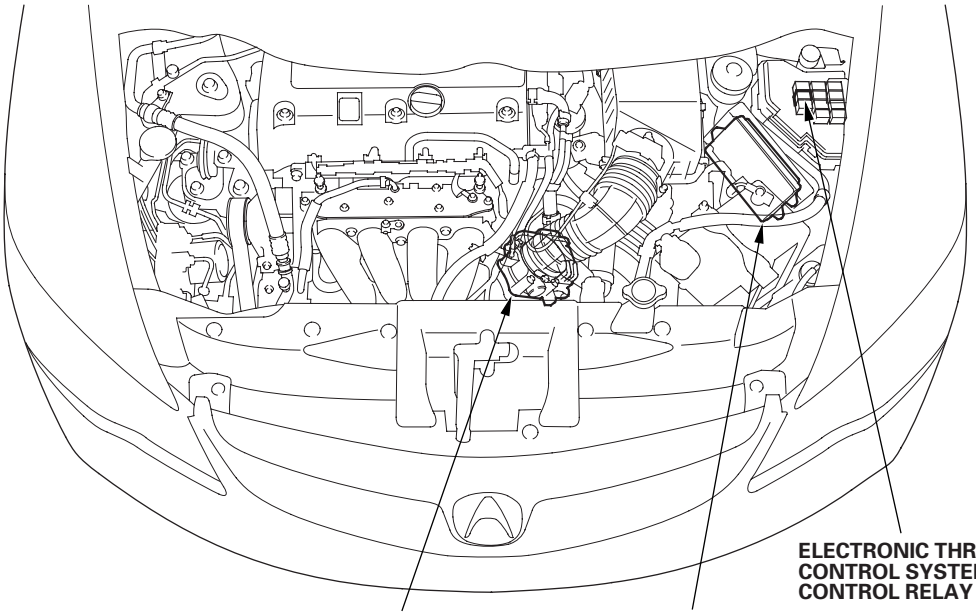
    NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

23. A/T model: If the READ DATA (ATF life) failed in step 9, go to step 26. Otherwise go to step 24.
24. A/T model: Select the A/T SYSTEM with the HDS.
25. A/T model: Select the REPLACE TCM/PCM MENU, then select WRITE DATA, and follow the screen prompts.

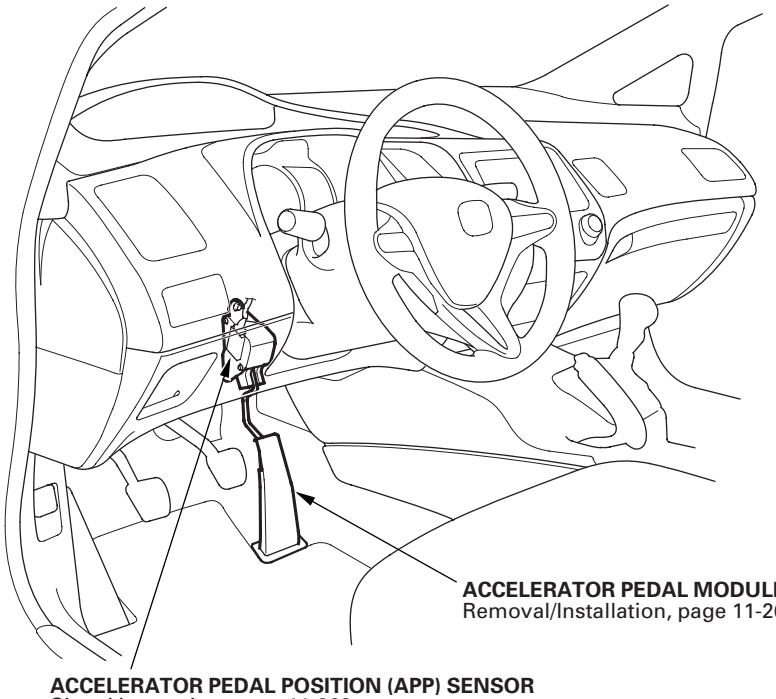
    NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

26. Select IMMOBI system with the HDS.
27. Enter the immobilizer code that you got from the iN or use the ECM/PCM replacement procedure in the HDS; it allows you to start the engine.
28. If the TP POSITION CHECK failed in step 7, clean the throttle body (see page 11-344), then go to step 29.
29. If the READ DATA failed in step 8 or the WRITE DATA failed in step 22, replace the engine oil (see page 8-10) and engine oil filter (see page 8-11), then go to step 30 (A/T) or step 31 (M/T).
30. If the READ DATA failed in step 10 or the WRITE DATA failed in step 27, replace the ATF (see page 14-232), then go to step 31.
31. Select PGM-FI system, and reset the ECM/PCM with the HDS.
32. Update the ECM/PCM if it does not have the latest software (see page 11-227).
33. Do the ECM/PCM idle learn procedure (see page 11-310).
34. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

Component Location Index



* : This illustration shows K20Z2 engine



DTC Troubleshooting

DTC P0122: TP Sensor A Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES—Go to step 4.

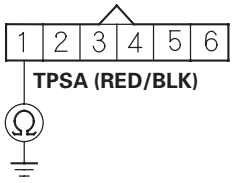
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES—Go to step 10.

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

   THROTTLE BODY 6P CONNECTOR



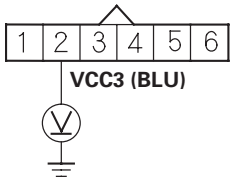
   Wire side of female terminals

   Is there continuity?

   YES—Repair short in the wire between the throttle body and the ECM/PCM (C20), then go to step 18.

   NO—Go to step 23.
10. Measure the voltage between throttle body 6P connector terminal No. 2 and body ground.

    THROTTLE BODY 6P CONNECTOR



    Wire side of female terminals

    Is there about 5 V?

    YES—Go to step 16.

    NO—Go to step 11.

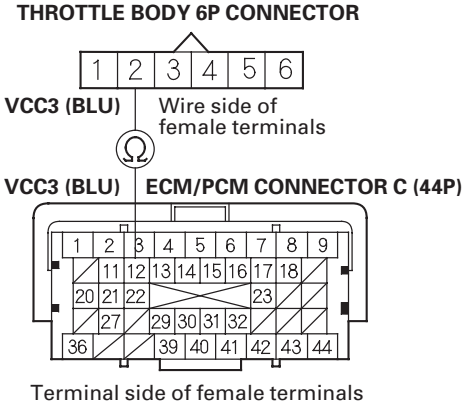
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Disconnect the throttle body 6P connector.

15. Check for continuity between ECM/PCM connector terminal C12 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0123: TP Sensor A Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES—Go to step 4.

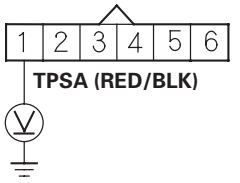
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES—Go to step 13.

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



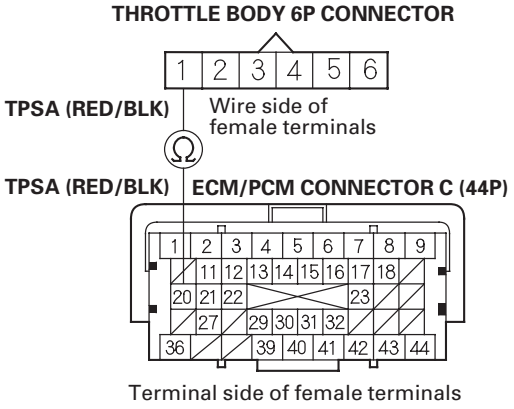
Wire side of female terminals

   Is there about 5 V?

   YES—Go to step 18.

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).

12. Check for continuity between ECM/PCM connector terminal C20 and throttle body 6P connector terminal No. 1.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C20), then go to step 20.

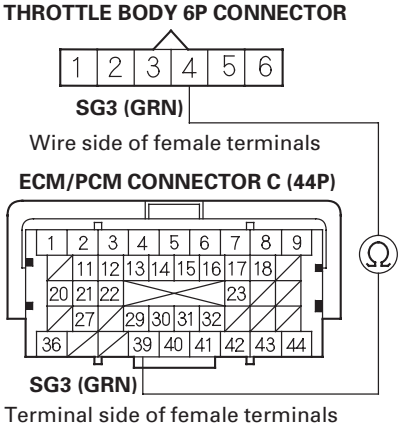
13. Turn the ignition switch to LOCK (0).

14. Disconnect the throttle body 6P connector.

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector C (44P).

17. Check for continuity between ECM/PCM connector terminal C39 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C39), then go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

18. Turn the ignition switch to LOCK (0).
19. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-310).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0222: TP Sensor B Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

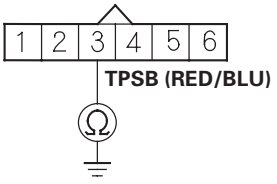
   Are DTC P0122 and P0222 indicated at the same time?

   YES—Go to step 10.

   NO—Go to step 5.

5. Turn the ignition switch to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

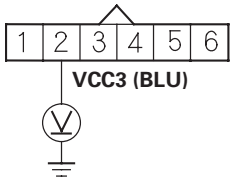
Is there continuity?

YES—Repair short in the wire between the throttle body and the ECM/PCM (C21), then go to step 18.

NO—Go to step 23.

10. Measure the voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

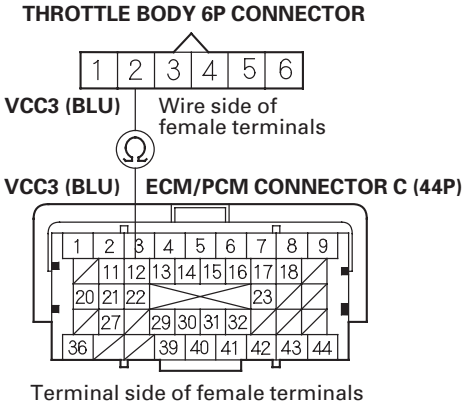
NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Disconnect the throttle body 6P connector.

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between ECM/PCM connector terminal C12 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0223: TP Sensor B Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.8 V or more?

   YES—Go to step 4.

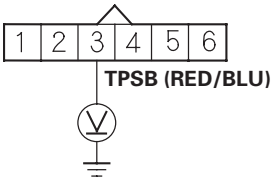
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES—Go to step 13.

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

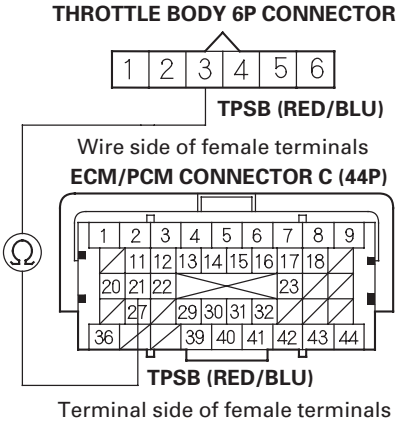
NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between ECM/PCM connector terminal C21 and throttle body 6P connector terminal No. 3.



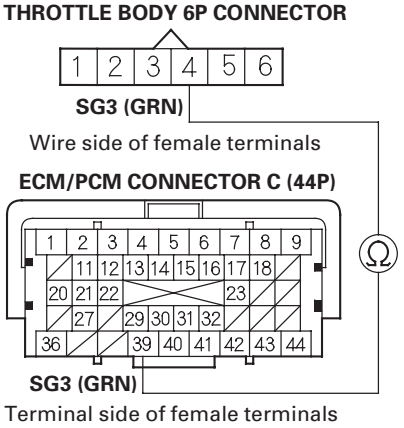
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C21), then go to step 20.

13. Turn the ignition switch to LOCK (0).
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).

17. Check for continuity between ECM/PCM connector terminal C39 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C39), then go to step 20.

18. Turn the ignition switch to LOCK (0).

19. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

20. Reconnect all connectors.

21. Turn the ignition switch to ON (II).

22. Reset the ECM/PCM with the HDS.

23. Do the ECM/PCM idle learn procedure (see page 11-310).

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1658: ETCS Control Relay ON Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

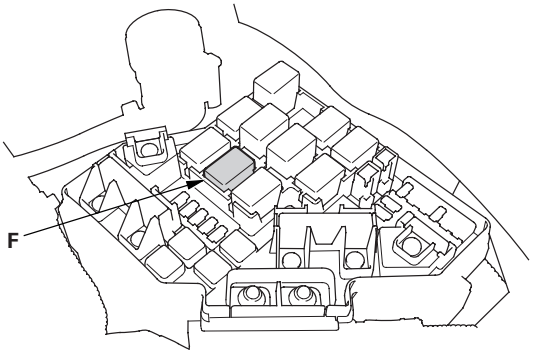
   Is the RELAY circuit OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Remove the ETCS control relay (F) from the under-hood fuse/relay box.



(cont'd)

DTC Troubleshooting (cont'd)

5. Test the ETCS control relay (see page 22-70).

   Is the ETCS control relay OK?

   YES—Go to step 6.

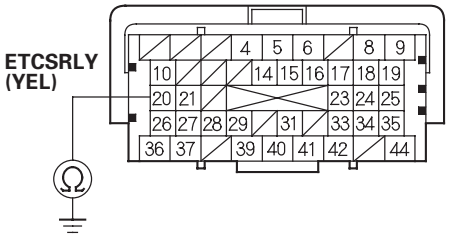
   NO—Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.

7. Disconnect ECM/PCM connector A (44P).

8. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 13.

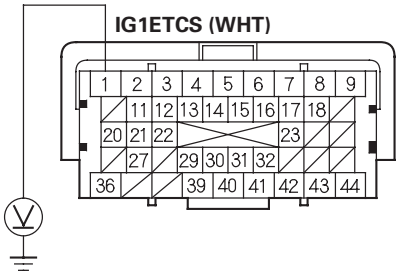
NO—Go to step 9.

9. Disconnect ECM/PCM connector C (44P).

10. Turn the ignition switch to ON (II).

11. Measure the voltage between ECM/PCM connector terminal C1 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the ECM/PCM (C1) and the ETCS control relay, then go to step 12.

NO—Go to step 18.

12. Turn the ignition switch to LOCK (0).

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Turn the ignition switch to LOCK (0).

19. Reconnect all connectors.

20. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1659: ETCS Control Relay OFF Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES—Go to step 4.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. ■

4. Turn the ignition switch to LOCK (0).

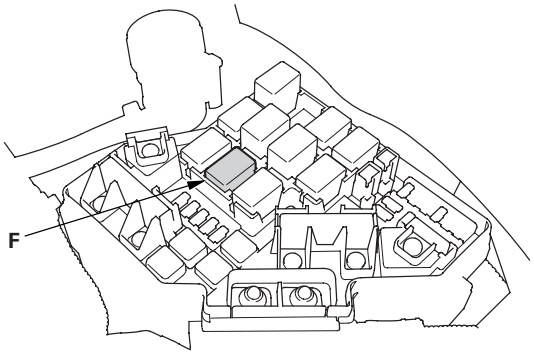
5. Check the No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES—Go to step 6.

    NO—Go to step 17.

6. Remove the ETCS control relay (F) from the under-hood fuse/relay box.



(cont'd)

DTC Troubleshooting (cont'd)

7. Test the ETCS control relay (see page 22-70).

   Is the ETCS control relay OK?

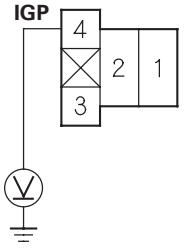
   YES—Go to step 8.

   NO—Replace the ETCS control relay, then go to step 23.

8. Turn the ignition switch to ON (II).

9. Measure the voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

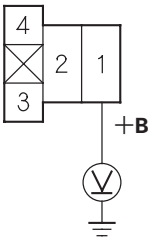
Is there battery voltage?

YES—Go to step 10.

NO—Replace the under-hood fuse/relay box (see page 22-65), then go to step 22.

10. Measure the voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 11.

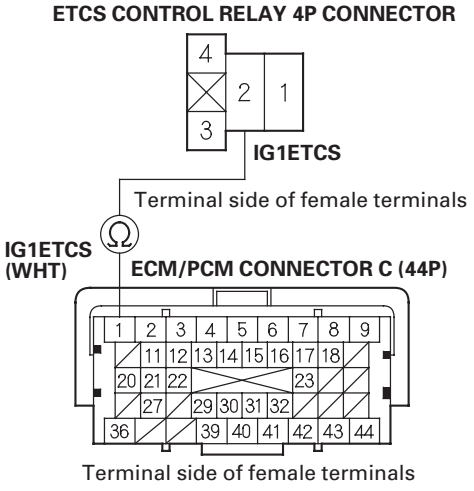
NO—Replace the under-hood fuse/relay box (see page 22-65), then go to step 22.

11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ETCS control relay 4P connector terminal No. 2 and ECM/PCM connector terminal C1.



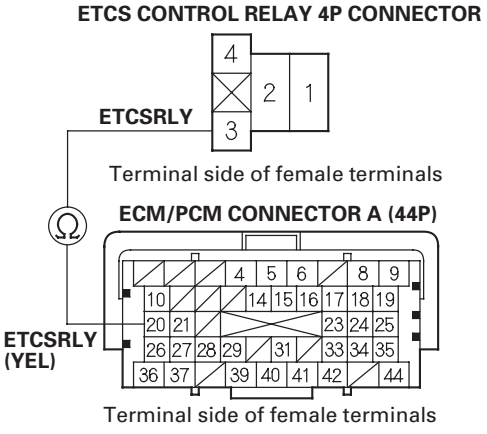
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (C1) and the ETCS control relay, then go to step 23.

15. Disconnect ECM/PCM connector A (44P).

16. Check for continuity between ETCS control relay 4P connector terminal No. 3 and ECM/PCM connector terminal A20.



Is there continuity?

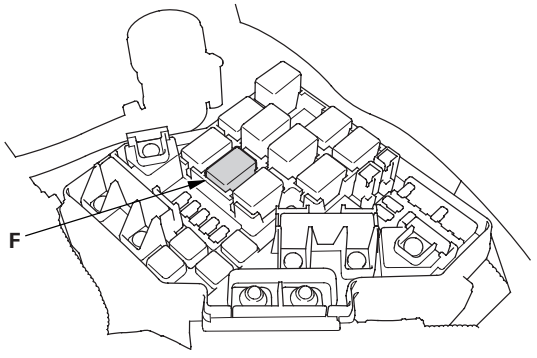
YES—Go to step 28.

NO—Repair open in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

17. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

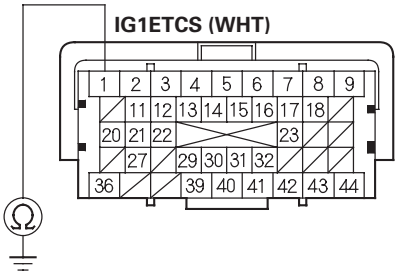


18. Jump the SCS line with the HDS.

19. Disconnect ECM/PCM connector C (44P).

20. Check for continuity between ECM/PCM connector terminal C1 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

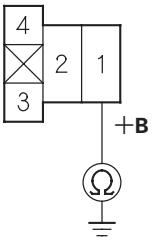
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C1) and the ETCS control relay, then go to step 23.

NO—Go to step 21.

21. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the under-hood fuse/relay box (see page 22-65), then go to step 23.

NO—Go to step 28.

22. Turn the ignition switch to LOCK (0).

23. Reconnect all connectors.

24. Turn the ignition switch to ON (II).

25. Reset the ECM/PCM with the HDS.

26. Do the ECM/PCM idle learn procedure (see page 11-310).

27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1659 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

28. Reconnect all connectors.

29. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1683: Throttle Valve Default Position Spring Performance Problem

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Turn the ignition switch to LOCK (0), and wait 10 seconds.

5. Turn the ignition switch to ON (II).

6. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

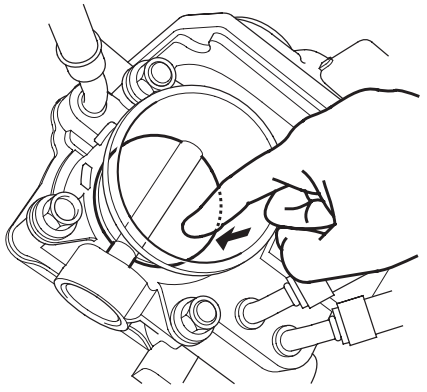
7. Turn the ignition switch to LOCK (0).

8. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

(cont'd)

DTC Troubleshooting (cont'd)

9. Push the throttle valve closed as shown.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Clean the throttle body (see page 11-344), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

    NO—Go to step 11.

11. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

12. Turn the ignition switch to ON (II).

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-310).

15. Turn the ignition switch to LOCK (0), and wait 10 seconds.

16. Turn the ignition switch to ON (II).

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1684: Throttle Valve Return Spring Performance Problem

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Turn the ignition switch to LOCK (0), and wait 10 seconds.

5. Turn the ignition switch to ON (II).

6. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1684 indicated?

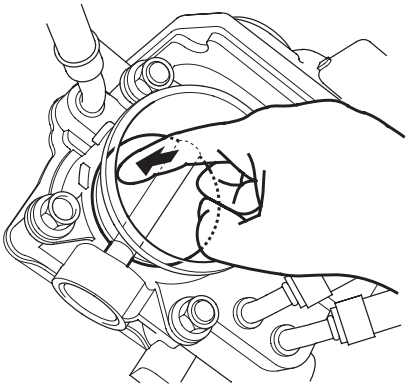
    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

7. Turn the ignition switch to LOCK (0).

8. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

9. Push the throttle valve open as shown.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Clean the throttle body (see page 11-344), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

    NO—Go to step 11.

11. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

12. Turn the ignition switch to ON (II).

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-310).

15. Turn the ignition switch to LOCK (0), and wait 10 seconds.

16. Turn the ignition switch to ON (II).

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1684 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2101: ETCS Malfunction

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Do the ETCS TEST in the INSPECTION MENU with the HDS.

4. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES—Go to step 7.

    NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - APP SENSOR

6. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-344). ■

(cont'd)

DTC Troubleshooting (cont'd)

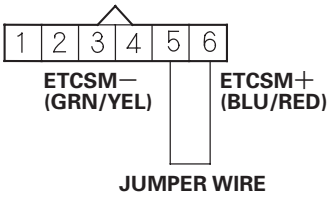
7. Turn the ignition switch to LOCK (0).
8. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
9. Turn the ignition switch to ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

    Does the throttle valve operate smoothly?

    YES—Clean the throttle body (see page 11-344), then go to step 22 and recheck. If DTC P2101 is indicated, go to step 19.

    NO—Go to step 13.
13. Turn the ignition switch to LOCK (0).
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

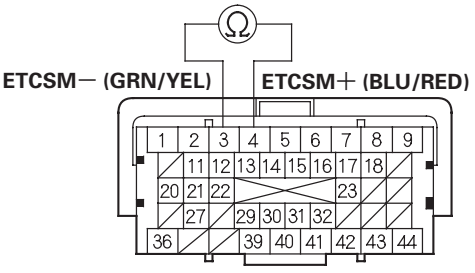
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

18. Check for continuity between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step 21.

19. Turn the ignition switch to LOCK (0).
20. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see page 11-310).

25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • APP SENSOR

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-344), and go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
    • APP SENSOR

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2101 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2118: Throttle Actuator Current Range/ Performance Problem

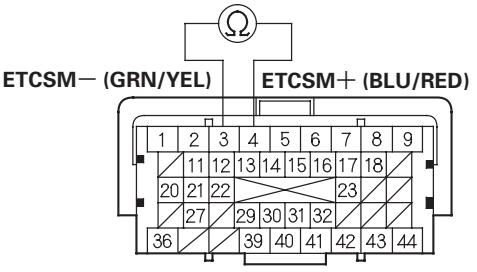
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Jump the SCS line with the HDS.

2. Disconnect ECM/PCM connector C (44P).

3. Measure the resistance between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there about 1.0 Ω or less?

YES—Go to step 4.

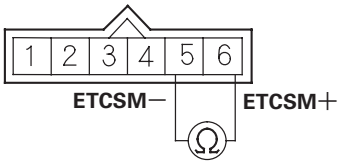
NO—Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the throttle body 6P connector.
5. At the throttle body side, measure the resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

THROTTLE BODY 6P CONNECTOR



Terminal side of male terminals

Is there about 1.0 Ω or less?

YES—Go to step 6.

NO—Repair short in the wires between the ECM/PCM C3 (ETCSM− line) and C4 (ETCSM+ line), then go to step 7.

6. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
7. Reconnect all connectors.
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Turn the ignition switch to LOCK (0).
12. Turn the ignition switch to ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
15. Reconnect all connectors.
16. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
17. Turn the ignition switch to LOCK (0).
18. Turn the ignition switch to ON (II).
19. Slowly press the accelerator pedal to the floor.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 17. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2122: APP Sensor A (TP Sensor D) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

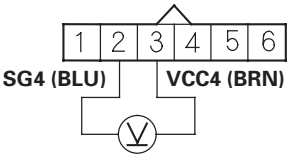
1. Turn the ignition switch to ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

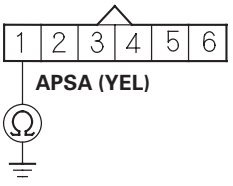
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 17.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

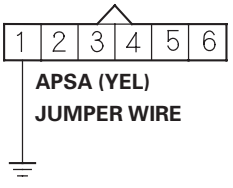
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A17) and the APP sensor, then go to step 24.

NO—Go to step 11.

11. Connect APP sensor 6P connector terminal No. 1 to body ground with a jumper wire.

APP SENSOR 6P CONNECTOR



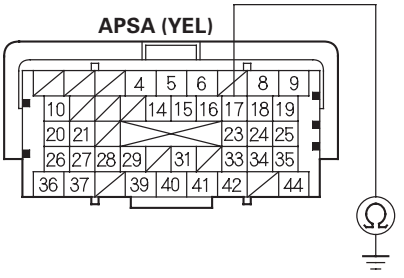
Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between ECM/PCM connector terminal A17 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

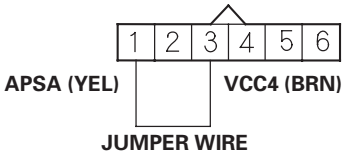
YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (A17) and the APP sensor, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).

14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch to ON (II).

16. Check APP SENSOR A in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES—Go to step 29.

NO—Go to step 22.

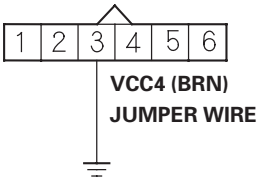
17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect ECM/PCM connector A (44P).

20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

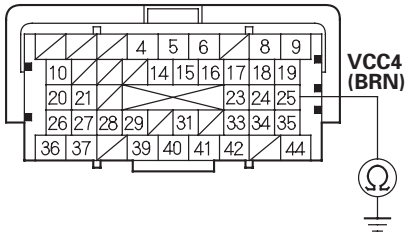
APP SENSOR 6P CONNECTOR



Wire side of female terminals

21. Check for continuity between ECM/PCM connector terminal A25 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the ECM/PCM (A25) and the APP sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).

23. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

29. Turn the ignition switch to LOCK (0).

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2123: APP Sensor A (TP Sensor D) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

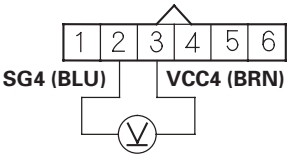
1. Turn the ignition switch to ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

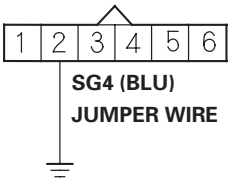
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 7.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

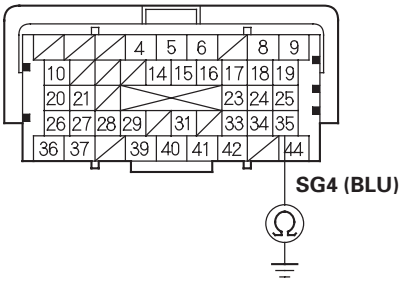
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A35 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A35) and the APP sensor, then go to step 14.

12. Turn the ignition switch to LOCK (0).

13. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

19. Reconnect all connectors.

20. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2127: APP Sensor B (TP Sensor E) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■

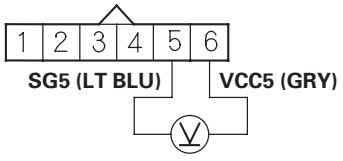
3. Turn the ignition switch to LOCK (0).

4. Disconnect the APP sensor 6P connector.

5. Turn the ignition switch to ON (II).

6. Measure the voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 7.

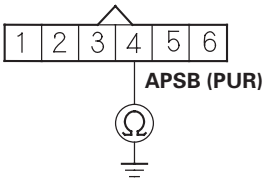
NO—Go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

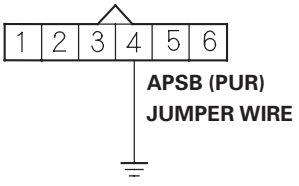
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A18) and the APP sensor, then go to step 24.

NO—Go to step 11.

11. Connect APP sensor 6P connector terminal No. 4 to body ground with a jumper wire.

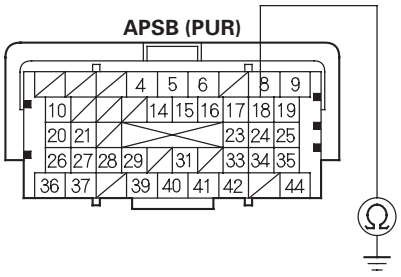
APP SENSOR 6P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A18 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

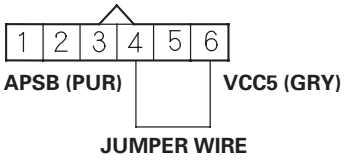
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (A18) and the APP sensor, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).
14. Connect APP sensor 6P connector terminals No. 4 and No. 6 with a jumper wire.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch to ON (II).

16. Check APP SENSOR B in the DATA LIST with the HDS.

    Is there about 0.2 V or less?

    YES—Go to step 29.

    NO—Go to step 22.

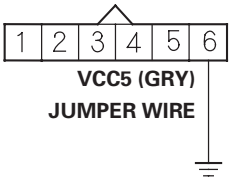
17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect ECM/PCM connector A (44P).

20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

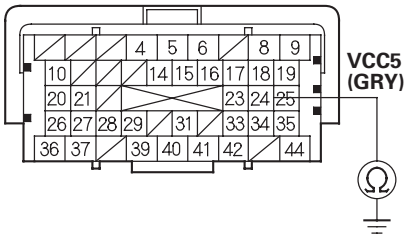
APP SENSOR 6P CONNECTOR



Wire side of female terminals

21. Check for continuity between ECM/PCM connector terminal A24 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the ECM/PCM (A24) and the APP sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).

23. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

DTC Troubleshooting (cont'd)

29. Turn the ignition switch to LOCK (0).

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2127 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2128: APP Sensor B (TP Sensor E) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■

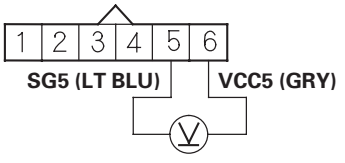
3. Turn the ignition switch to LOCK (0).

4. Disconnect the APP sensor 6P connector.

5. Turn the ignition switch to ON (II).

6. Measure the voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 12.

NO—Go to step 7.

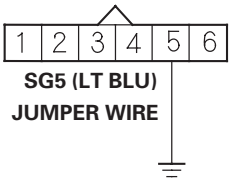
7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect ECM/PCM connector A (44P).

10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

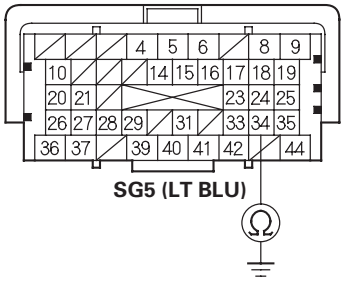
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A34 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A34) and the APP sensor, then go to step 14.

12. Turn the ignition switch to LOCK (0).

13. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2128 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

19. Reconnect all connectors.

20. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2128 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2135: TP Sensor A/B Incorrect Voltage Correlation

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2135 indicated?

   YES—Go to step 5.

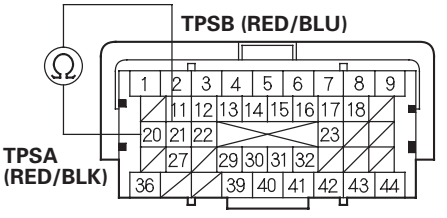
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
7. Turn the ignition switch to ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

   Does the valve temporarily move to its fully closed position?

   YES—Go to step 15.

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminals C20 and C21.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

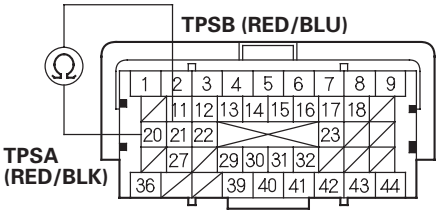
YES—Go to step 13.

NO—Go to step 22.

13. Disconnect the throttle body 6P connector.

14. Check for continuity between ECM/PCM connector terminals C20 and C21.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between ECM/PCM connector terminals C20 (TPSA line) and C21 (TPSB line), then go to step 17.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).

16. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

17. Reconnect all connectors.

18. Turn the ignition switch to ON (II).

19. Reset the ECM/PCM with the HDS.

20. Do the ECM/PCM idle learn procedure (see page 11-310).

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

22. Reconnect all connectors.

23. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2138: APP Sensor A/B (TP Sensor D/E) Incorrect Voltage Correlation

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2138 indicated?

   YES—Go to step 5.

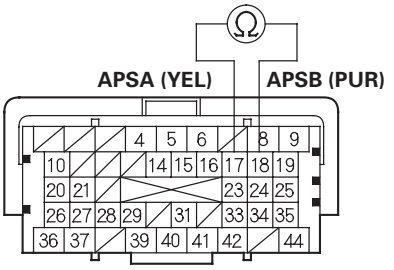
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■
5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

   Are they the same voltage?

   YES—Go to step 6.

   NO—Go to step 12.
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (44P).
9. Check for continuity between ECM/PCM connector terminals A17 and A18.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

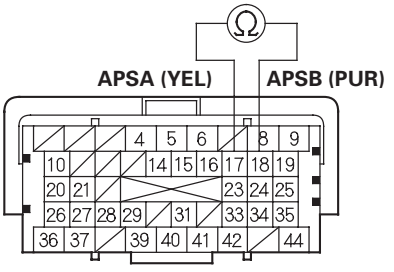
Is there continuity?

YES—Go to step 10.

NO—Go to step 22.

10. Disconnect the APP sensor 6P connector.
11. Check for continuity between ECM/PCM connector terminals A17 and A18.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between the ECM/PCM A17 (APSA line) and A18 (APSB line), then go to step 14.

NO—Go to step 13.

12. Turn the ignition switch to LOCK (0).
13. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-310).
18. Turn the ignition switch to LOCK (0).
19. Turn the ignition switch to ON (II).
20. Press the accelerator pedal to the floor.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
24. Turn the ignition switch to LOCK (0).
25. Turn the ignition switch to ON (II).
26. Press the accelerator pedal to the floor.
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2176: Throttle Actuator Control System Idle Position Not Learned

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2176 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-344). ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
8. Turn the ignition switch to ON (II).
9. Clear the DTC with the HDS.
10. Visually check the throttle valve operation while doing the ETCS TEST in the INSPECTION MENU with the HDS.

    Does the throttle valve move to its fully closed position?

    YES—Go to step 11.

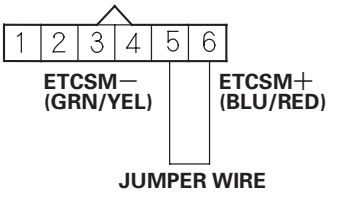
    NO—Go to step 12.
11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES—Clean the throttle body (see page 11-344), then go to step 21 and recheck.

    NO—Go to step 18.
12. Turn the ignition switch to LOCK (0).
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector C (44P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

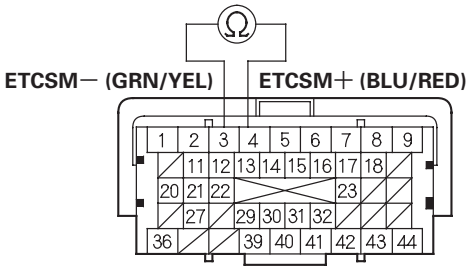
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

17. Check for continuity between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step 20.

18. Turn the ignition switch to LOCK (0).

19. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

20. Reconnect all connectors.

21. Turn the ignition switch to ON (II).

22. Reset the ECM/PCM with the HDS.

23. Do the ECM/PCM idle learn procedure (see page 11-310).

24. Turn the ignition switch to LOCK (0).

25. Turn the ignition switch to ON (II), and wait 10 seconds.

26. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-344), and go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Turn the ignition switch to LOCK (0).

30. Turn the ignition switch to ON (II), and wait 10 seconds.

31. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

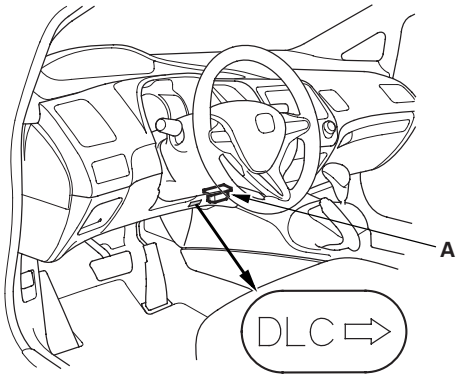
YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

APP Sensor Signal Inspection

NOTE:
- This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedure.
- Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.
- Press the accelerator pedal several times to check its operation. If it does not operate smoothly, check the pedal. If you find a problem, replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

   - If it is 0 %, the APP sensor is OK.
   - If it is not 0 %, update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see page 11-7), then go to step 5.

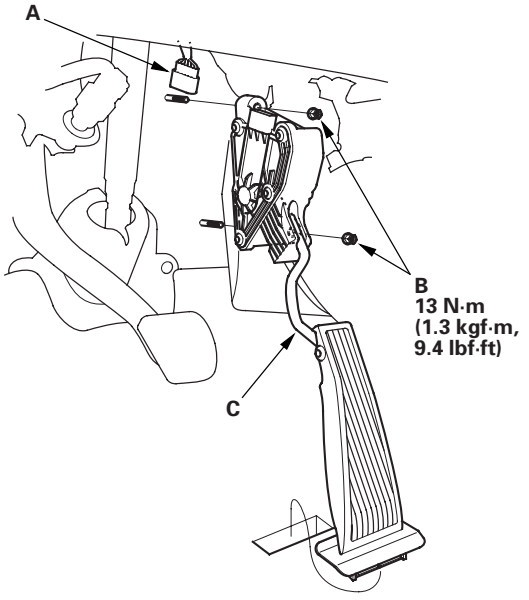
5. With the accelerator pedal not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

   - If it is 0 %, the APP sensor is OK.
   - If it is not 0 %, replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270), then go to step 1.

Accelerator Pedal Module Removal/Installation

K20Z2 engine ('06-08 models)

1. Disconnect the APP sensor 6P connector (A), then remove the nuts (B).



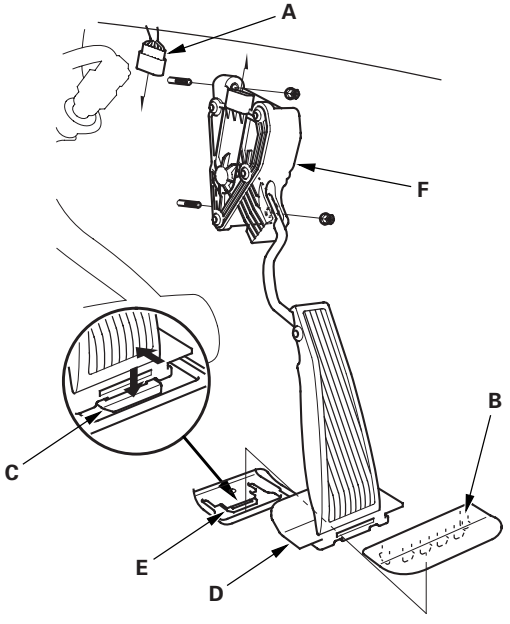
2. Remove the accelerator pedal module (C).

   NOTE: APP sensor is not available separately. Do not disassemble the accelerator pedal module.

3. Install the parts in the reverse order of removal.

K20Z2 engine ('09 model)

1. Disconnect the APP sensor connector (A).



2. Remove the clip (B).

   NOTE: Do not reuse the clip once it is removed.

3. Push the tab (C), and remove the accelerator pedal pad (D) from the pedal stop (E).

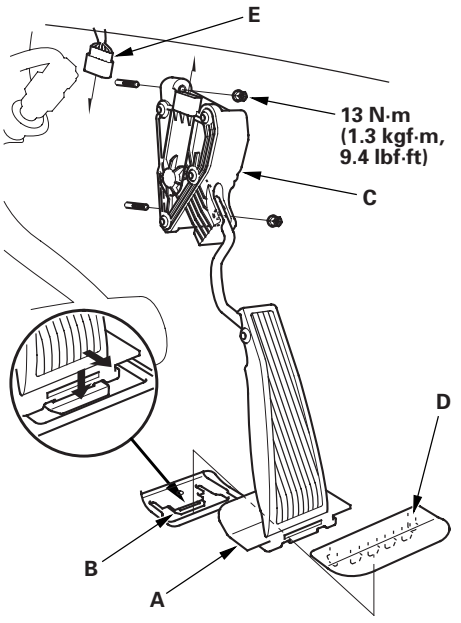
4. Remove the accelerator pedal module (F).

   NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

(cont'd)

Accelerator Pedal Module Removal/Installation (cont'd)

5. Set the accelerator pedal pad (A) to the pedal stop (B).

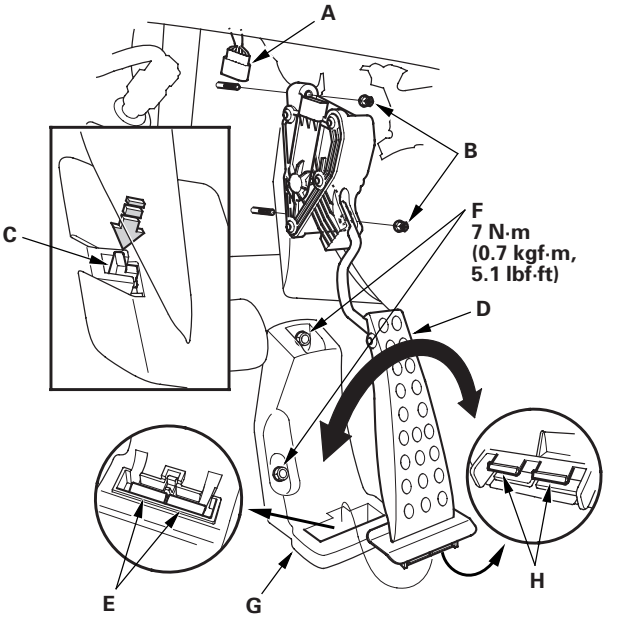


6. Install the accelerator pedal module (C) with a new clip (D).

7. Reconnect the APP sensor connector (E).

K20Z3 engine ('06-08 models)

1. Disconnect the APP sensor 6P connector (A), then remove the nuts (B).



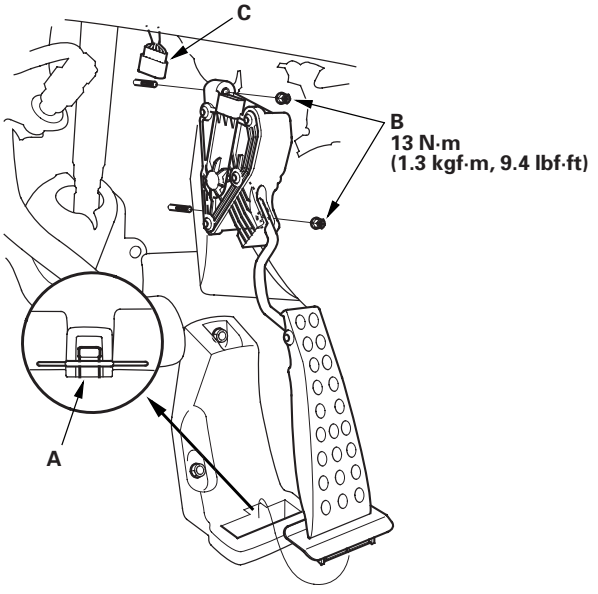
2. Push the tab (C).

3. Pry the accelerator pedal module to right and left, and remove the accelerator pedal module (D).

NOTE:
- The APP sensor is not available separately. Do not disassemble the accelerator pedal module.
- If the tab or tab receivers (E) are damaged, pull back the carpet, remove the nuts (F), and replace the pedal stop (G).
- If the tabs (H) of the accelerator pedal module are damaged, replace the accelerator pedal module.

4. Install the accelerator pedal module.

   NOTE: Make sure the tab (A) is secure.

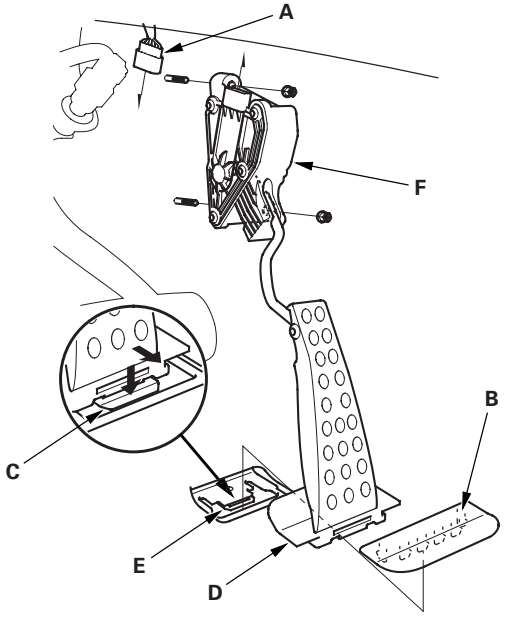


5. Install the nuts (B), then connect the APP sensor 6P connector (C).

   NOTE: Make sure that the accelerator pedal module is secure.

K20Z3 engine ('09 model)

1. Disconnect the APP sensor connector (A).



2. Remove the clip (B).

   NOTE: Do not reuse the clip once it is removed.

3. Push the tab (C), and remove the accelerator pedal pad (D) from the pedal stop (E).

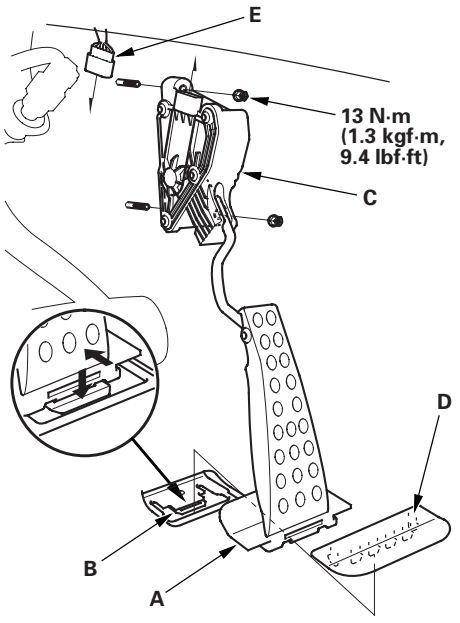
4. Remove the accelerator pedal module (F).

   NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

(cont'd)

Accelerator Pedal Module Removal/Installation (cont'd)

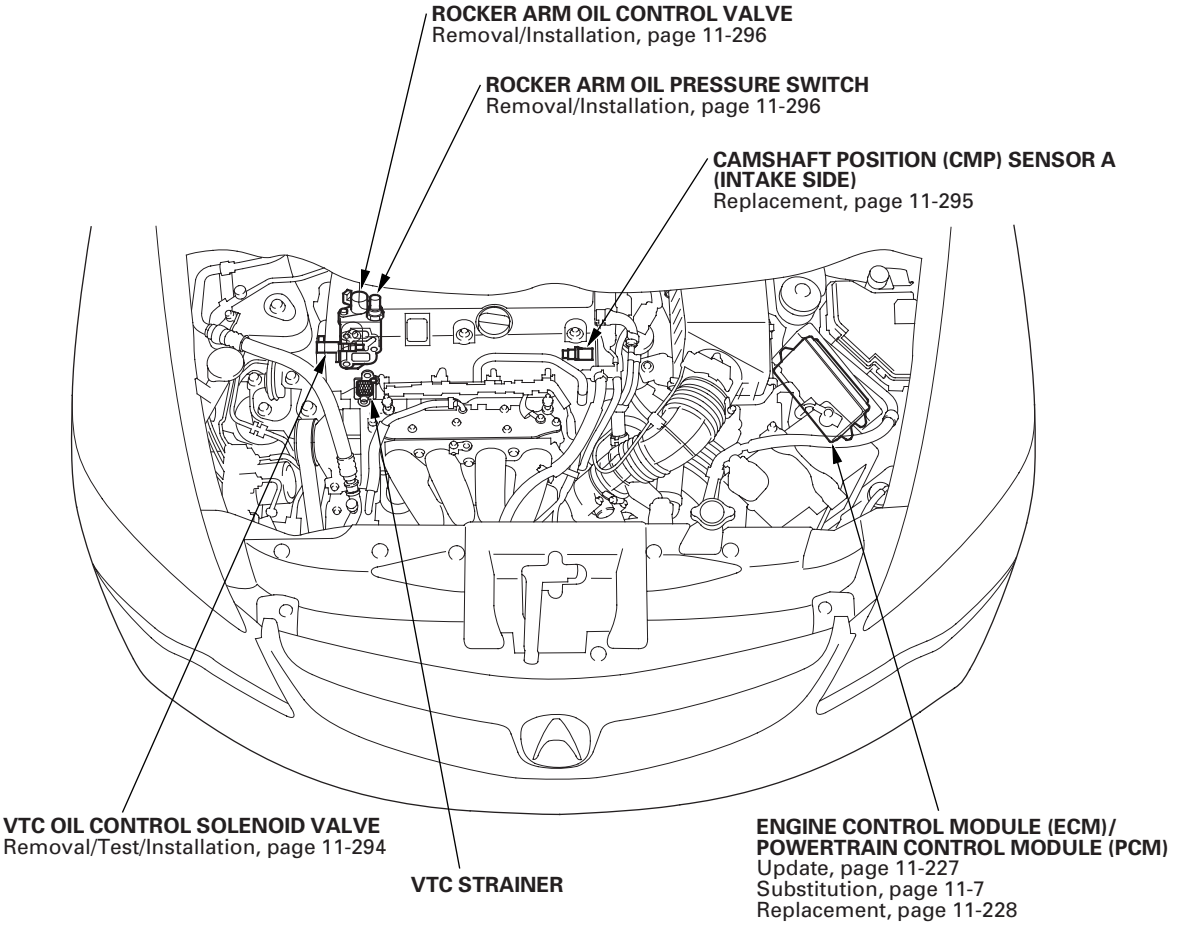
5. Set the accelerator pedal pad (A) to the pedal stop (B).



6. Install the accelerator pedal module (C) with a new clip (D).

7. Reconnect the APP sensor connector (E).

Component Location Index



* : This illustration shows K20Z2 engine

DTC Troubleshooting

DTC P0010: VTC Oil Control Solenoid Valve Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

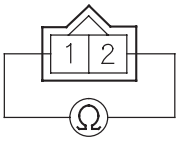
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the VTC TEST in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0010 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM. ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the VTC oil control solenoid valve 2P connector.
8. At the solenoid valve side, measure the resistance between VTC oil control solenoid valve 2P connector terminals No. 1 and No. 2.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Terminal side of male terminals

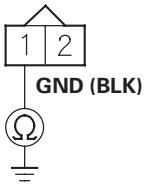
Is there 6.75—8.25 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 14.

9. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 1 and body ground.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

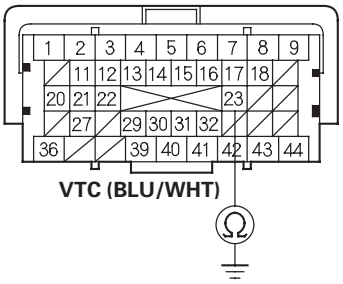
YES—Go to step 10.

NO—Repair open in the wire between the VTC oil control solenoid valve and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 15.

10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).

12. Check for continuity between ECM/PCM connector terminal C23 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

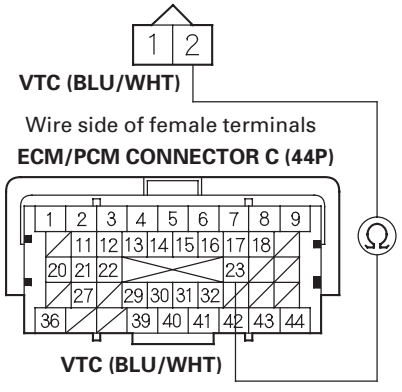
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C23) and the VTC oil control solenoid valve, then go to step 15.

NO—Go to step 13.

13. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 2 and ECM/PCM connector terminal C23.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the ECM/PCM (C23) and the VTC oil control solenoid valve, then go to step 15.

14. Replace the VTC oil control solenoid valve (see page 11-294).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Reset the ECM/PCM with the HDS.

18. Do the ECM/PCM idle learn procedure (see page 11-310).

19. Do the VTC TEST in the INSPECTION MENU with the HDS.

20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0010 indicated?

YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for DTC P0010 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

22. Reconnect all connectors.

23. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

24. Do the VTC TEST in the INSPECTION MENU with the HDS.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0010 indicated?

    YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P0010 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

DTC P0011: VTC System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine.

4. Watch the low oil pressure indicator with the engine running.

   Is the low oil pressure indicator on?

   YES—Check the engine oil level. If the oil level is OK, check the oil pressure (see page 8-10), then go to step 15.

   NO—Go to step 5.

5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 6.

   NO—Go to step 9.

6. Test-drive at a steady speed between 40—120 km/h (25—75 mph) for 10 minutes.

7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 8.

   NO—Go to step 6 and recheck.

8. Monitor the OBD STATUS for DTC P0011 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

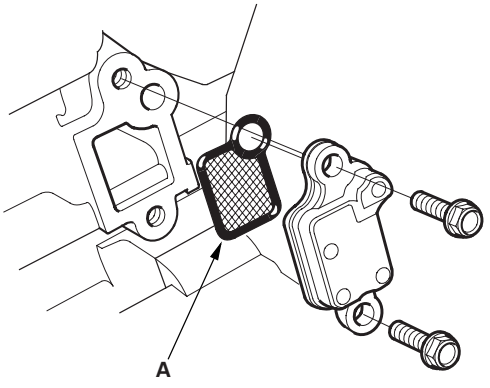
   YES—Go to step 9.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

9. Turn the ignition switch to LOCK (0).

10. Remove the auto-tensioner (see page 4-32).

11. Remove the VTC strainer (A), and check it for clogging.



   Is the strainer OK?

   YES—Go to step 12.

   NO—Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 14.

12. Test the VTC oil control solenoid valve (see page 11-294).

   Is the VTC oil control solenoid valve OK?

   YES—Go to step 13.

   NO—Replace the VTC oil control solenoid valve (see page 11-294), then go to step 14.

13. Inspect the VTC actuator (see page 6-11).

   Is the VTC actuator OK?

   YES—Go to step 14.

   NO—Replace the VTC actuator (see page 6-42), then go to step 14.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Clear the CKP pattern with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Do the CKP pattern learn procedure (see page 11-4).

19. Do the VTC TEST in the INSPECTION MENU with the HDS.

20. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0011 indicated?

   YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

   NO—Go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

21. Monitor the OBD STATUS for DTC P0011 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19 and recheck.

DTC P0340: CMP Sensor A No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

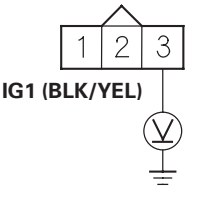
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0340 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor A and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect CMP sensor A 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between CMP sensor A 3P connector terminal No. 3 and body ground.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

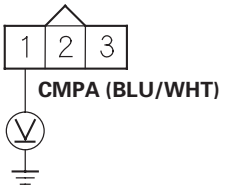
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between CMP sensor A and the No. 3 ALTERNATOR (10 A) fuse then go to step 18.

9. Measure the voltage between CMP sensor A 3P connector terminal No. 1 and body ground.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

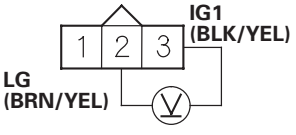
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CMP sensor A 3P connector terminals No. 2 and No. 3.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between CMP sensor A and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 18.

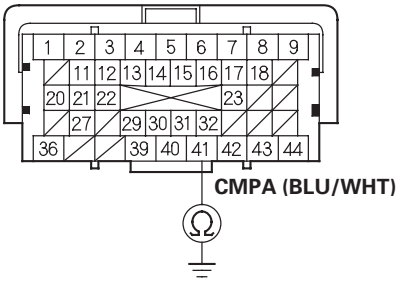
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ECM/PCM connector terminal C41 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

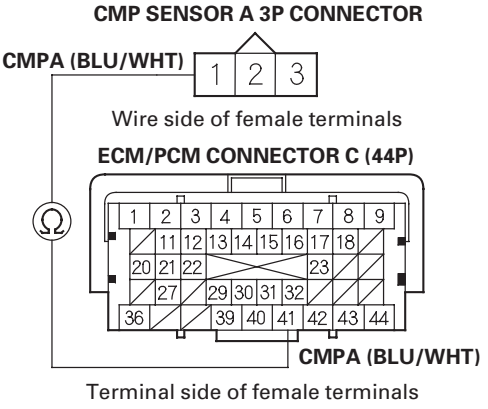
YES—Repair short in the wire between the ECM/PCM (C41) and CMP sensor A, then go to step 18.

NO—Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between CMP sensor A 3P connector terminal No. 1 and ECM/PCM connector terminal C41.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the ECM/PCM (C41) and CMP sensor A, then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace CMP sensor A (see page 11-295).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor A and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0341: CMP Sensor A and CKP Sensor Incorrect Phase Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive at a steady speed between 30—60 km/h (19—38 mph) for 10 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0341 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 6.

   NO—Go to step 9.
6. Test-drive at a steady speed between 30—60 km/h (19—38 mph) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 8.

   NO—Go to step 6 and recheck.
8. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Test the VTC oil control solenoid valve (see page 11-294).

    Is the VTC oil control solenoid valve OK?

    YES—Go to step 11.

    NO—Replace the VTC oil control solenoid valve (see page 11-294), then go to step 14.
11. Check the camshaft timing (see page 6-21).

    Is the camshaft timing OK?

    YES—Go to step 12.

    NO—Reset the camshaft timing (see page 6-21), then go to step 14.
12. Check for damage or stretch at the cam chain (see page 6-32).

    Is the cam chain damaged or stretched?

    YES—Replace the cam chain (see page 6-18), then go to step 14.

    NO—Go to step 13.
13. Inspect the VTC actuator (see page 6-11).

    Is the actuator OK?

    YES—Go to step 14.

    NO—Replace the VTC actuator (see page 6-42), then go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Clear the CKP pattern with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-310).
18. Do the CKP pattern learn procedure (see page 11-4).
19. Test-drive at a steady speed between 30—60 km/h (19—38 mph) for 10 minutes.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0341 indicated?

    YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

    NO—Go to step 21.
21. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

DTC P0344: CMP Sensor A Circuit Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP A NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
6. Check the CMP A NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor A and the ECM/PCM. ■
7. Check for poor connections or loose terminals at these locations:

    • CMP sensor A
    • ECM/PCM
    • Engine ground
    • Body ground

    Are the connections and the terminals OK?

    YES—Go to step 8.

    NO—Repair the connectors or the terminals, then go to step 11.

8. Check for damage on the CMP sensor A pulser plate (see page 6-41).

   Is the pulser plate damaged?

   YES—Replace the CMP sensor A pulser plate (see page 6-41), then go to step 11.

   NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Replace CMP sensor A (see page 11-295).

11. Turn the ignition switch to ON (II).

12. Reset the ECM/PCM with the HDS.

13. Do the ECM/PCM idle learn procedure (see page 11-310).

14. Start the engine, and let it idle for 10 seconds.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0344 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor A and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1009: VTC Advance Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0341 is stored at the same time as DTC P1009, troubleshoot DTC P1009 first, then recheck for DTC P0341.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine.

4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1009 indicated?

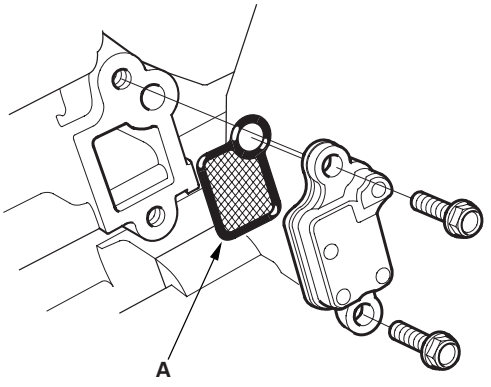
   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■

5. Turn the ignition switch to LOCK (0).

6. Remove the cam chain auto-tensioner (see page 6-29).

7. Remove the VTC strainer (A), and check it for clogging.



   Is the strainer OK?

   YES—Go to step 8.

   NO—Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

8. Test the VTC oil control solenoid valve (see page 11-294).

   Is the valve OK?

   YES—Go to step 9.

   NO—Replace the VTC oil control solenoid valve (see page 11-294), then go to step 10.

9. Inspect the VTC actuator (see page 6-11).

   Is the actuator OK?

   YES—Check the VTC system oil passages, then go to step 10.

   NO—Replace the VTC actuator (see page 6-42), then go to step 10.

10. Turn the ignition switch to ON (II).

11. Reset the ECM/PCM with the HDS.

12. Clear the CKP pattern with the HDS.

13. Do the ECM/PCM idle learn procedure (see page 11-310).

14. Do the CKP pattern learn procedure (see page 11-4).

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1009 indicated?

    YES—Check the oil passages at the VTC system, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2646: Rocker Arm Oil Pressure Switch Circuit Low Voltage

Special Tools Required
- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

   Is the engine oil level OK?

   YES—Go to step 2.

   NO—Adjust the engine oil to the proper level, then go to step 21.

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. ■

   NO—Go to step 5.

5. Turn the ignition switch to LOCK (0).

6. Disconnect the rocker arm oil pressure switch 2P connector.

7. Turn the ignition switch to ON (II).

8. Check the VTEC PRES SW in the DATA LIST with the HDS.

   Is SWITCH ON indicated?

   YES—Go to step 16.

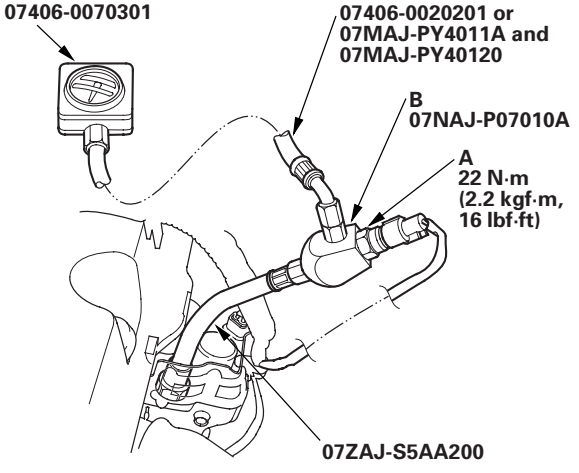
   NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Remove the cowl cover and the under cowl panel (see page 20-163).

11. Remove the rocker arm oil pressure switch (A), and attach the special tools as shown, then attach the rocker arm oil pressure switch to the oil pressure gauge attachment (B).

    NOTE: Install the parts in the reverse order of removal with a new O-ring.



12. Reconnect the rocker arm oil pressure switch 2P connector.

13. Start the engine.

14. Do the VTEC TEST in the INSPECTION MENU with the HDS.

15. Check the oil pressure.

    Does the oil pressure increase to at least 392 kPa (4.0 kgf/cm², 56.9 psi)?

    YES—Replace the rocker arm oil pressure switch (see page 11-296), then go to step 20.

    NO—Inspect the following items. If they are OK, replace the rocker arm oil control valve (see page 11-296), then go to step 19.

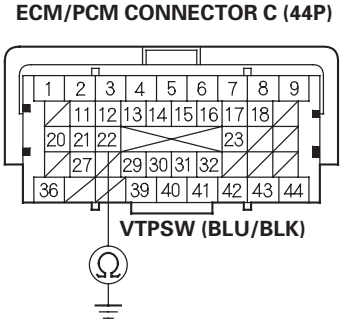
    - VTEC systems oil line
    - Operation of the rocker arm (see page 6-8).

16. Turn the ignition switch to LOCK (0).

17. Jump the SCS line with the HDS.

18. Disconnect ECM/PCM connector C (44P).

19. Check for continuity between ECM/PCM connector terminal C22 and body ground.



Terminal side of female terminals

   Is there continuity?

   YES—Repair short in the wire between the ECM/PCM (C22) and the rocker arm oil pressure switch, then go to step 20.

   NO—Go to step 27.

20. Reconnect all connectors.

21. Turn the ignition switch to ON (II).

22. Reset the ECM/PCM with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

23. Do the ECM/PCM idle learn procedure (see page 11-310).

24. Do the VTEC TEST in the INSPECTION MENU with the HDS.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2646 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control valve, and the ECM/PCM, then go step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control valve, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 24 and recheck.

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Do the VTEC TEST in the INSPECTION MENU with the HDS.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2646 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 29 and recheck.

DTC P2647: Rocker Arm Oil Pressure Switch Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

   Is the engine oil level OK?

   YES—Go to step 2.

   NO—Adjust the engine oil to the proper level, then go to step 17.

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. ■

   NO—Go to step 5.

5. Check the result of step 4.

   - VTEC Switch Failure
   - VTEC Switch Open
   - VTEC Switch SIG Line Open
   - VTEC Switch GND Line Open

   Is the test result any of above?

   YES—Go to step 6.

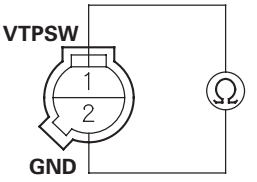
   NO—Check for poor connections or loose terminals at the rocker arm oil pressure switch. If it is OK, replace the rocker arm oil control valve (see page 11-296), then, go to step 15.

6. Turn the ignition switch to LOCK (0).

7. Disconnect the rocker arm oil pressure switch 2P connector.

8. At the rocker arm oil pressure switch side, check for continuity between rocker arm oil pressure switch 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

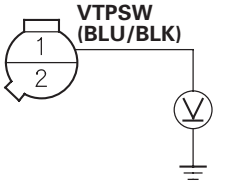
YES—Go to step 9.

NO—Replace the rocker arm oil pressure switch (see page 11-296), then go to step 16.

9. Turn the ignition switch to ON (II).

10. Measure the voltage between rocker arm oil pressure switch 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between the rocker arm oil pressure switch and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 15.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

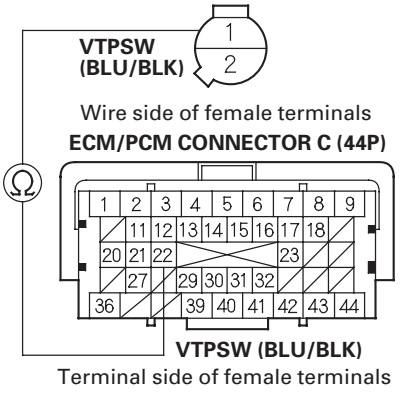
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between rocker arm oil pressure switch 2P connector terminal No. 1 and ECM/PCM connector terminal C22.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the ECM/PCM (C22) and the rocker arm oil pressure switch, then go to step 16.

15. Turn the ignition switch to LOCK (0).

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Reset the ECM/PCM with the HDS.

19. Do the ECM/PCM idle learn procedure (see page 11-310).

20. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM, then go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

22. Reconnect all connectors.

23. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

24. Start the engine, and let it idle.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2647 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2648: Rocker Arm Oil Control Solenoid Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. ■

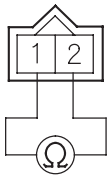
    NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Disconnect the rocker arm oil control solenoid 2P connector.

6. At the solenoid side, measure the resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of male terminals

Is there 14—30 Ω at room temperature?

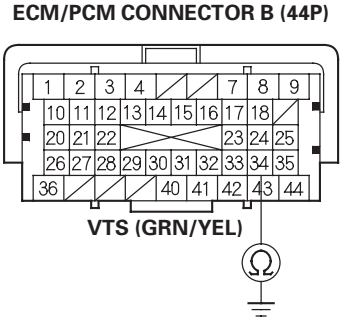
YES—Go to step 7.

NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector B (44P).
9. Check for continuity between ECM/PCM connector terminal B34 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B34) and the rocker arm oil control solenoid, then go to step 11.

NO—Go to step 18.

10. Replace the rocker arm oil control valve (see page 11-296).
11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-310).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
20. Do the VTEC TEST in the INSPECTION MENU with the HDS.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P2649: Rocker Arm Oil Control Solenoid Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

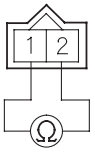
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2649 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil control solenoid 2P connector.
7. At the solenoid side, measure the resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of male terminals

Is there 14—30 Ω at room temperature?

YES—Go to step 8.

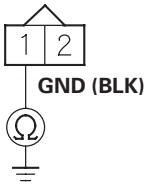
NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between rocker arm oil control solenoid 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

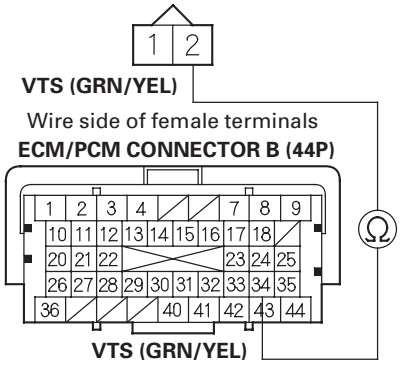
NO—Repair open in the wire between the rocker arm oil control solenoid and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 13.

9. Jump the SCS line with the HDS.

10. Disconnect ECM/PCM connector B (44P).

11. Check for continuity between ECM/PCM connector terminal B34 and rocker arm oil control solenoid 2P connector terminal No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (B34) and the rocker arm oil control solenoid, then go to step 13.

12. Replace the rocker arm oil control valve (see page 11-296).

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

19. Reconnect all connectors.

20. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

21. Start the engine, and let it idle.

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 21. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

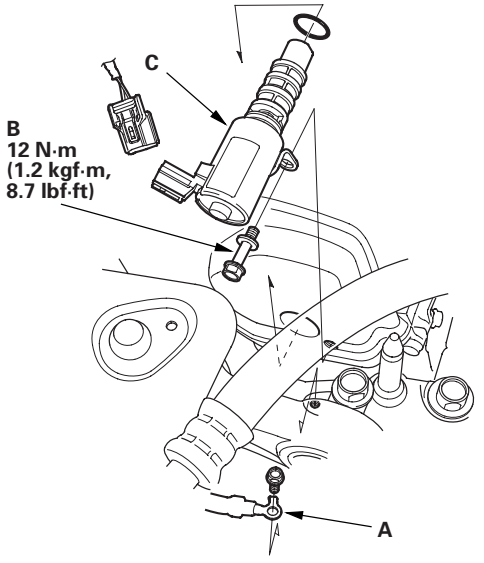
    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 21. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

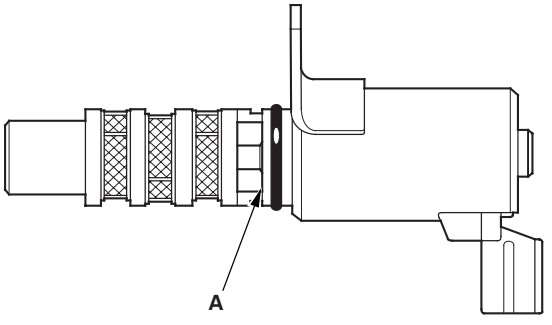
VTC Oil Control Solenoid Valve Removal/Test/Installation

1. Disconnect the VTC oil control solenoid valve 2P connector.
2. Remove the ground wire (A).



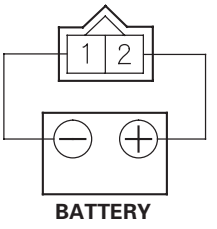
3. Remove the bolt (B) and the VTC oil control solenoid valve (C).
4. Check the VTC oil control solenoid valve strainer for clogging. If the strainer is clogged, replace the VTC oil control solenoid valve.
5. Note the amount of valve opening by observing the position of the piston shoulder (A) through the valve retard drain port. If you see the shoulder of the piston, the valve is open and must be replaced.

Closed



6. Connect the battery positive terminal to VTC oil control solenoid valve 2P connector terminal No. 2.

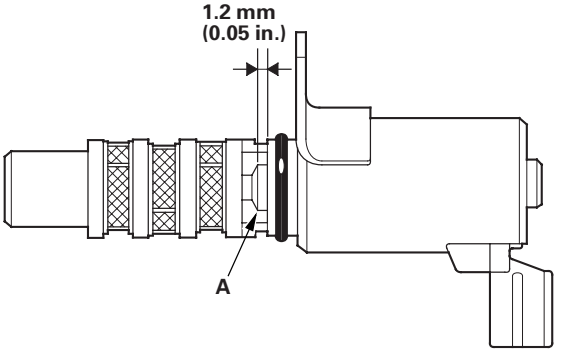
VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



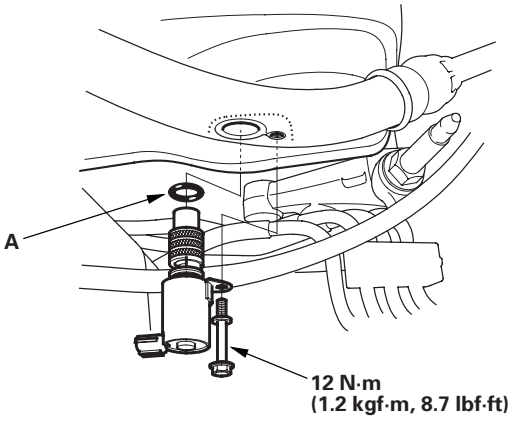
Terminal side of male terminals

7. Connect the battery negative terminal to VTC oil control solenoid valve 2P connector terminal No. 1. Appearance of inner valve (A) in the port should be at least 1.2 mm (0.05 in.). If the inner valve does not open, replace it; then go to step 8.

Open



8. Remove the VTC valve O-ring (A).



9. Coat a new O-ring with new engine oil, then install it on the valve.

10. Clean and dry the mating surface of the valve.

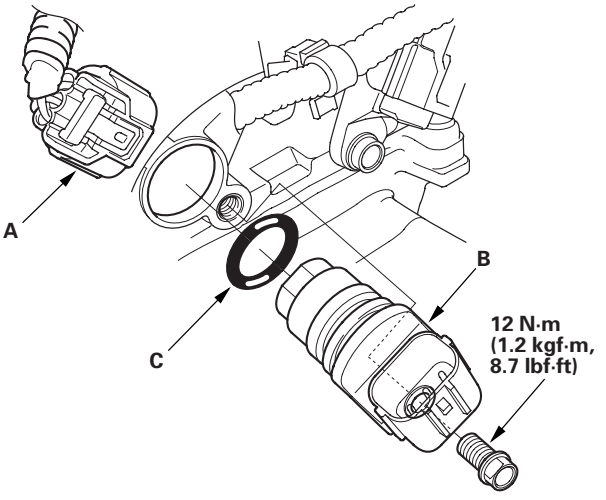
11. Install the valve.

    NOTE: Do not install the valve while wearing cloth fibrous gloves. Be careful not to contaminate the cylinder head opening.

CMP Sensor A Replacement

1. Remove the air cleaner (see page 11-345).

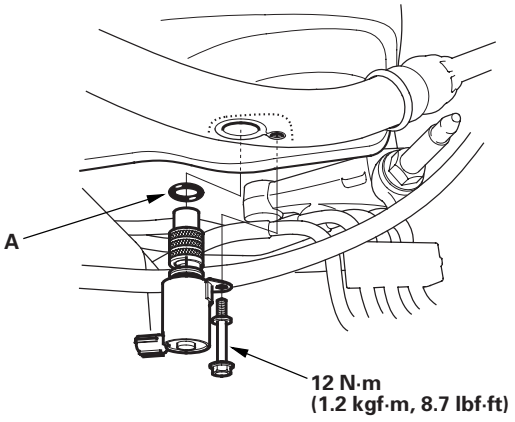
2. Disconnect CMP sensor A 3P connector (A).



3. Remove CMP sensor A (B) from the intake camshaft side of the cylinder head.

4. Install the parts in the reverse order of removal with a new O-ring (C).

8. Remove the VTC valve O-ring (A).



9. Coat a new O-ring with new engine oil, then install it on the valve.

10. Clean and dry the mating surface of the valve.

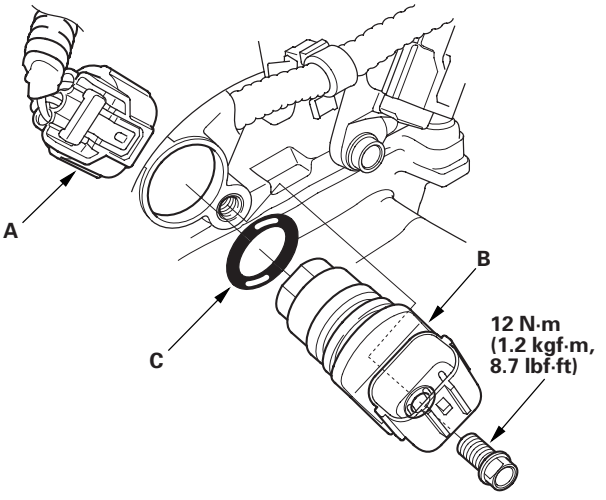
11. Install the valve.

    NOTE: Do not install the valve while wearing cloth fibrous gloves. Be careful not to contaminate the cylinder head opening.

CMP Sensor A Replacement

1. Remove the air cleaner (see page 11-345).

2. Disconnect CMP sensor A 3P connector (A).

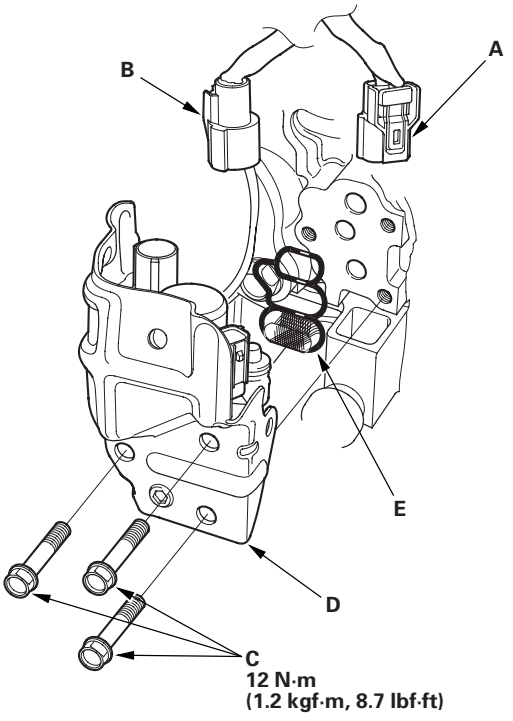


3. Remove CMP sensor A (B) from the intake camshaft side of the cylinder head.

4. Install the parts in the reverse order of removal with a new O-ring (C).

Rocker Arm Oil Control Valve Removal/Installation

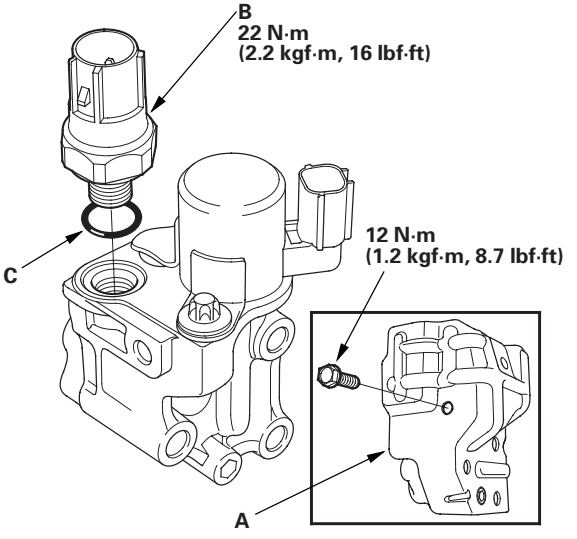
1. Remove the cowl cover and the under-cowl panel (see page 20-163).
2. Disconnect the rocker arm oil control valve 2P connector (A) and the rocker arm oil pressure switch 2P connector (B).



3. Remove the bolts (C).
4. Remove the rocker arm oil control valve (D).
5. Install the parts in the reverse order of removal with a new solenoid valve filter (E).

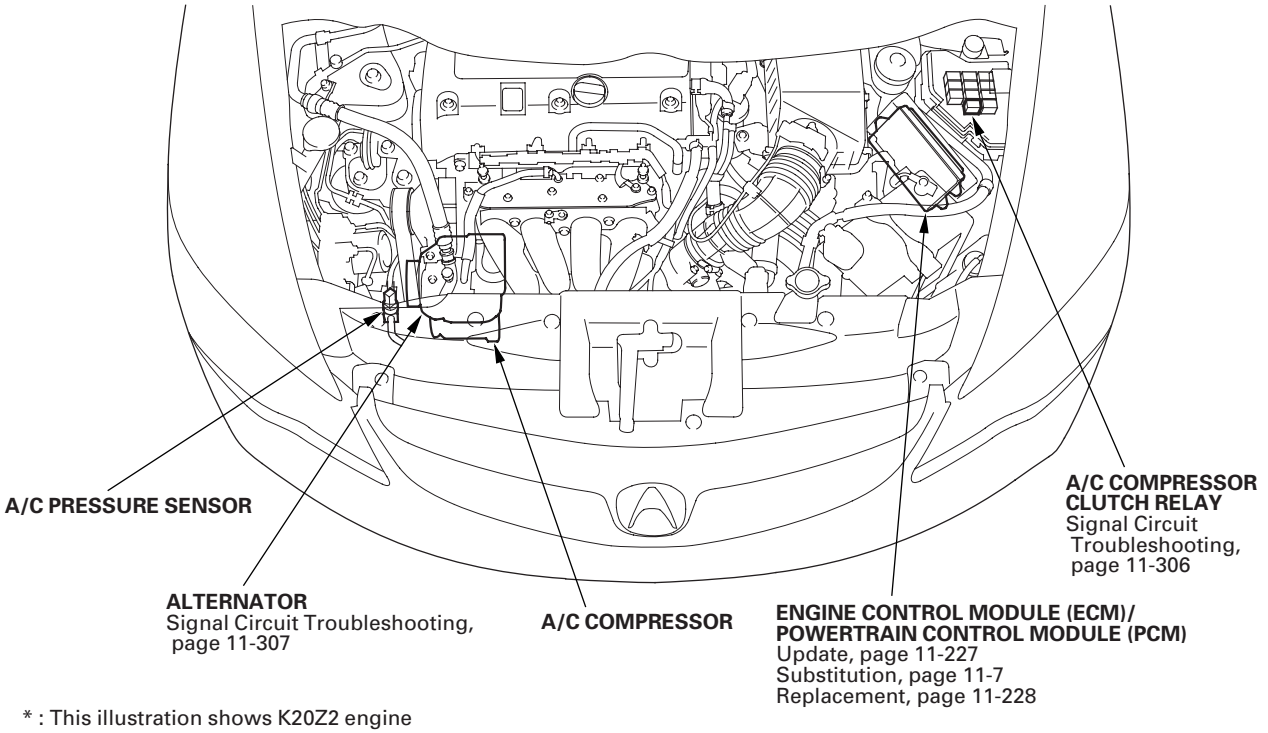
Rocker Arm Oil Pressure Switch Removal/Installation

1. Remove the rocker arm oil control valve (see page 11-296).
2. Remove the cover (A).

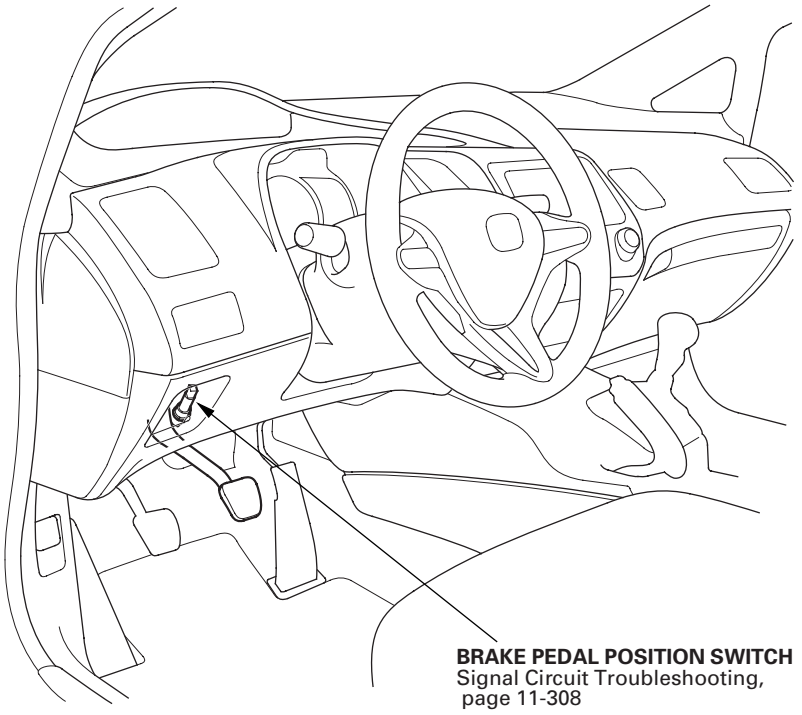


3. Remove the rocker arm oil pressure switch (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

Component Location Index



* : This illustration shows K20Z2 engine



DTC Troubleshooting

DTC P0506: Idle Control System RPM Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check under these DATA LIST conditions with the HDS:

   - ECT SENSOR 1 above 70 ℃ (156 ℉)
   - IAT SENSOR above 0 ℃ (32 ℉)
   - VSS is 0 km/h (0 mph)
   - ST FUEL TRIM between 0.69—1.47
   - FSS is CLOSED

5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

6. Remove the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
7. Check for dirt, carbon, or damage in the throttle bore.

   Is there dirt, carbon, or damage in the throttle bore?

   YES—If there is dirt or carbon, clean the throttle body (see page 11-344). Also check for damage to the air cleaner element (see page 11-346), then go to step 9. If there is damage in the throttle bore, go to step 8.

   NO—Check the A/C system or the charging system, then go to step 9.

8. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
12. Check under these DATA LIST conditions with the HDS:

    - ECT SENSOR 1 above 70 ℃ (156 ℉)
    - IAT SENSOR above 0 ℃ (32 ℉)
    - VSS is 0 km/h (0 mph)
    - ST FUEL TRIM between 0.69—1.47
    - FSS is CLOSED

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES—Go to step 19.

    NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, go to step 19. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

15. Remove the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

16. Check for dirt, carbon, or damage in the throttle bore.

    Is there dirt, carbon, or damage in the throttle bore?

    YES—If there is dirt or carbon, clean the throttle body (see page 11-344). Also check for damage to the air cleaner element (see page 11-346), then go to step 9. If there is damage in the throttle bore, go to step 8.

    NO—Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, rear window defogger and/or A/C, change the gear position, etc.).

18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—If the screen indicates FAILED, check the A/C system and/or the charging system, then go to step 1 and recheck. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 17.

19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

20. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

21. Check under these DATA LIST conditions with the HDS:

    - ECT SENSOR 1 above 70 °C (156 °F)
    - IAT SENSOR above 0 °C (32 °F)
    - VSS is 0 km/h (0 mph)
    - ST FUEL TRIM between 0.69—1.47
    - FSS is CLOSED

22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20.

DTC Troubleshooting (cont'd)

DTC P0507: Idle Control System RPM Higher Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for at least 20 seconds.
4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 5.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.
5. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster hose
   - Brake booster

   Are there any leaks?

   YES—Repair or replace the leaking part(s), then go to step 6.

   NO—Go to step 6.
6. Turn the ignition switch to ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see page 11-310).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for at least 20 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES—Go to step 12.

    NO—Go to step 11.
11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.), then go to step 9.

12. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

13. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 13. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 15.

15. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 13. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13.

DTC P0532: A/C Pressure Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle.

2. Turn the blower switch on.

3. Turn the A/C switch on.

4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the A/C pressure sensor 3P connector.

7. Turn the ignition switch to ON (II).

8. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES—Go to step 10.

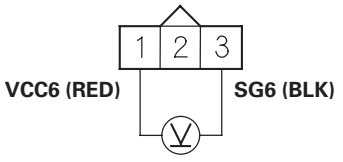
   NO—Go to step 9.

(cont'd)

DTC Troubleshooting (cont'd)

9. Measure the voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

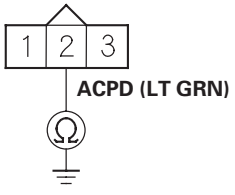
Is there about 5 V?

YES—Go to step 18.

NO—Go to step 14.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector A (44P).
13. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and body ground.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

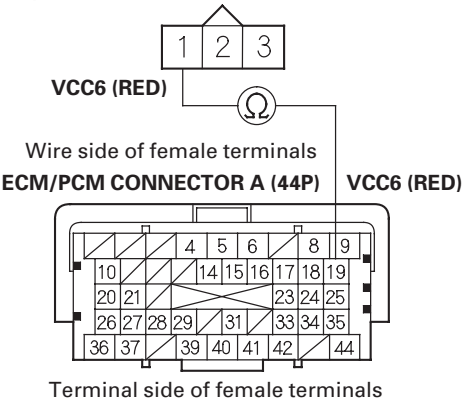
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A16) and the A/C pressure sensor, then go to step 20.

NO—Go to step 28.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 1 and ECM/PCM connector terminal A19.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 28.

NO—Repair open in the wire between the ECM/PCM (A19) and the A/C pressure sensor, then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the A/C pressure sensor (see page 21-8).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).

22. Reset the ECM/PCM with the HDS.

23. Do the ECM/PCM idle learn procedure (see page 11-310).

24. Start the engine, and let it idle.

25. Turn the blower switch on.

26. Turn the A/C switch on.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0532 indicated?

    YES—Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

28. Reconnect all connectors.

29. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

30. Start the engine, and let it idle.

31. Turn the blower switch on.

32. Turn the A/C switch on.

33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0532 indicated?

    YES—Check for poor connections or loose terminals at A/C pressure sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 30. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0533: A/C Pressure Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle.

2. Turn the blower switch on.

3. Turn the A/C switch on.

4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

    Is there about 4.75 V or more?

    YES—Go to step 5.

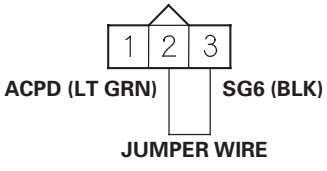
    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the A/C pressure sensor 3P connector.

7. Connect A/C pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

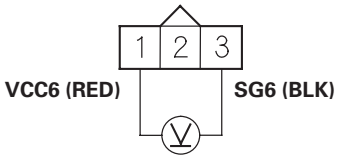
8. Turn the ignition switch to ON (II).
9. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.75 V or more?

   YES—Go to step 10.

   NO—Go to step 22.
10. Turn the ignition switch to LOCK (0).
11. Remove the jumper wire from the A/C pressure sensor 3P connector.
12. Turn the ignition switch to ON (II).
13. Measure the voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

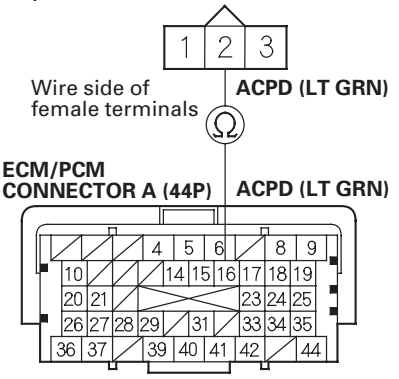
Is there about 5 V?

YES—Go to step 14.

NO—Go to step 18.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and ECM/PCM connector terminal A16.

A/C PRESSURE SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 32.

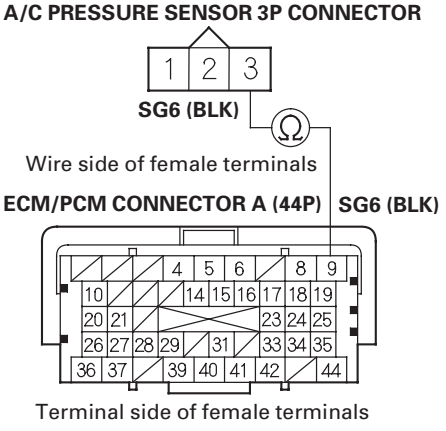
NO—Repair open in the wire between the ECM/PCM (A16) and the A/C pressure sensor, then go to step 24.

18. Turn the ignition switch to LOCK (0).

19. Jump the SCS line with the HDS.

20. Disconnect ECM/PCM connector A (44P).

21. Check for continuity between A/C pressure sensor 3P connector terminal No. 3 and ECM/PCM connector terminal A9.



Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the ECM/PCM (A9) and the A/C pressure sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).

23. Replace the A/C pressure sensor (see page 21-8).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

28. Start the engine, and let it idle.

29. Turn the blower switch on.

30. Turn the A/C switch on.

31. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0533 indicated?

    YES—Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

32. Reconnect all connectors.

33. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

34. Start the engine, and let it idle.

35. Turn the blower switch on.

36. Turn the A/C switch on.

(cont'd)

DTC Troubleshooting (cont'd)

37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0533 indicated?

    YES—Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

A/C Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 5.

   NO—Do the A/C system test (see page 21-99). ■
5. Check the A/C system.

   Does the A/C system operate?

   YES—The air conditioning system circuit is OK. ■

   NO—Go to step 6.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

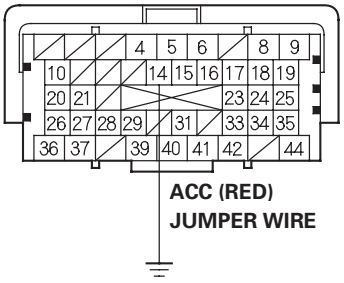
   Is there a clicking noise from the A/C compressor clutch?

   YES—Do the A/C system test (see page 21-99). ■

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (44P).
12. Turn the ignition switch to ON (II).

13. Momentarily connect ECM/PCM connector terminal A14 to body ground with a jumper wire several times.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the ECM/PCM. If the connections and the terminals are OK, check the A/C compressor clutch relay (see page 22-70), repair open in the wires between the ECM/PCM (A14), the A/C compressor clutch relay, and other A/C systems parts. ■

Alternator FR Signal Circuit Troubleshooting

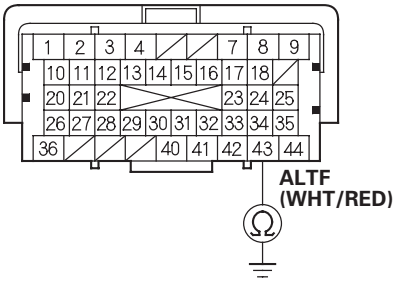
1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

   Does the percentage vary?

   YES—The alternator signal circuit is OK. ■

   NO—Go to step 4.
4. Turn the headlight switch and ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector B (44P).
8. Check for continuity between body ground and ECM/PCM connector terminal B43.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

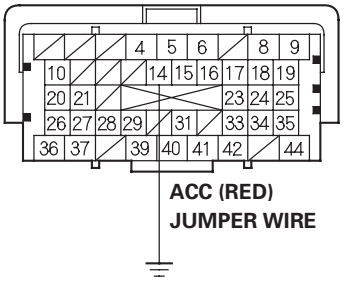
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B43) and the alternator. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

13. Momentarily connect ECM/PCM connector terminal A14 to body ground with a jumper wire several times.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the ECM/PCM. If the connections and the terminals are OK, check the A/C compressor clutch relay (see page 22-70), repair open in the wires between the ECM/PCM (A14), the A/C compressor clutch relay, and other A/C systems parts. ■

Alternator FR Signal Circuit Troubleshooting

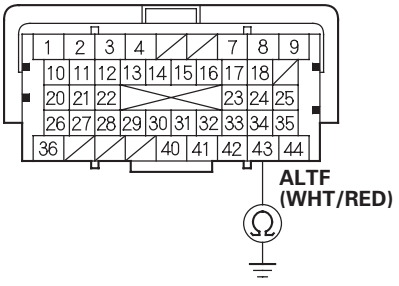
1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

   Does the percentage vary?

   YES—The alternator signal circuit is OK. ■

   NO—Go to step 4.
4. Turn the headlight switch and ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector B (44P).
8. Check for continuity between body ground and ECM/PCM connector terminal B43.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B43) and the alternator. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Turn the ignition switch to ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it indicate OFF?

   YES—Go to step 3.

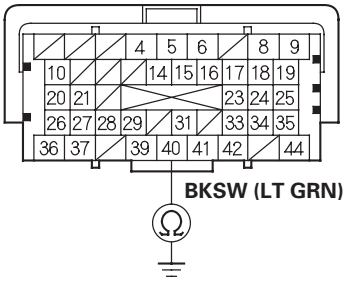
   NO—Inspect the brake pedal position switch (see page 19-6). ■
3. Press the brake pedal while checking the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it change to ON?

   YES—The brake pedal position switch signal circuit (BKSW line) is OK. ■

   NO—Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect ECM/PCM connector A (44P).
8. Check for continuity between ECM/PCM connector terminal A40 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

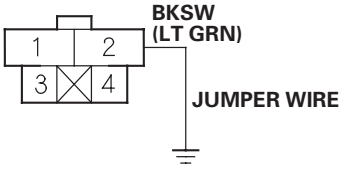
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A40) and the No. 12 HORN/STOP (15 A) fuse. Also, replace the No. 12 HORN/STOP (15 A) fuse. ■

NO—Go to step 9.

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

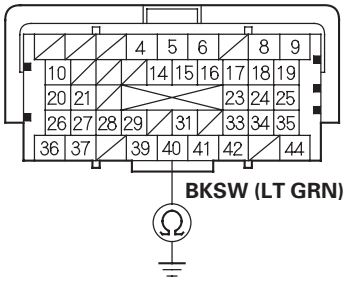
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A40 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 12 HORN/STOP (15 A) fuse. Also, inspect the brake pedal position switch (see page 19-6). ■

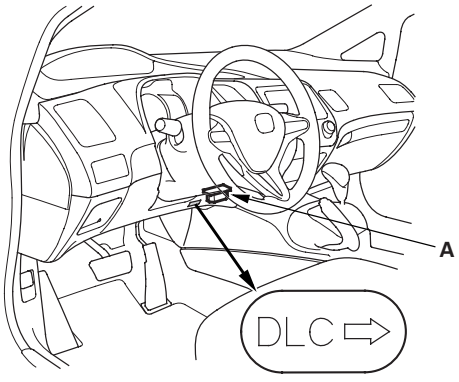
NO—Repair open in the wire between the ECM/PCM (A40) and the brake pedal position switch. ■

Idle Speed Inspection

NOTE:
- Before checking the idle speed, check these items:
  - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system
- Apply the parking brake, and make sure the headlights are off.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector (see step 5 on page 11-409).

2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

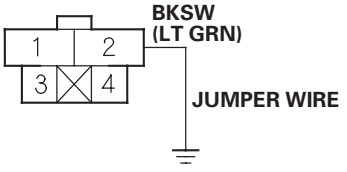


3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

(cont'd)

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

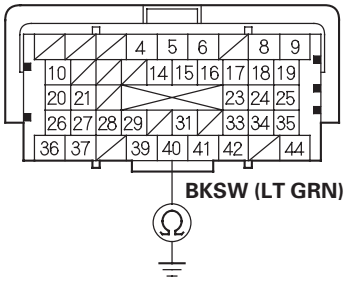
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A40 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 12 HORN/STOP (15 A) fuse. Also, inspect the brake pedal position switch (see page 19-6). ■

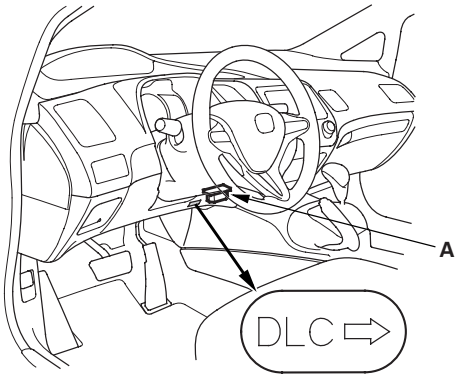
NO—Repair open in the wire between the ECM/PCM (A40) and the brake pedal position switch. ■

Idle Speed Inspection

NOTE:
- Before checking the idle speed, check these items:
  - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system
- Apply the parking brake, and make sure the headlights are off.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector (see step 5 on page 11-409).

2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

(cont'd)

Idle Speed Inspection (cont'd)

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be:
   K20Z2 engine:

M/T	**700±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

6. Let the engine idle for 1 minute with high electric load (A/C switch on, temperature set to max cool, blower fan on high, and headlights on high beam).

   Idle speed should be:
   K20Z2 engine:

M/T	**780±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

   NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see page 11-310). If the idle speed is still not within specification, go to the symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.

ECM/PCM Idle Learn Procedure

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace the ECM/PCM.
- Reset the ECM/PCM.
- Update the ECM/PCM.
- Replace or clean the throttle body.
- Disassemble the engine or the transmission.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

Procedure

1. Make sure all electrical items (A/C, audio, lights, etc.) are off.

2. Reset the ECM/PCM with the HDS.

3. Turn the ignition switch to ON (II), and wait 2 seconds.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 90 ℃ (194 ℉).

5. Let the engine idle for about 5 minutes with the throttle fully closed.

   NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

Idle Speed Inspection (cont'd)

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be:
   K20Z2 engine:

M/T	**700±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

6. Let the engine idle for 1 minute with high electric load (A/C switch on, temperature set to max cool, blower fan on high, and headlights on high beam).

   Idle speed should be:
   K20Z2 engine:

M/T	**780±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

   NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see page 11-310). If the idle speed is still not within specification, go to the symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.

ECM/PCM Idle Learn Procedure

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace the ECM/PCM.
- Reset the ECM/PCM.
- Update the ECM/PCM.
- Replace or clean the throttle body.
- Disassemble the engine or the transmission.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

Procedure

1. Make sure all electrical items (A/C, audio, lights, etc.) are off.

2. Reset the ECM/PCM with the HDS.

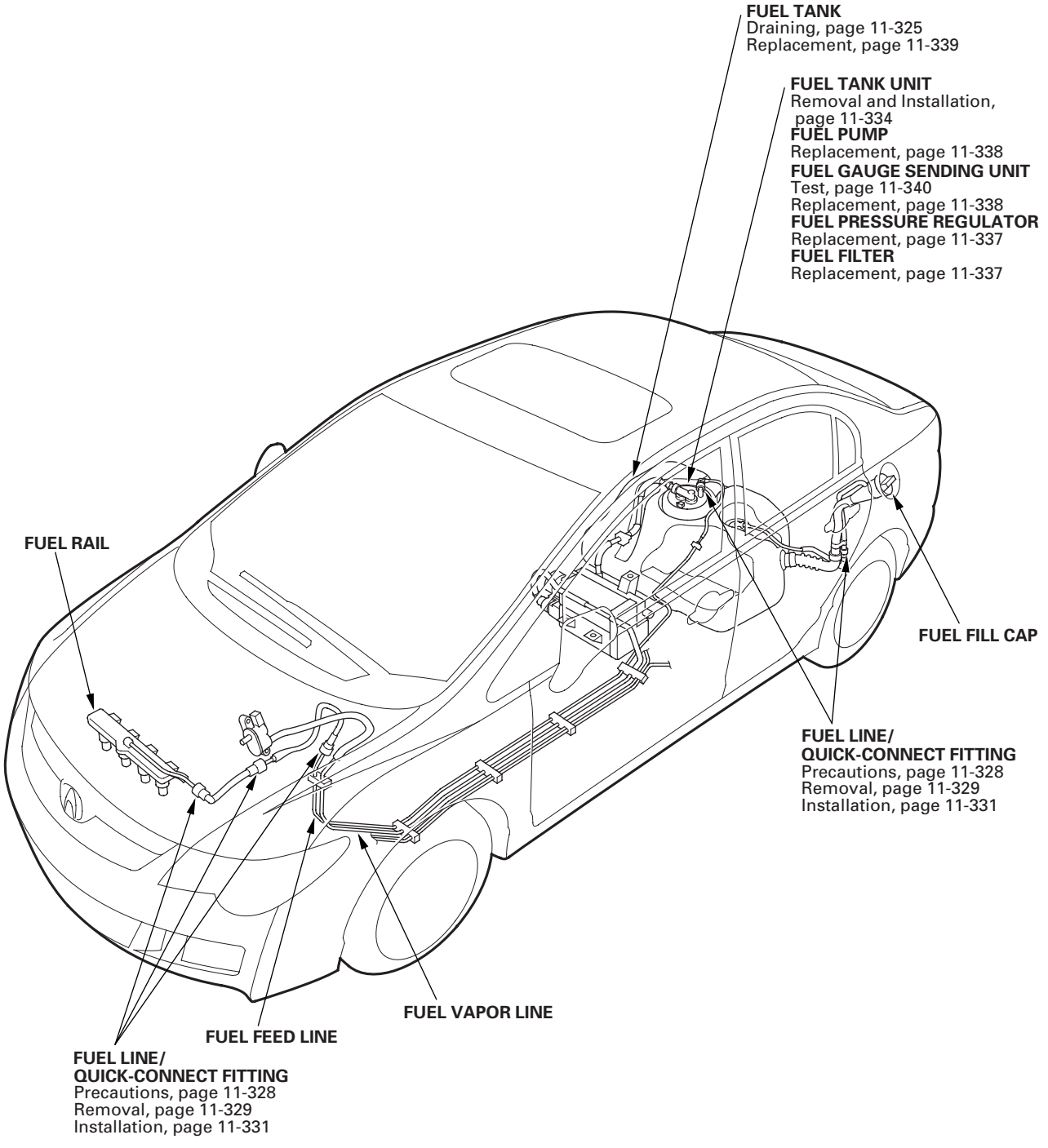
3. Turn the ignition switch to ON (II), and wait 2 seconds.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 90 ℃ (194 ℉).

5. Let the engine idle for about 5 minutes with the throttle fully closed.

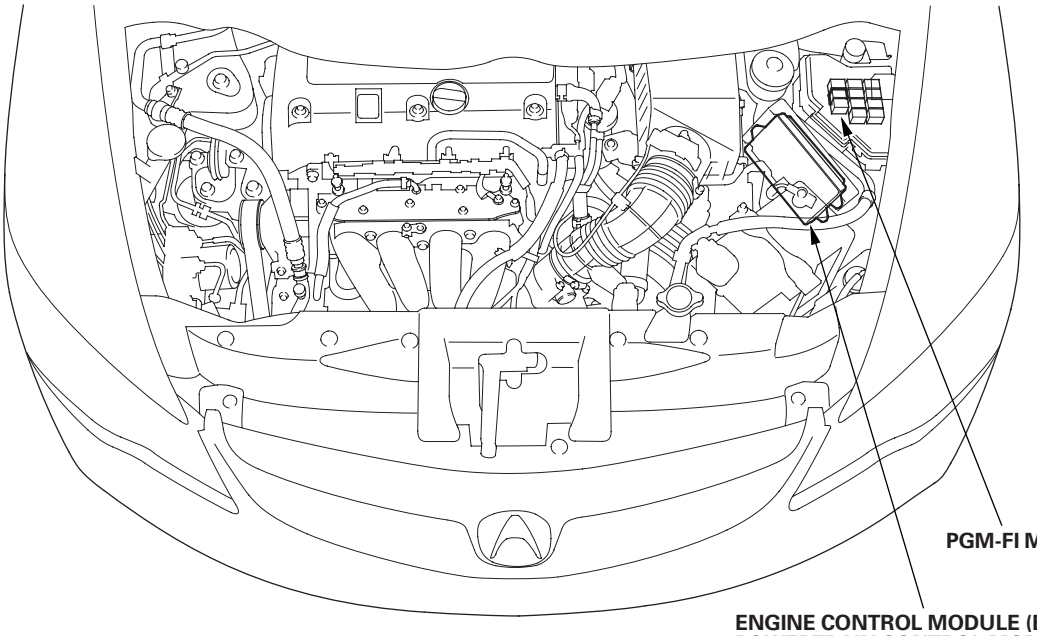
   NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

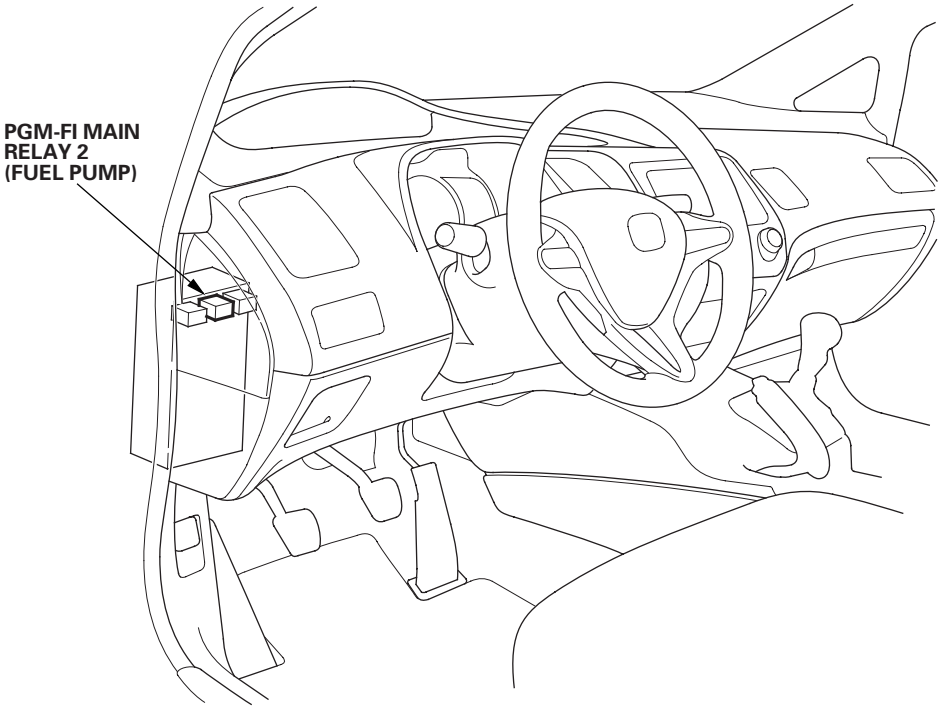
Component Location Index



(cont'd)

Component Location Index (cont'd)





DTC Troubleshooting

DTC P0461: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Because it requires 260 km (162 miles) of driving without refueling to complete this diagnosis, DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit (see page 11-340).

   Is the fuel gauge sending unit OK?

   YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module (tach). ■

   NO—Replace the fuel gauge sending unit (see page 11-338), then go to step 2.

2. Turn the ignition switch to ON (II).
3. Reset the ECM/PCM with the HDS.
4. Do the ECM/PCM idle learn procedure (see page 11-310).
5. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.

   NO—Troubleshooting is complete. ■

DTC P0462: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0462 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0).
5. Remove the rear seat cushion (see page 20-131).
6. Remove the rear floor upper cross-member and the access panel from the floor (see page 11-334).
7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch to ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES—Replace the fuel gauge sending unit (see page 11-338), then go to step 22.

    NO—Go to step 11.

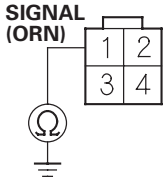
11. Turn the ignition switch to LOCK (0).
12. Remove the gauge control module (tach) (see page 22-277).
13. Disconnect the gauge control module (tach) 36P connector.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between fuel tank unit 4P connector terminal No. 1 and body ground.

FUEL TANK UNIT 4P CONNECTOR



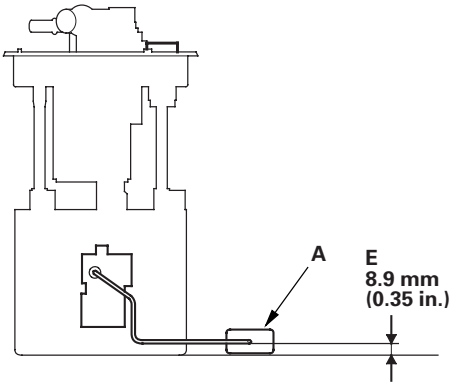
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 23.

NO—Go to step 15.

15. Reconnect the gauge control module (tach) 36P connector.
16. Remove the fuel tank unit (see page 11-334).
17. Connect the fuel tank unit 4P connector.
18. Turn the ignition switch to ON (II).
19. Clear the DTC with the HDS.
20. Set the float (A) to the E position.



21. Check the fuel gauge.

Does the gauge move to the empty position?

YES—Go to step 29.

NO—Replace the gauge control module (tach) (see page 22-277), then go to step 22.

22. Turn the ignition switch to LOCK (0).
23. Reconnect all connectors.
24. Install the parts in the reverse order of removal.
25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-310).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

29. Reconnect all connectors.

30. Install the parts in the reverse order of removal.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0463: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS, and wait 5 seconds.

3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0463 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0).

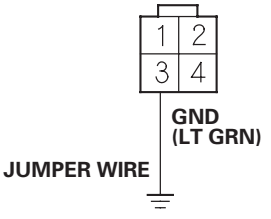
5. Remove the rear seat cushion (see page 20-131).

6. Remove the rear floor upper cross-member and the access panel from the floor (see page 11-334).

7. Disconnect the fuel tank unit 4P connector.

8. Connect fuel tank unit 4P connector terminal No. 3 to body ground with a jumper wire.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

(cont'd)

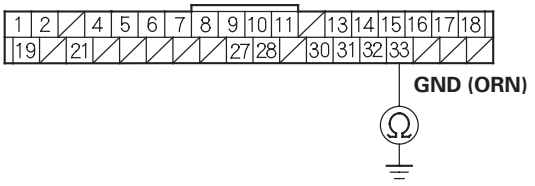
DTC Troubleshooting (cont'd)

9. Remove the gauge control module (tach) (see page 22-277).

10. Disconnect the gauge control module (tach) 36P connector.

11. Check for continuity between gauge control module (tach) 36P connector terminal No. 33 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

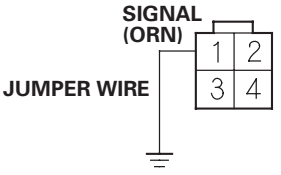
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the gauge control module (tach) (GND line) and the fuel gauge sending unit, then go to step 24.

12. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.

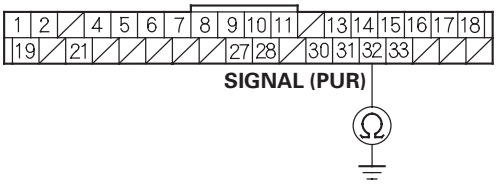
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

13. Check for continuity between gauge control module (tach) 36P connector terminal No. 32 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 24.

14. Remove the jumper wire from the fuel tank unit 4P connector.

15. Remove the fuel tank unit (see page 11-334).

16. Test the fuel gauge sending unit (see page 11-340).

    Is the fuel gauge sending unit OK?

    YES—Go to step 17.

    NO—Replace the fuel gauge sending unit (see page 11-338), then go to step 23.

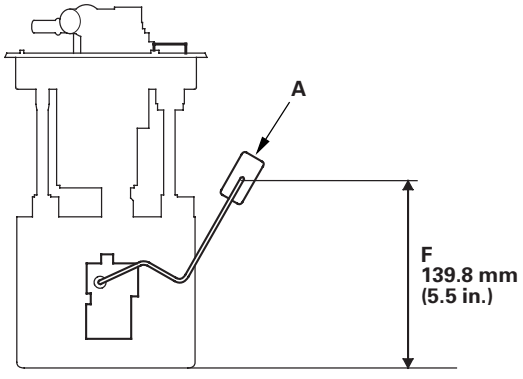
17. Connect the fuel tank unit 4P connector.

18. Reconnect the gauge control module (tach) 36P connector.

19. Turn the ignition switch to ON (II).

20. Clear the DTC with the HDS.

21. Set the float (A) to the F position.



22. Check the fuel gauge.

    Does the gauge move to the full position?

    YES—Go to step 30.

    NO—Replace the gauge control module (tach) (see page 22-277), then go to step 23.

23. Turn the ignition switch to LOCK (0).

24. Reconnect all connectors.

25. Install the parts in the reverse order of removal.

26. Turn the ignition switch to ON (II).

27. Reset the ECM/PCM with the HDS.

28. Do the ECM/PCM idle learn procedure (see page 11-310).

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

30. Reconnect all connectors.

31. Install the parts in the reverse order of removal.

32. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

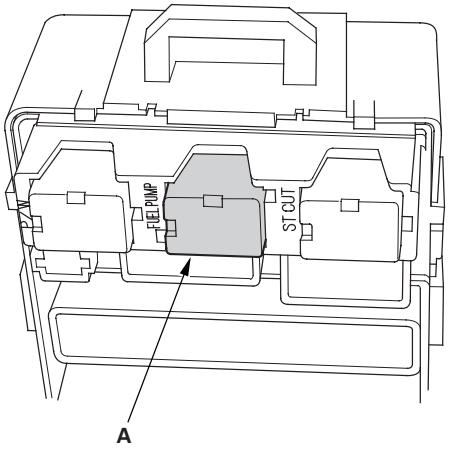
    YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Fuel Pump Circuit Troubleshooting

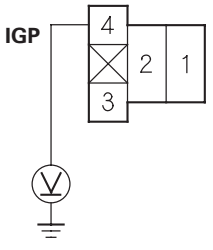
If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch to LOCK (0).
2. Remove the under-dash fuse/relay box (see page 22-66), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



3. Reinstall the under-dash fuse/relay box.
4. Turn the ignition switch to ON (II).
5. Measure the voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

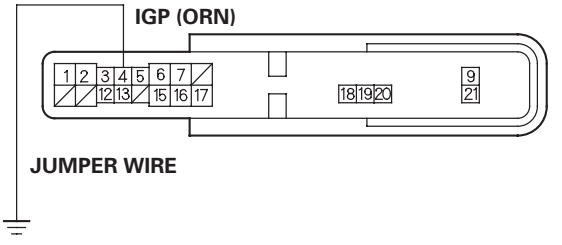
Is there battery voltage?

YES—Go to step 12.

NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Disconnect the under-hood fuse/relay box connector E (10P).
8. Disconnect the C101 connector at left side of engine compartment (see page 22-16).
9. Disconnect under-dash fuse/relay box connector G (21P).
10. Connect under-dash fuse/relay box connector G (21P) terminal No. 4 to body ground with a jumper wire.

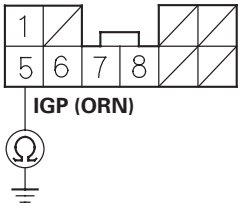
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)



Wire side of female terminals

11. Check for continuity between under-hood fuse/relay box connector E (10P) terminal No. 5 and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNECTOR E (10P)



Wire side of female terminals

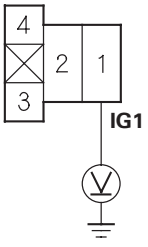
Is there continuity?

YES—
- Replace PGM-FI main relay 1. ■
- If needed, replace the under-hood fuse/relay box (see page 22-65). ■

NO—Repair open in the wire between the under-hood fuse/relay box and the under-dash fuse/relay box. ■

12. Measure the voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

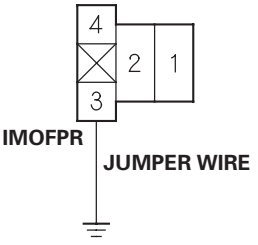
YES—Go to step 13.

NO—
- Check the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box. ■
- If needed, replace the under-dash fuse/relay box (see page 22-66). ■

13. Turn the ignition switch to LOCK (0).

14. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 to body ground with a jumper wire.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



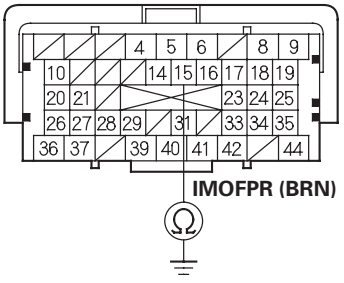
Terminal side of female terminals

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector A (44P).

17. Check for continuity between body ground and ECM/PCM connector terminal A15.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the ECM/PCM (A15). ■

18. Remove the under-dash fuse/relay box (see page 22-66), then reinstall PGM-FI main relay 2 (FUEL PUMP).

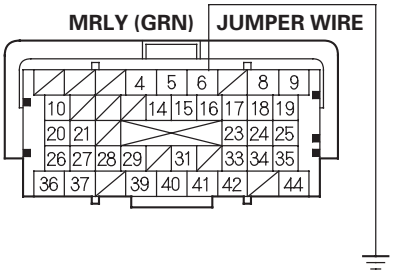
19. Reinstall the under-dash fuse/relay box (see page 22-66).

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

20. Connect ECM/PCM connector terminal A6 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (44P)

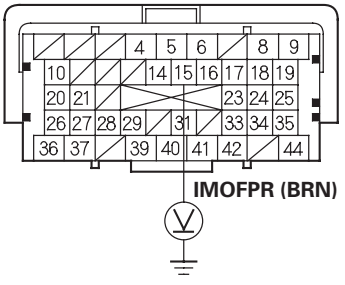


Terminal side of female terminals

21. Turn the ignition switch to ON (II).

22. Measure the voltage between ECM/PCM connector terminal A15 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 23.

NO—Replace PGM-FI main relay 2 (FUEL PUMP). ■

23. Turn the ignition switch to LOCK (0).

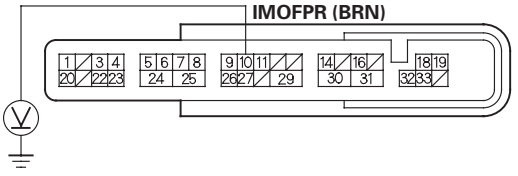
24. Reconnect ECM/PCM connector A (44P).

25. Open the SCS line with the HDS.

26. Turn the ignition switch to LOCK (0).

27. Turn the ignition switch to ON (II), and measure the voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground within 2 seconds.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



Wire side of female terminals

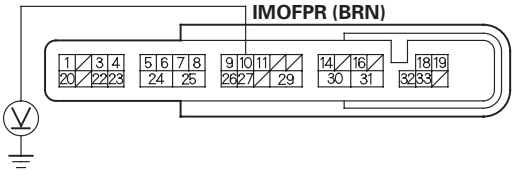
Is there battery voltage?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Go to step 28.

28. Turn the ignition switch to ON (II), and measure the voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground after 2 seconds.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 29.

NO—If needed replace the under-dash fuse/relay box (see page 22-66), then go to step 29.

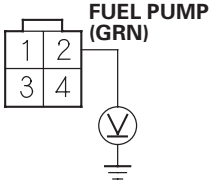
29. Turn the ignition switch to LOCK (0).

30. Remove the rear seat cushion (see page 20-131).

31. Remove the rear floor upper cross-member, then remove the access panel from the floor (see page 11-334).

32. Turn the ignition switch to ON (II), and measure the voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 37.

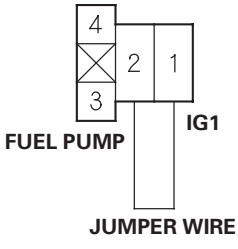
NO—Go to step 33.

33. Turn the ignition switch to LOCK (0).

34. Remove PGM-FI main relay 2 (FUEL PUMP).

35. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

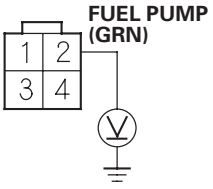
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

36. Turn the ignition switch to ON (II), and measure the voltage between fuel tank unit 4P connector terminal No. 2 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

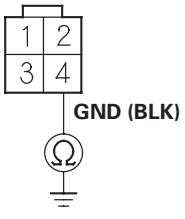
YES—Replace PGM-FI main relay 2 (FUEL PUMP). ■

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the fuel tank unit 4P connector. ■

37. Turn the ignition switch to LOCK (0).

38. Check for continuity between fuel tank unit 4P connector terminal No. 4 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the fuel pump (see page 11-338). ■

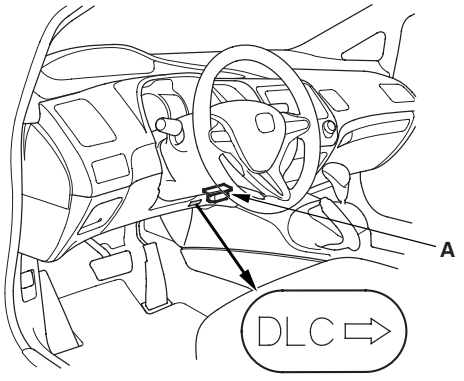
NO—Repair open in the wire between the fuel tank unit 4P connector and G601 (see page 22-34). ■

Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by disabling the fuel pump and then disconnecting the fuel tube/quick connect fitting in the engine compartment.

With the HDS

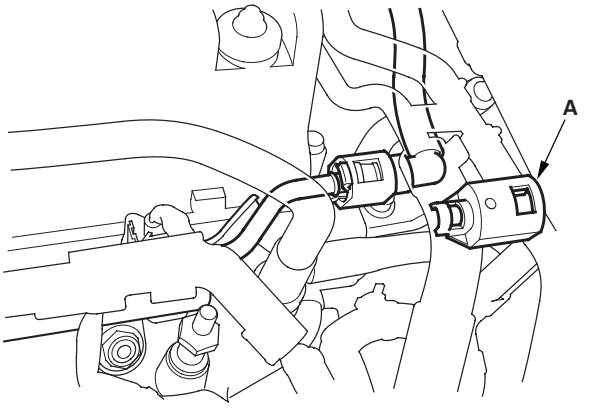
1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



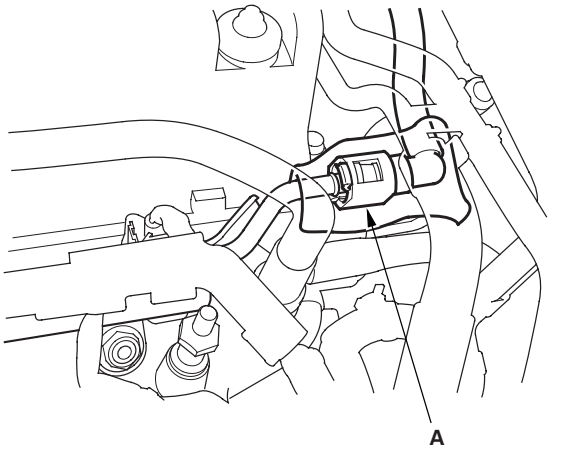
3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
5. Turn the ignition switch to LOCK (0).
6. Remove the fuel fill cap to relieve the pressure in the fuel tank.
7. Turn the ignition switch to ON (II).
8. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.

   NOTE:
   - Do not allow the engine to idle above 1,000 rpm or the ECM/PCM will continue to operate the fuel pump.
   - A DTC or a Temporary DTC may be set during this procedure. Check for DTCs, and clear them as needed (see page 11-4).

9. Turn the ignition switch to LOCK (0).
10. Do the battery terminal disconnection procedure (see page 22-68).
11. Remove the quick-connect fitting cover (A).

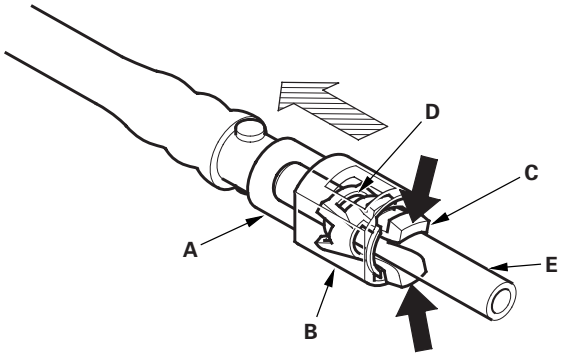


12. Check the fuel quick-connect fitting for dirt, and clean it if needed.
13. Place a rag or shop towel over the quick-connect fitting (A).



14. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

    NOTE:
    - Be careful not to damage the line (E) or other parts.
    - Do not use tools.
    - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
    - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.

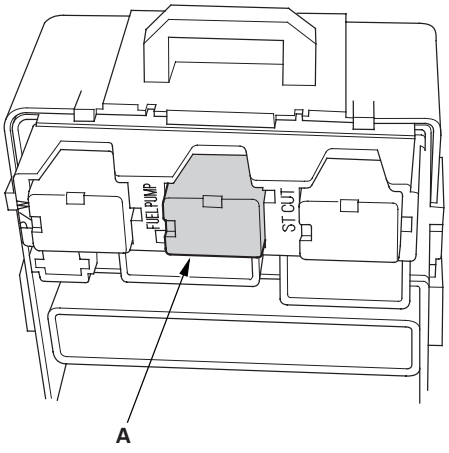


15. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-330).

16. Do the battery terminal reconnection procedure (see page 22-68).

Without the HDS

1. Remove the under-dash fuse/relay box (see page 22-66), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



2. Reinstall the under-dash fuse/relay box.

3. Start the engine, and let it idle until it stalls.

    NOTE: If any DTCs are stored, clear and ignore them.

4. Turn the ignition switch to LOCK (0).

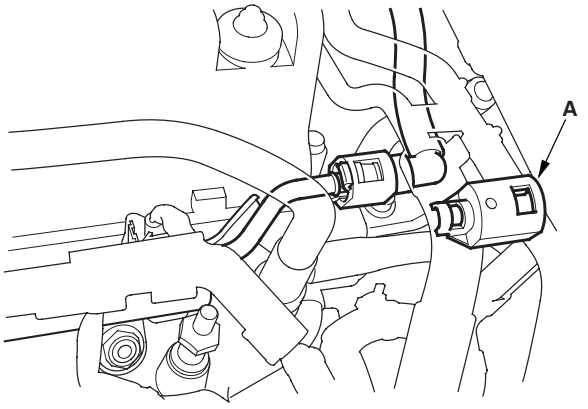
5. Remove the fuel fill cap.

6. Do the battery terminal disconnection procedure (see page 22-68).

(cont'd)

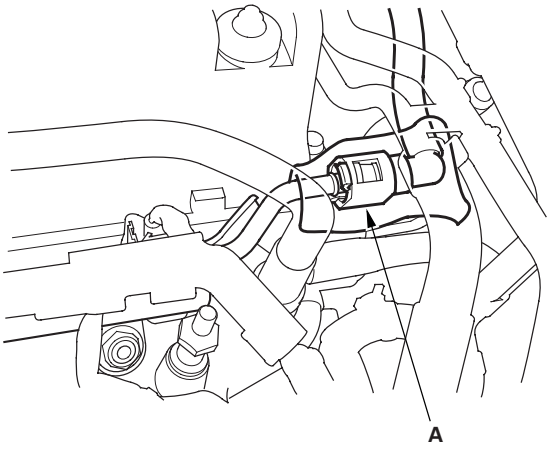
Fuel Pressure Relieving (cont'd)

7. Remove the quick-connect fitting cover (A).



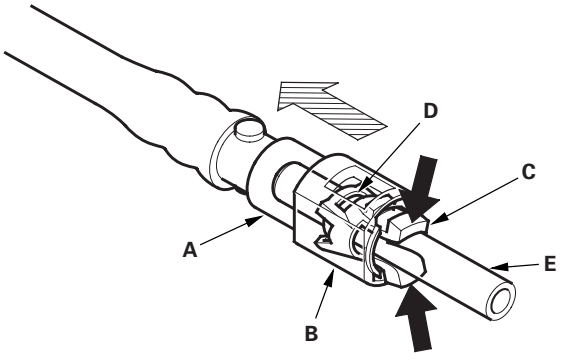
8. Check the fuel quick-connect fitting for dirt, and clean it if needed.

9. Place a rag or shop towel over the quick-connect fitting (A).



10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

    NOTE:
    - Be careful not to damage the line (E) or other parts.
    - Do not use tools.
    - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
    - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-330).

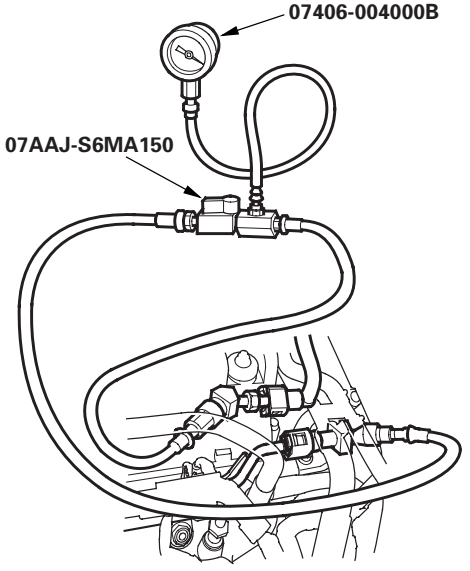
12. Do the battery terminal reconnection procedure (see page 22-68).

Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-322).

2. Disconnect the quick-connect fitting. Attach the fuel pressure gauge set and the fuel pressure gauge.



3. Start the engine, and let it idle.

   - If the engine starts, go to step 5.
   - If the engine does not start, go to step 4.

4. Check to see if the fuel pump is running: Listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.

   - If the pump runs, go to step 5.
   - If the pump does not run, do the fuel pump circuit troubleshooting (see page 11-318).

5. Read the fuel pressure gauge. The pressure should be 330—380 kPa (3.4—3.9 kgf/cm^2, 48—55 psi).

   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-337) and the fuel filter (see page 11-337), then recheck the fuel pressure.

Fuel Tank Draining

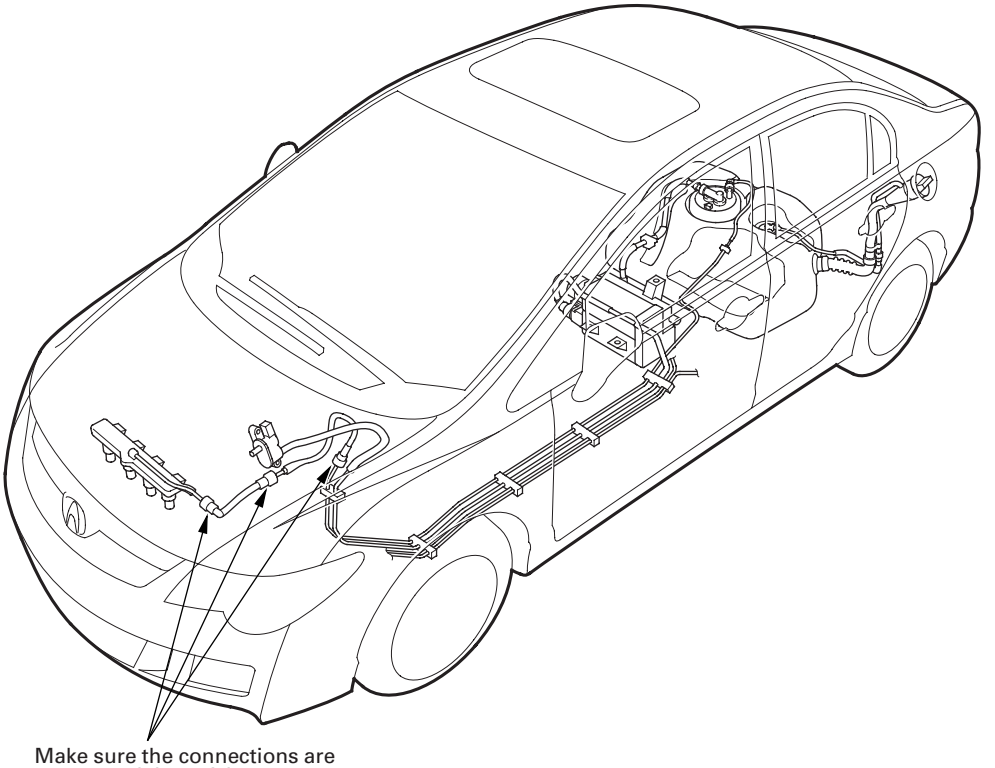
1. Remove the fuel tank unit (see page 11-334).

2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.

3. Reinstall the fuel tank unit (see page 11-335).

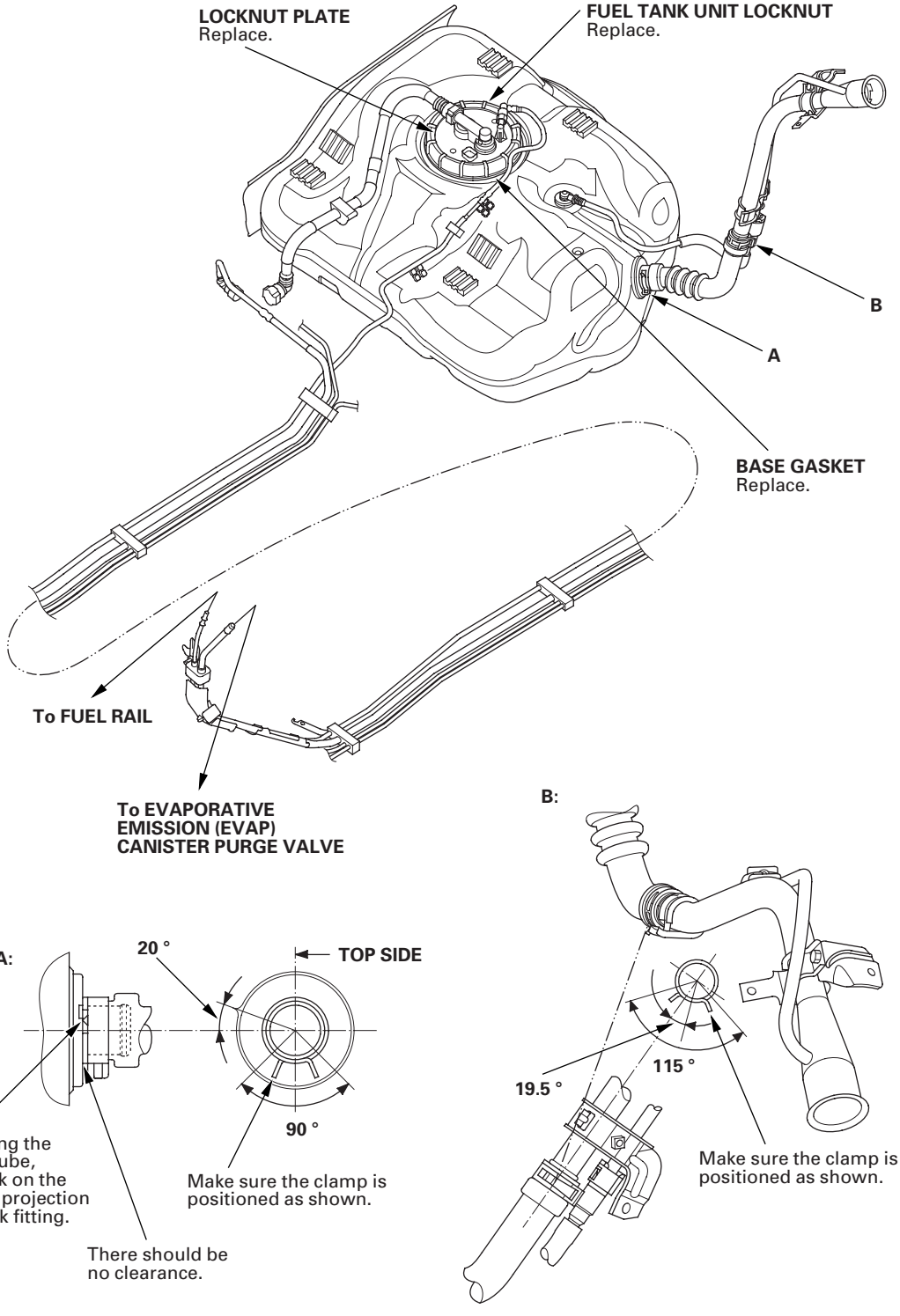
Fuel Line Inspection

Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.



Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.

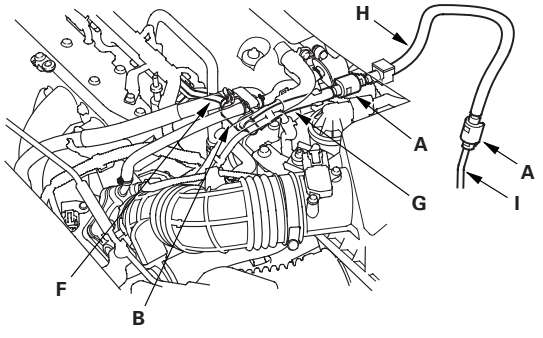
Check all clamps, and make sure they are properly positioned.



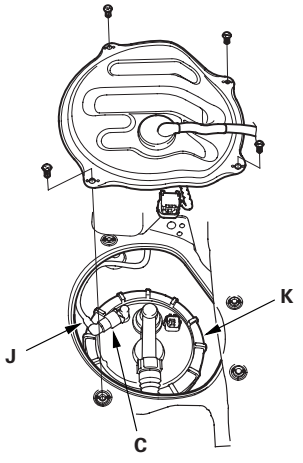
Fuel Line/Quick-Connect Fitting Precautions

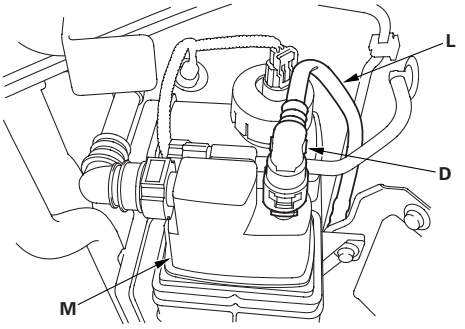
The fuel line/quick-connect fittings (A), (B), (C), (D), and (E) connect the fuel rail (F) to fuel feed hose A (G), fuel feed hose A to fuel feed hose B (H), fuel feed hose B to the fuel line (I), the fuel line (J) to the fuel tank unit (K), the fuel vapor line (L) to the EVAP canister (M) and the fuel tank vapor recirculation tube (N) to the fuel fill pipe (O). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, you need to disconnect or connect the quick-connect fittings.
Pay attention to the following:

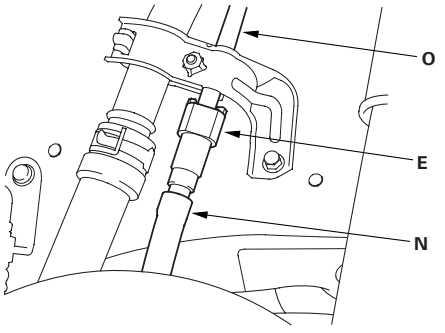
- The fuel feed hoses, the fuel line, and the quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, the fuel line, and the quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they come in contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, the fuel line, and the quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.



* : This illustration shows K20Z2 engine.







A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- replacing the fuel tank.
- replacing the fuel fill pipe.
- it has been removed from the line.
- it is damaged.

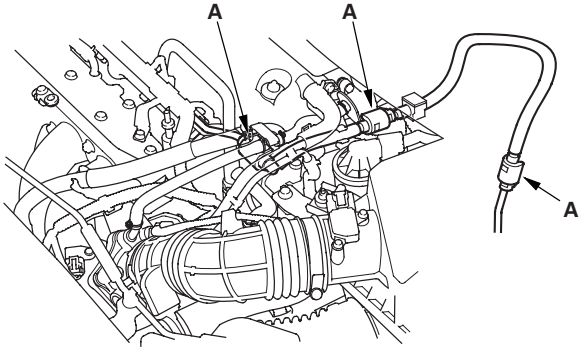
Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Green	6.3 mm (0.2 in.)
B	Tokai	Blue green	8 mm (0.3 in.)
C	Sanoh	White	9.5 mm (0.4 in.)
D	Sanoh	White	12 mm (0.5 in.)
E	Tokai	Natural	12 mm (0.5 in.)

Fuel Line/Quick-Connect Fitting Removal

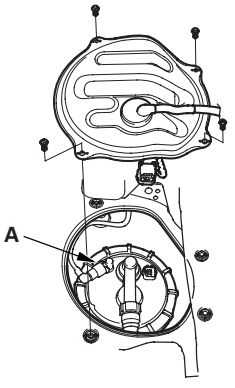
NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-328).

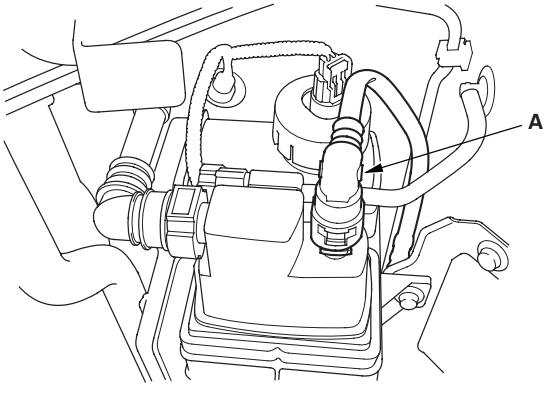
1. Relieve the fuel pressure (see page 11-322).

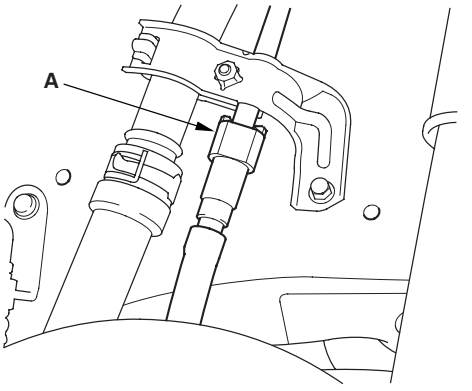
2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.



* : This illustration shows K20Z2 engine.

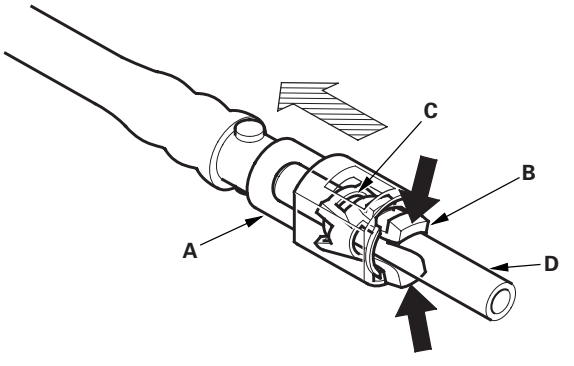






3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

NOTE:
- Be careful not to damage the line (D) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.

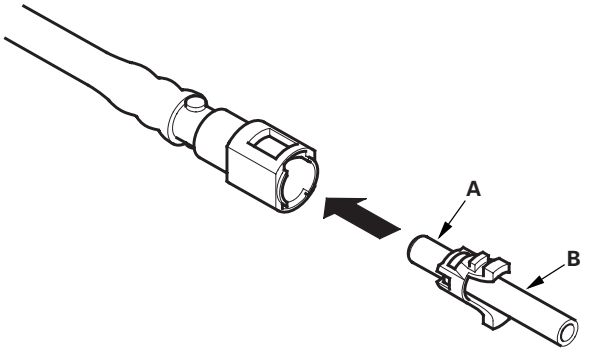


(cont'd)

Fuel Line/Quick-Connect Fitting Removal (cont'd)

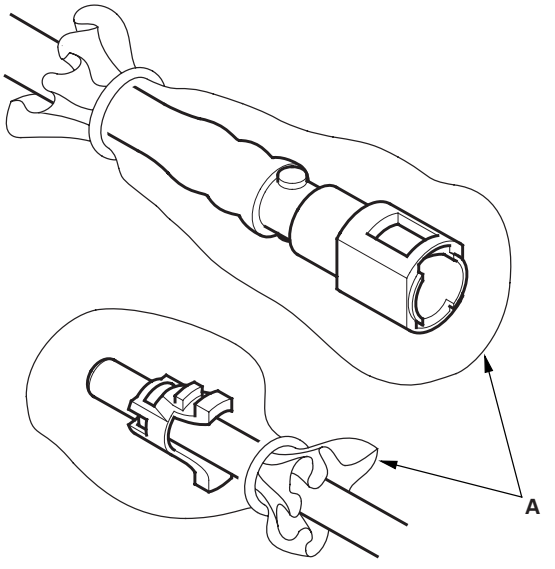
4. Check the contact area (A) of the line (B) for dirt or damage.

   - If it is dirty, clean it, then dry it with the compressed air.
   - If it is rusty or damaged, replace the fuel filter or fuel feed line.



5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

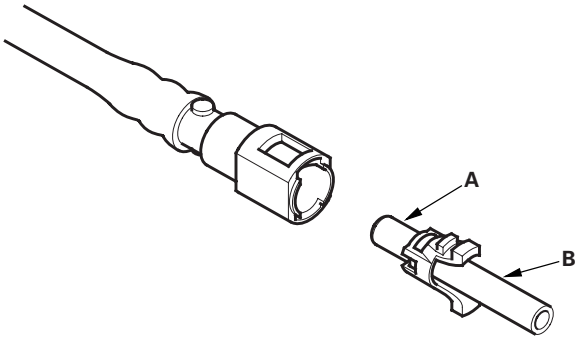
   NOTE: The retainer cannot be reused once it has been removed from the line.
   Replace the retainer when:
   - replacing the fuel rail.
   - replacing the fuel feed line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the fuel gauge sending unit.
   - replacing the EVAP purge pipe.
   - replacing the EVAP canister.
   - replacing the fuel tank.
   - replacing the fuel fill pipe.
   - it has been removed from the line.
   - it is damaged.



Fuel Line/Quick-Connect Fitting Installation

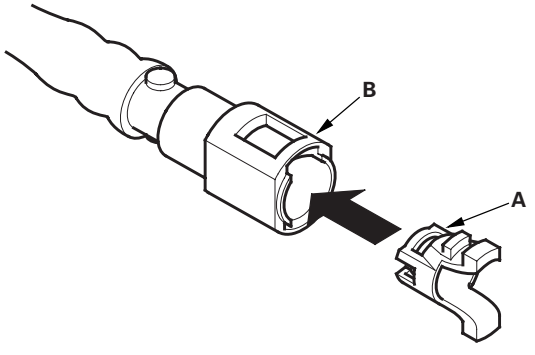
NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-328).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

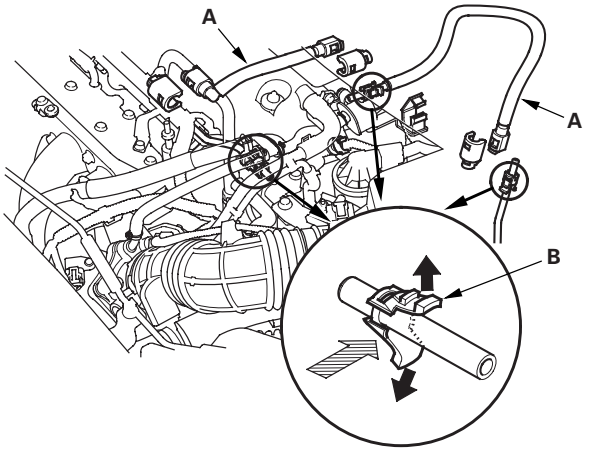


2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

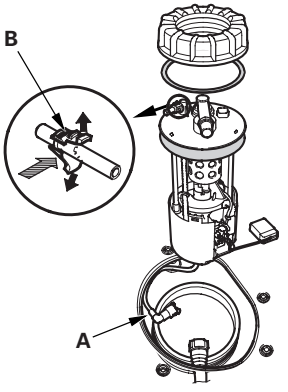
- replacing the fuel rail.
- replacing the fuel feed line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge pipe.
- replacing the EVAP canister.
- replacing the fuel tank.
- replacing the fuel fill pipe.
- removing the retainer from the line.
- Use the same manufacturer's retainer and the same size when replacing the retainer (see page 11-328).

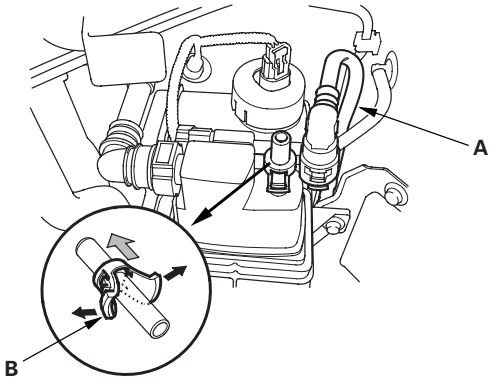


3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer (B) from the mating line.



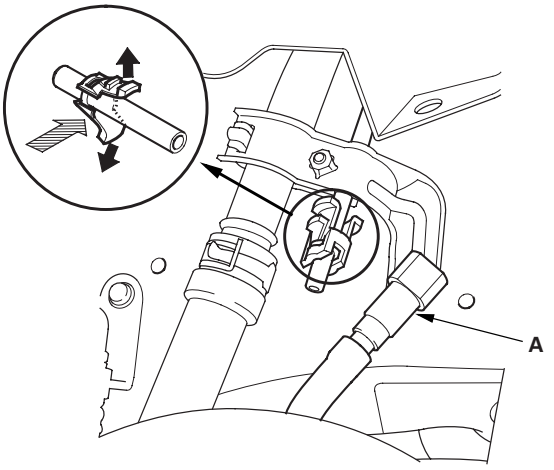
* : This illustration shows K20Z2 engine.





(cont'd)

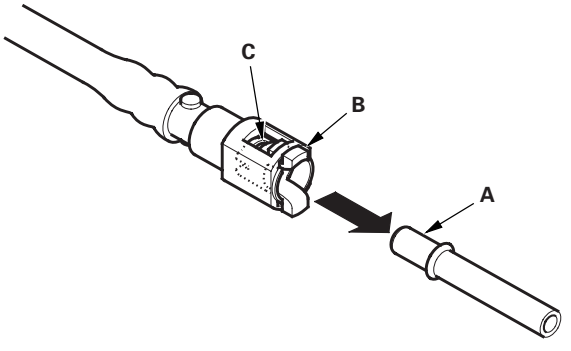
Fuel Line/Quick-Connect Fitting Installation (cont'd)



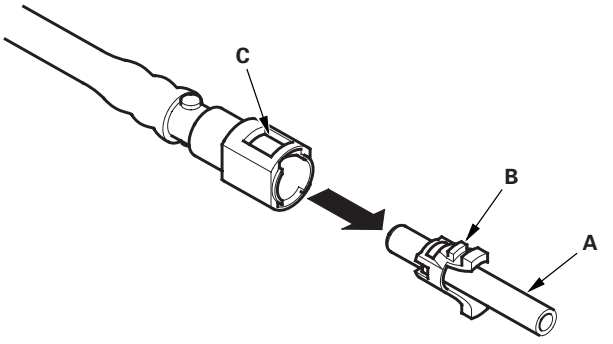
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

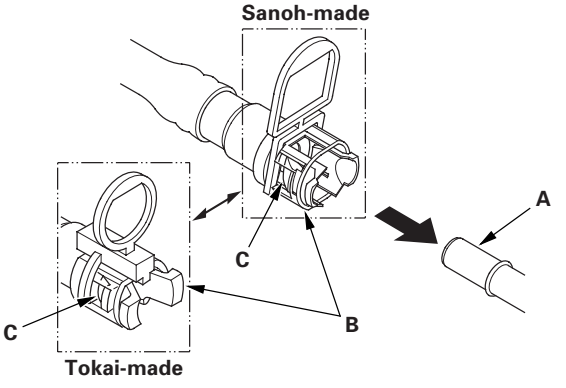
Connection with new retainer



Reconnection to existing retainer

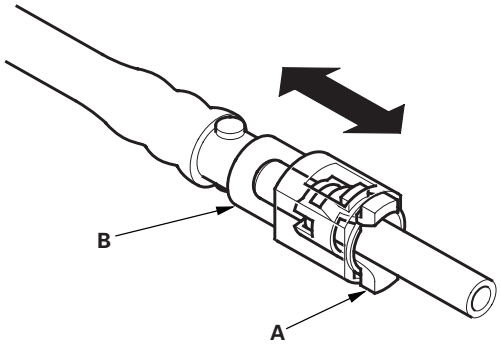


Connection to new fuel line

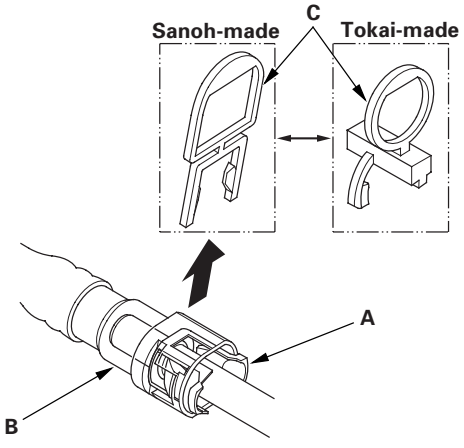


5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you replace the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm the connection is secure.

   NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.



Connection to new fuel line



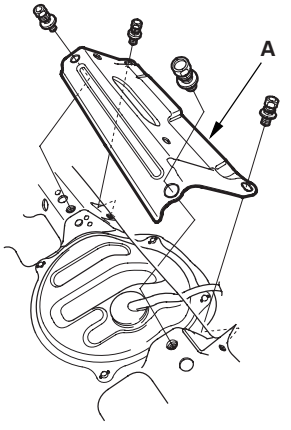
6. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.

Fuel Tank Unit Removal and Installation

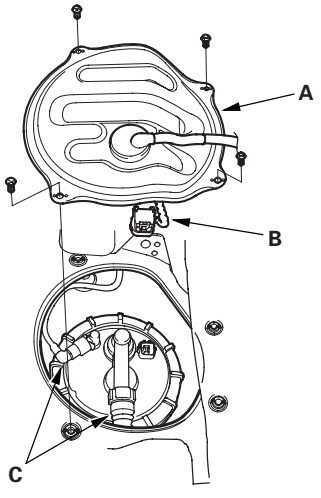
Special Tools Required
Fuel pump module locknut wrench 07AAA-SNAA100

Removal

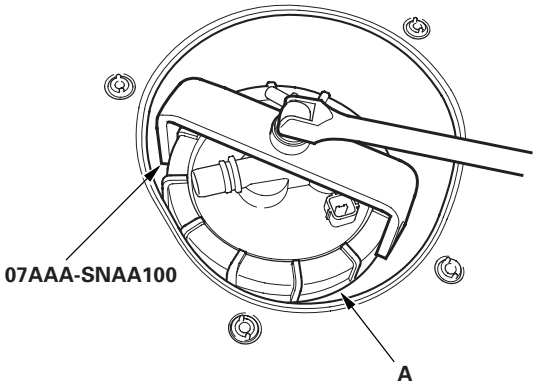
1. Relieve the fuel pressure (see page 11-322).
2. Remove the rear seat cushion (see page 20-131).
3. Remove the rear floor upper cross-member (A).



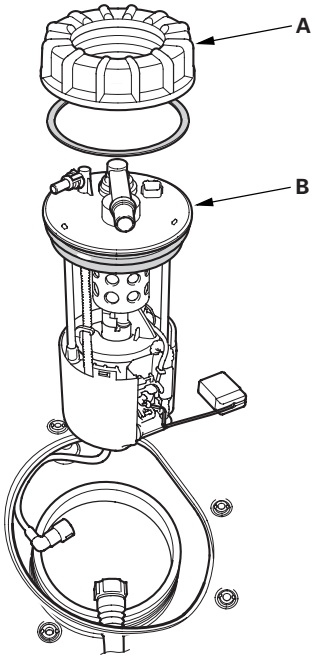
4. Remove the access panel (A) from the floor.



5. Disconnect the fuel tank unit 4P connector (B).
6. Disconnect the quick-connect fittings (C) from the fuel tank unit.
7. Using the special tool, loosen the locknut (A).



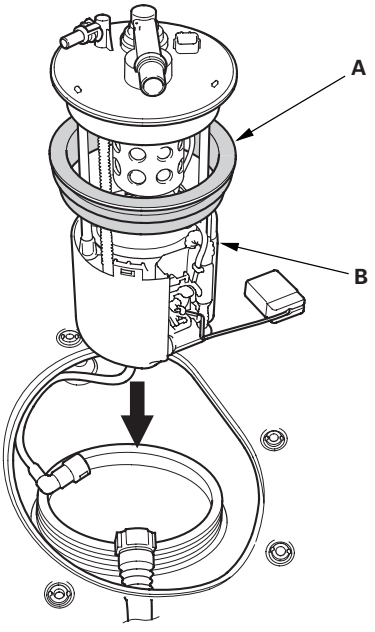
8. Remove the locknut (A) and the fuel tank unit (B).



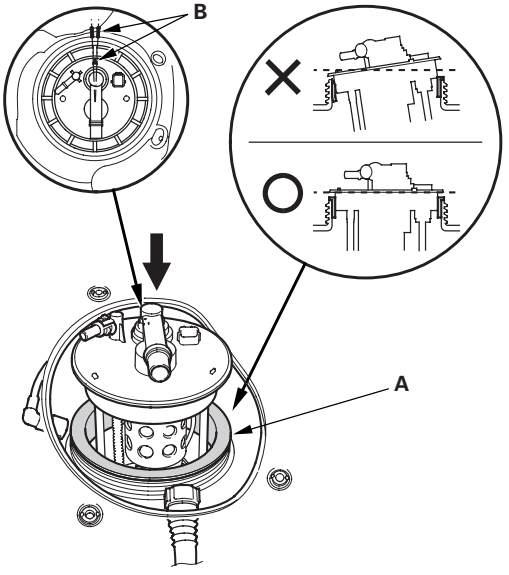
Installation

1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), then insert the fuel tank unit partially into the fuel tank.

   NOTE:
   - Be careful not to damage the new base gasket.
   - Be careful not to bend the fuel gauge sending unit.
   - Do not coat the base gasket with oil.



2. Transfer the base gasket (A) from the fuel tank unit to the fuel tank.



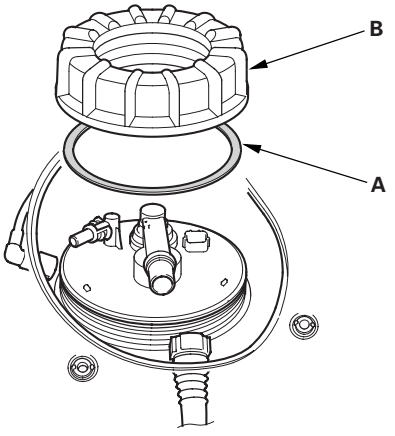
3. Align the marks (B) on the fuel tank and the fuel tank unit, then insert the fuel tank unit into the fuel tank until it sits on the base gasket.

   NOTE: To prevent a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.

(cont'd)

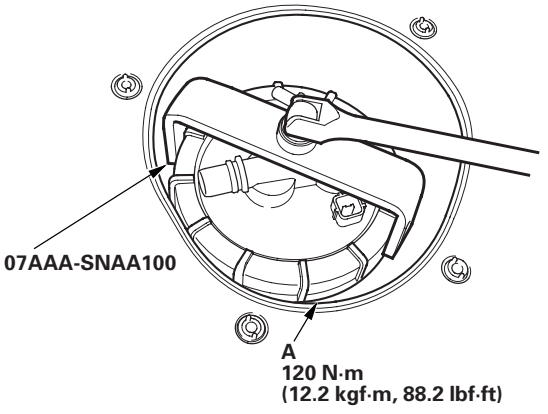
Fuel Tank Unit Removal and Installation (cont'd)

4. Install a locknut plate (A) and a new locknut (B).



5. Using the special tool, tighten the new locknut (A) to the specified torque.

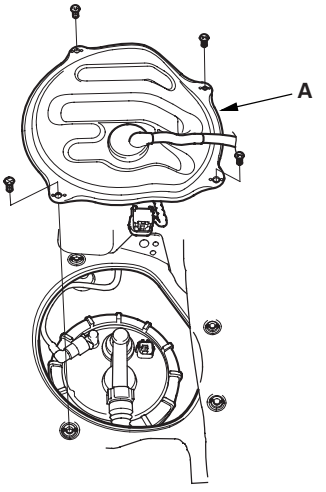
   NOTE:
   - After tightening, make sure the marks are still aligned.
   - After installation, check the base gasket, visually or by hand, to make sure it is not pinched.



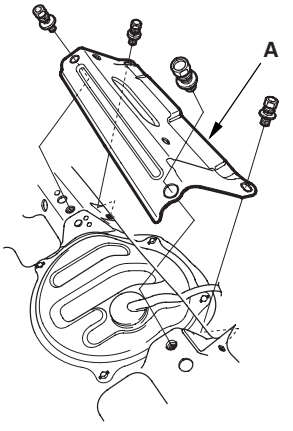
6. Connect the fuel tank unit 4P connector, then connect the quick-connect fitting.

7. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.

8. Install the access panel (A) to the floor.



9. Install the rear floor upper cross-member (A).

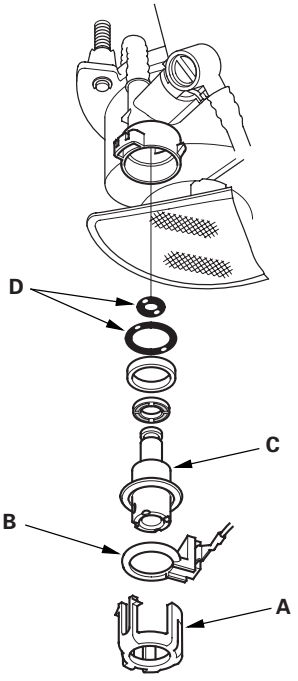


10. Install the rear seat cushion (see page 20-131).

11. Install the fuel fill cap.

Fuel Pressure Regulator Replacement

1. Remove the fuel tank unit (see page 11-334).
2. Remove the bracket (A).



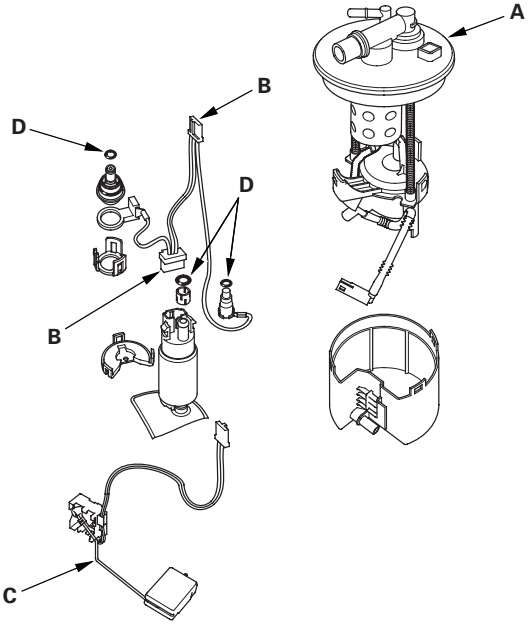
3. Remove the ground ring (B).
4. Remove the fuel pressure regulator (C).
5. Install the parts in the reverse order of removal with new O-rings (D) and a new bracket (A). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-335).

   NOTE: Coat the O-rings with clean engine oil; do not use any other oil.
   Do not pinch the O-rings during installation.

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-325), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-334).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:

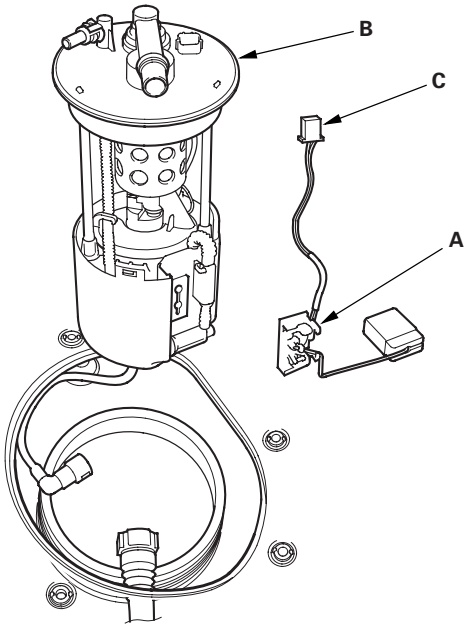
   - When connecting the wire harness, make sure the connection is secure and the connectors (B) are firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

4. Install the parts in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-335).

Fuel Pump/Fuel Gauge Sending Unit Replacement

1. Remove the fuel tank unit (see page 11-334).

2. Remove the fuel level sensor (fuel sending unit) (A) from the fuel tank unit (B).



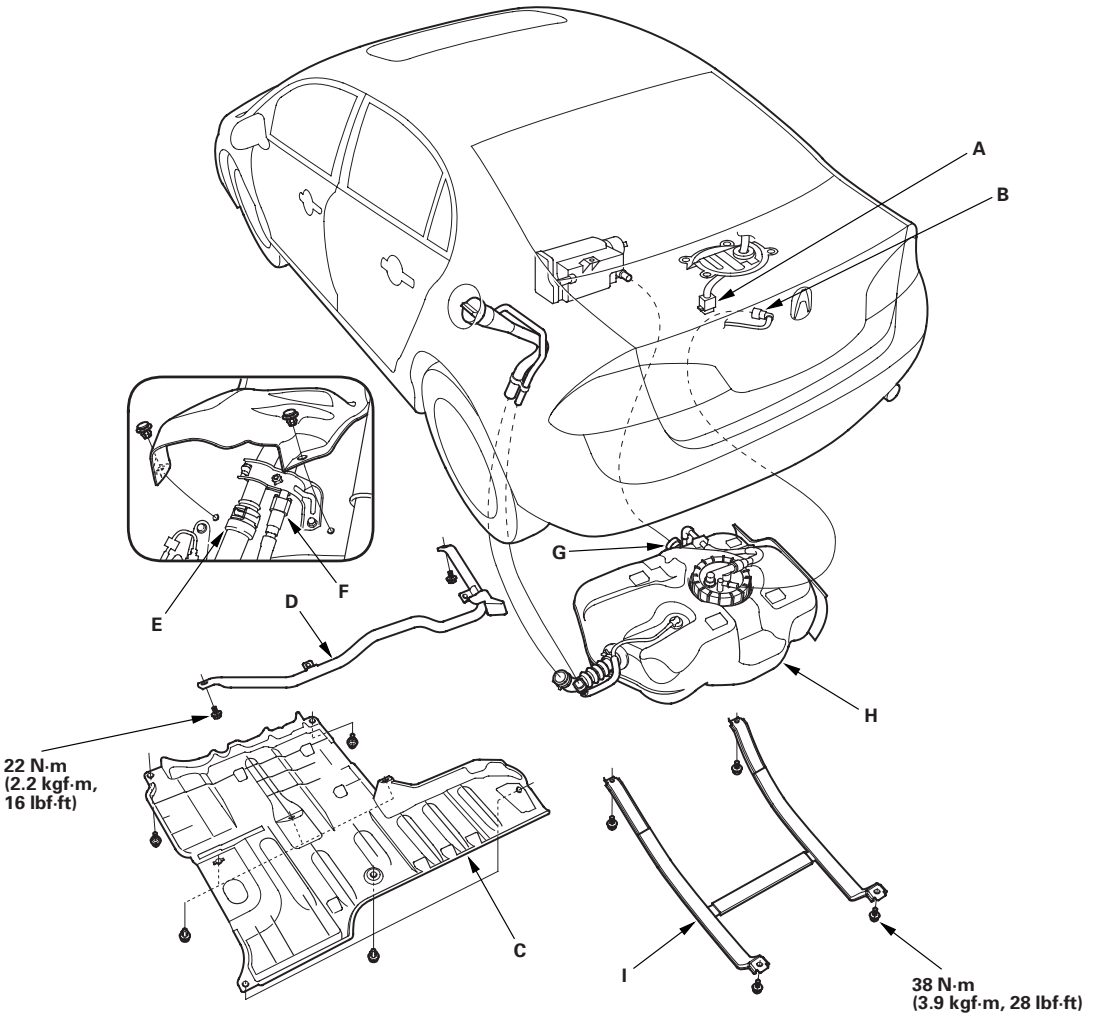
3. Check these items before installing the fuel tank unit:

   - When connecting the wire harness, make sure the connection is secure and the connector (C) is firmly locked into place.
   - When installing the fuel gauge sending unit, be careful not to bend or twist it excessively.

4. Install the parts in the reverse order of removal. When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-335).

Fuel Tank Replacement

1. Drain the fuel tank (see page 11-325), then disconnect fuel tank unit 4P connector (A) and the quick-connect fittings (B).

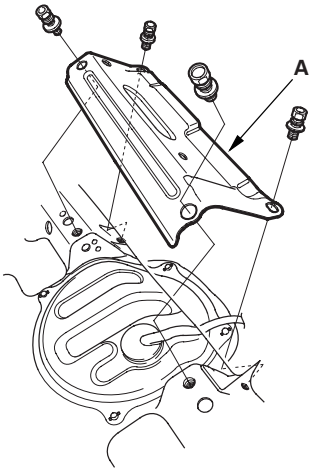


2. Raise the vehicle on a lift.
3. Remove the cover (C), and the EVAP canister guard pipe (D).
4. Disconnect the fuel fill tube (E). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
5. Disconnect the quick-connect fitting (F) and the fuel tank vapor recirculation tube (G).
6. Place a jack or other support under the fuel tank (H).
7. Remove the strap bolts and the strap (I).
8. Remove the fuel tank.
9. Install the parts in the reverse order of removal.

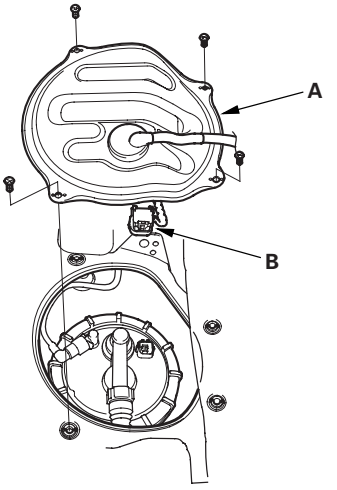
Fuel Gauge Sending Unit Test

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-244).

1. Check the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs.
   - If no DTCs are found, go to step 3.
   - If DTC B1175 or B1176 is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch to LOCK (0).
4. Remove the rear seat cushion (see page 20-131).
5. Remove the rear floor upper cross-member (A).

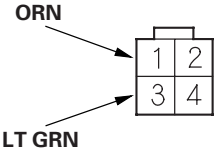


6. Remove the access panel (A) from the floor.



7. Disconnect the fuel tank unit 4P connector (B).
8. Measure the voltage between fuel tank unit 4P connector terminals No. 1 and No. 3 with the ignition switch ON (II). There should be battery voltage.
   - If the voltage is OK, go to step 9.
   - If the voltage is not as specified, check for:
     – a short in the ORN wire to ground.
     – an open in the ORN or LT GRN wire.

FUEL TANK UNIT 4P CONNECTOR

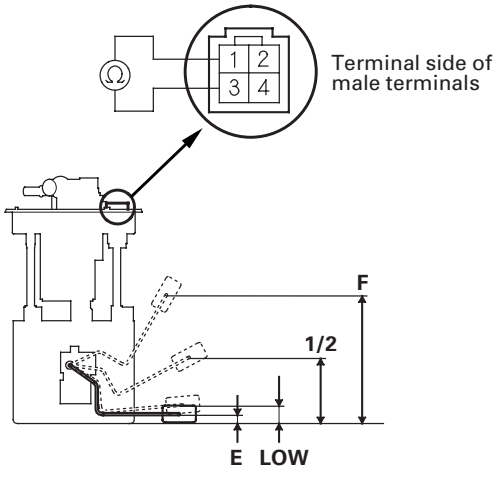


Wire side of female terminals

9. Turn the ignition switch to LOCK (0).
10. Remove the fuel tank unit from the fuel tank (see page 11-334).

11. Measure the resistance between fuel tank unit 4P connector terminals No. 1 and No. 3 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions.
If you do not get the following readings, replace the fuel gauge sending unit (see page 11-338).

Float Position	F 139.8 mm (5.5 in.)	1/2 72.1 mm (2.8 in.)	LOW 19.5 mm (0.77 in.)	E 8.9 mm (0.35 in.)
Resistance (Ω)	19 to 21	205.8 to 215.8	537.5 to 707	772 to 788



12. Reconnect the fuel tank unit 4P connector.

13. Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.

14. Turn the ignition switch to ON (II).

15. Check that the pointer of the fuel gauge indicates F with the float at F.

    - If the pointer of the fuel gauge does not indicate F, replace the gauge assembly.
    - If the gauge is OK, the test is complete.

    NOTE:
    - The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is turned to ACC or to LOCK (0), regardless of the fuel level.
    - Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.

Low Fuel Indicator Test

1. Do the gauge self-diagnostic function (see page 22-241).

    - If the low fuel indicator flashes, go to step 2.
    - If the low fuel indicator does not flash, replace the gauge control module (tach) (see page 22-277).

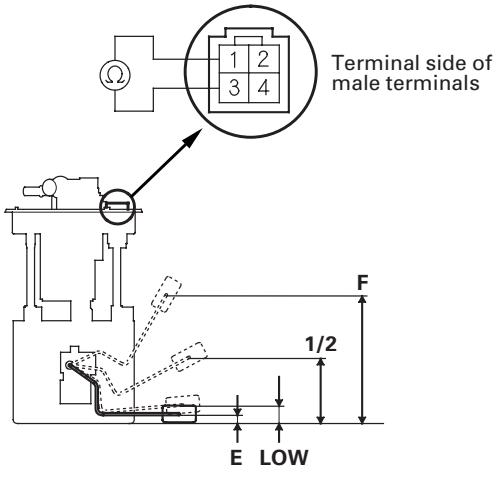
2. Check for body electrical system DTCs.

    - If any DTCs are indicated, do the indicated DTC's troubleshooting.
    - If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-340).

11. Measure the resistance between fuel tank unit 4P connector terminals No. 1 and No. 3 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions.
If you do not get the following readings, replace the fuel gauge sending unit (see page 11-338).

Float Position	F 139.8 mm (5.5 in.)	1/2 72.1 mm (2.8 in.)	LOW 19.5 mm (0.77 in.)	E 8.9 mm (0.35 in.)
Resistance (Ω)	19 to 21	205.8 to 215.8	537.5 to 707	772 to 788



12. Reconnect the fuel tank unit 4P connector.

13. Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.

14. Turn the ignition switch to ON (II).

15. Check that the pointer of the fuel gauge indicates F with the float at F.

    - If the pointer of the fuel gauge does not indicate F, replace the gauge assembly.
    - If the gauge is OK, the test is complete.

    NOTE:
    - The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is turned to ACC or to LOCK (0), regardless of the fuel level.
    - Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.

Low Fuel Indicator Test

1. Do the gauge self-diagnostic function (see page 22-241).

    - If the low fuel indicator flashes, go to step 2.
    - If the low fuel indicator does not flash, replace the gauge control module (tach) (see page 22-277).

2. Check for body electrical system DTCs.

    - If any DTCs are indicated, do the indicated DTC's troubleshooting.
    - If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-340).

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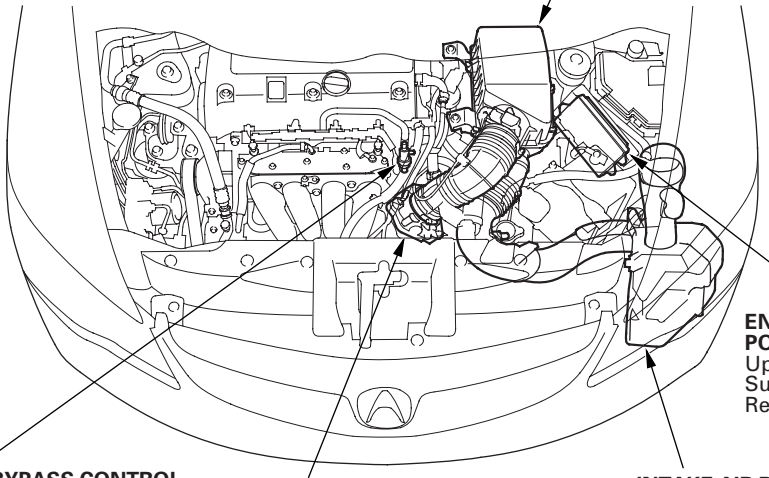
K20Z2 engine:



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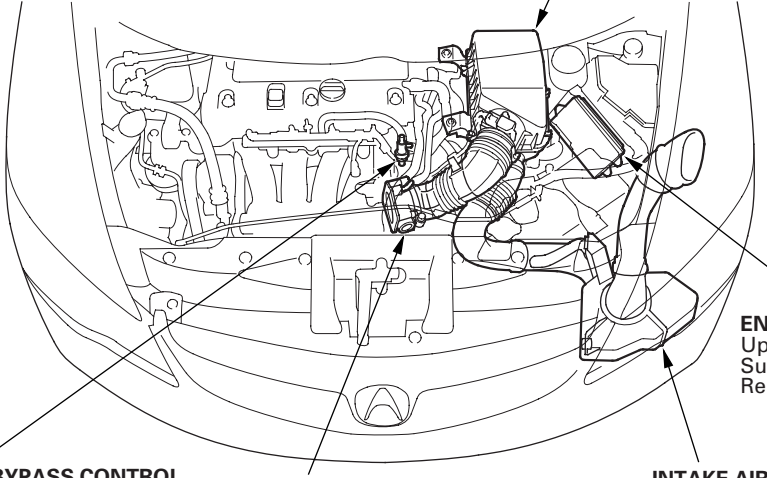

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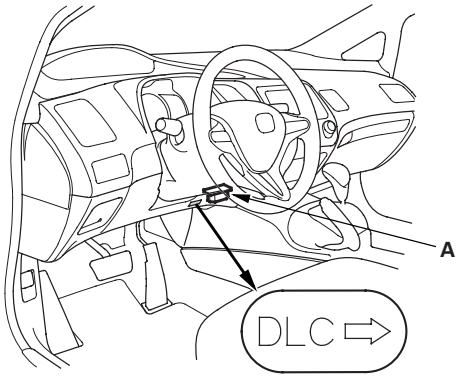
Throttle Body Test

Carbon Accumulation Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble code (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

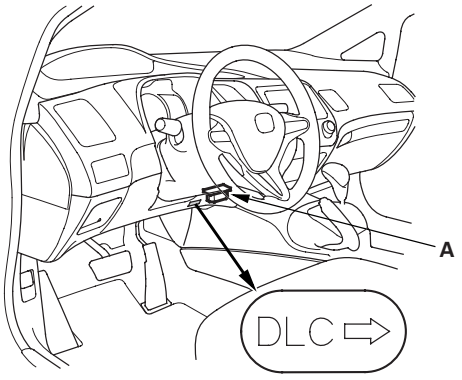


2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.46 deg. If it is not, clean the throttle body (see page 11-344).

Throttle Position Learning Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble code (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-344).

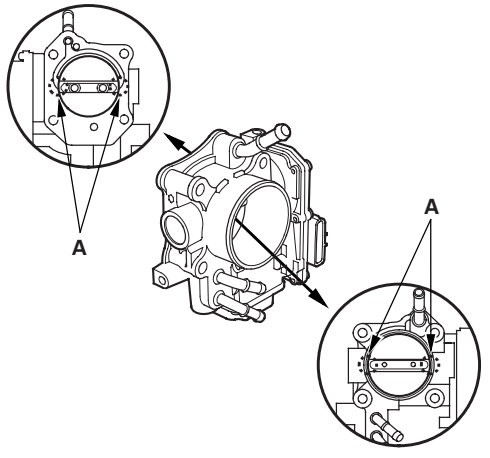
Throttle Body Cleaning

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner element is damaged, replace it (see page 11-346).
2. Remove the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

   NOTE:
   - Remove the throttle body to clean it.
   - Be careful not to pinch your fingers.
   - To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).
   - Do not spray throttle plate and induction cleaner directly on the throttle body.
   - Use Honda genuine throttle plate and induction cleaner.



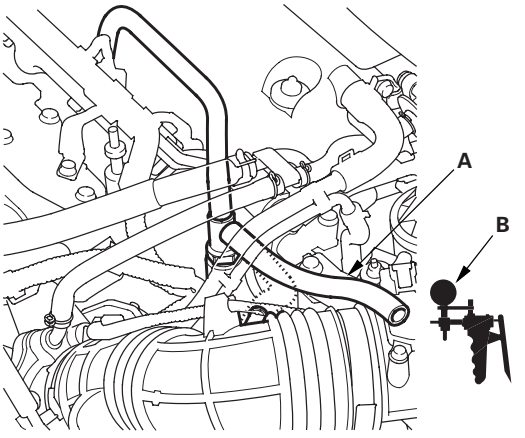
4. Install the throttle body (see page 11-348).
5. Reset the ECM/PCM with the HDS (see page 11-4).
6. Turn the ignition switch to ON (II), and wait 2 seconds.
7. Do the ECM/PCM idle learn procedure (see page 11-310).

Intake Air Bypass Control Thermal Valve Test

Special Tools Required
Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

1. Start the engine, then let it idle.

   NOTE: The engine coolant temperature must be below 65 ℃ (149 ℉).
2. Remove the engine cover (see step 1 on page 9-3).
3. Remove the vacuum hose (A) from the intake air duct, and connect a vacuum pump/gauge (B) to the hose.



* : This illustration shows K20Z2 engine.

4. Raise and lower the engine speed, and make sure the vacuum gauge reading changes as the engine speed changes.

   If the vacuum reading does not change, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see page 11-351).
5. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

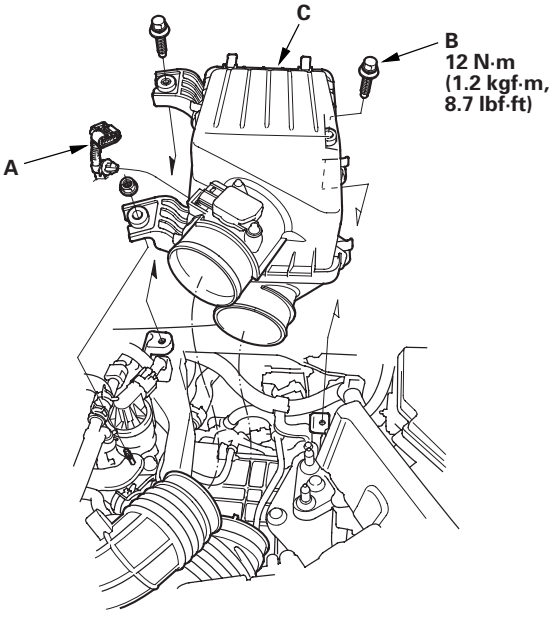
6. Raise and lower the engine speed, and make sure the vacuum gauge reading does not change as the rpm changes.

   If the vacuum reading changes, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see page 11-351).

Air Cleaner Removal/Installation

1. Disconnect the MAF sensor/IAT sensor 5P connector (A).

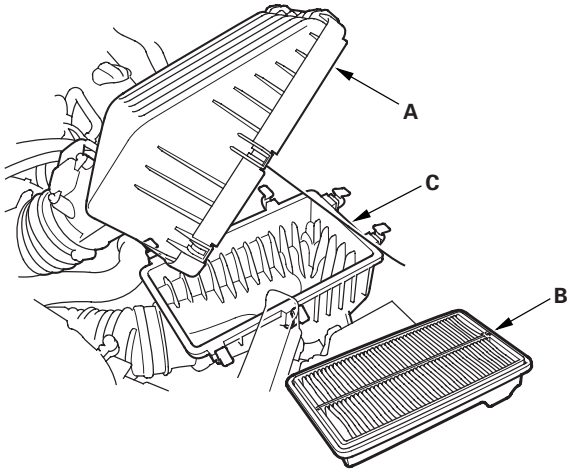


* : This illustration shows K20Z2 engine.

2. Remove the bolts (B).
3. Remove the air cleaner (C).
4. Install the parts in the reverse order of removal.

Air Cleaner Element Inspection/ Replacement

1. Open the air cleaner housing cover (A).



2. Remove the air cleaner element (B) from the air cleaner housing (C).
3. Check the air cleaner element for damage or clogging. If it is damaged or clogged, replace it.

   NOTE: Do not use compressed air to clean the air cleaner element.

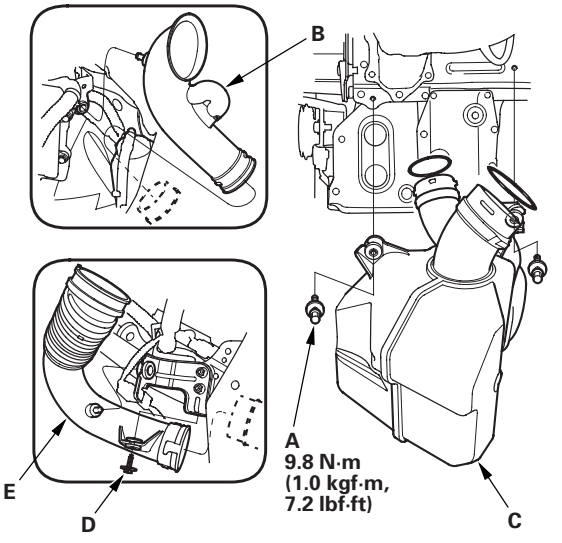
4. Clean and remove any debris from inside the air cleaner housing.
5. Install the parts in the reverse order of removal.

   - If you did not replace the air cleaner element, this procedure is complete.
   - If the maintenance minder required air cleaner element replacement, reset the maintenance minder (see page 3-7).
   - If you replaced the air cleaner element, reset the ECM/PCM (see page 11-4), and do the ECM/PCM idle learn procedure (see page 11-310).

Intake Air Resonator Removal/ Installation

K20Z2 engine

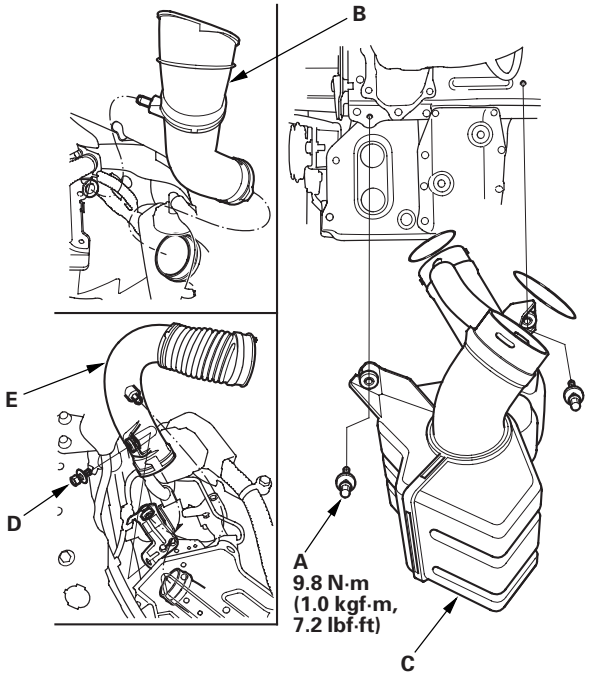
1. Remove the front bumper (see page 20-146).
2. Remove the bolts (A), and pipe (B).



3. Remove the intake air resonator (C).
4. Do the battery removal procedure (see page 22-69).
5. Remove the bolt (D), and duct (E).
6. Install the parts in the reverse order of removal.
7. Do the battery installation procedure (see page 22-69).

K20Z3 engine

1. Remove the front bumper (see page 20-146).
2. Remove the bolts (A), and pipe (B).



3. Remove the intake air resonator (C).
4. Do the battery removal procedure (see page 22-69).
5. Remove the bolt (D), and duct (E).
6. Install the parts in the reverse order of removal.
7. Do the battery installation procedure (see page 22-69).

Throttle Body Removal/Installation

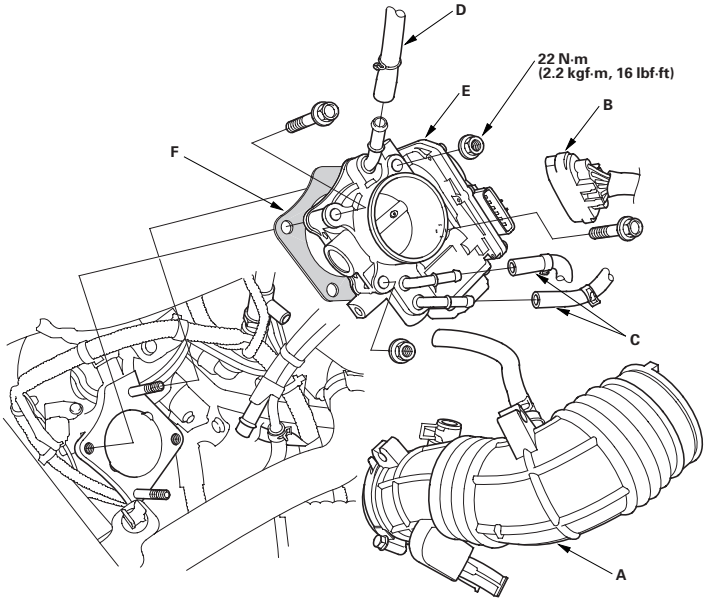
⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve is activated.

K20Z2 engine

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 4.

1. Connect the HDS to the DLC while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch to LOCK (0).
5. Remove the intake air duct (A).



6. Disconnect the throttle body connector (B).
7. Disconnect the water bypass hoses (C), and plug them.
8. Disconnect the vacuum hose (D).
9. Remove the throttle body (E).
10. Install the parts in the reverse order of removal with a new gasket (F), then do these:
    - Refill the radiator with engine coolant (see page 10-8).
    - Do the ECM/PCM idle learn procedure (see page 11-310).

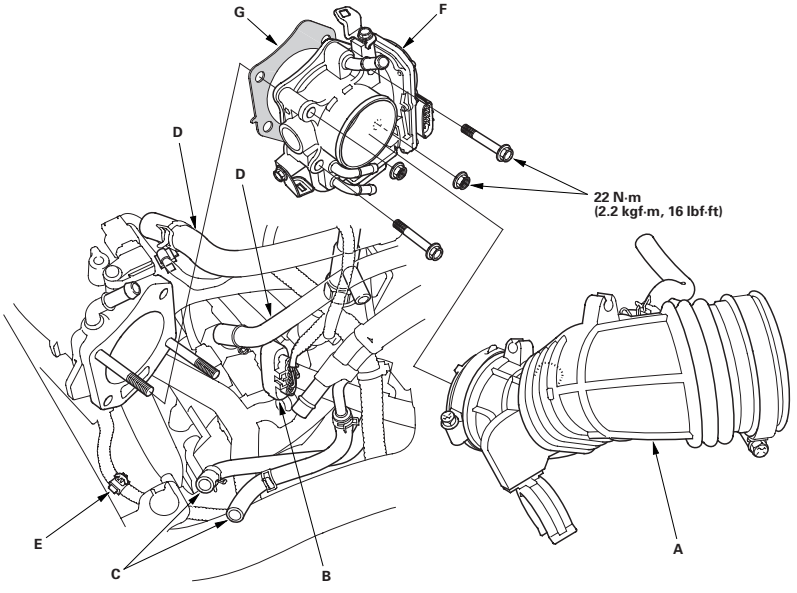
⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve is activated.

K20Z3 engine

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 4.

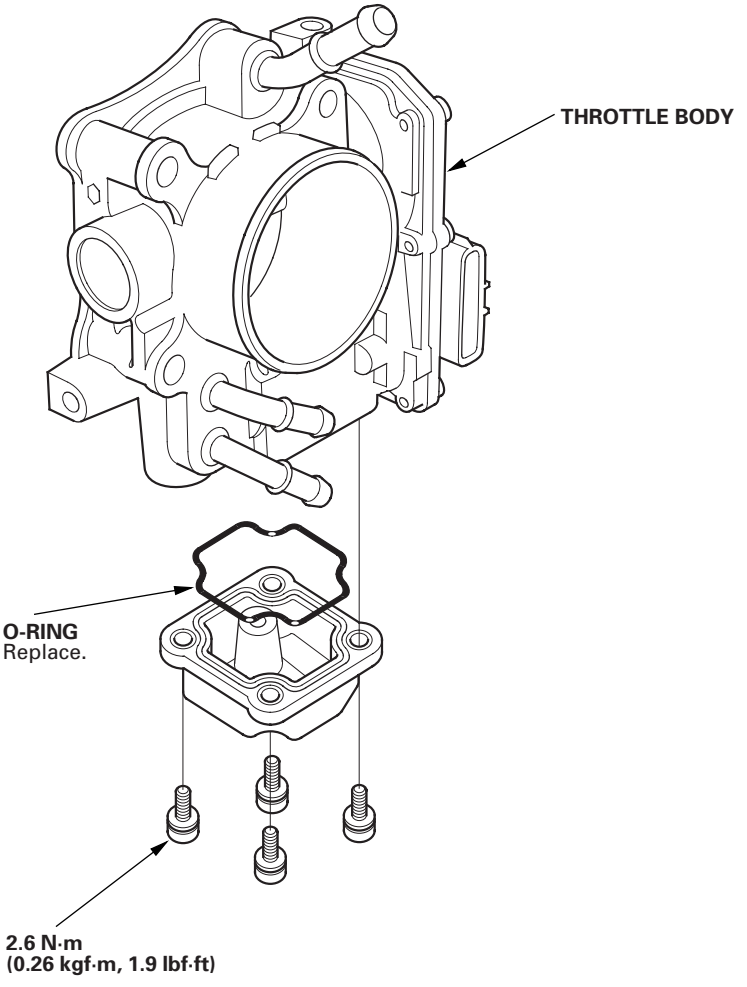
1. Connect the HDS to the DLC while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch to LOCK (0).
5. Remove the intake air duct (A).



6. Disconnect the throttle body connector (B).
7. Disconnect the water bypass hoses (C), and plug them.
8. Disconnect the vacuum hoses (D) and the clamp (E).
9. Remove the throttle body (F).
10. Install the parts in the reverse order of removal with a new gasket (G), then do these:

    • Refill the radiator with engine coolant (see page 10-8).
    • Do the ECM idle learn procedure (see page 11-310).

Throttle Body Disassembly/Reassembly



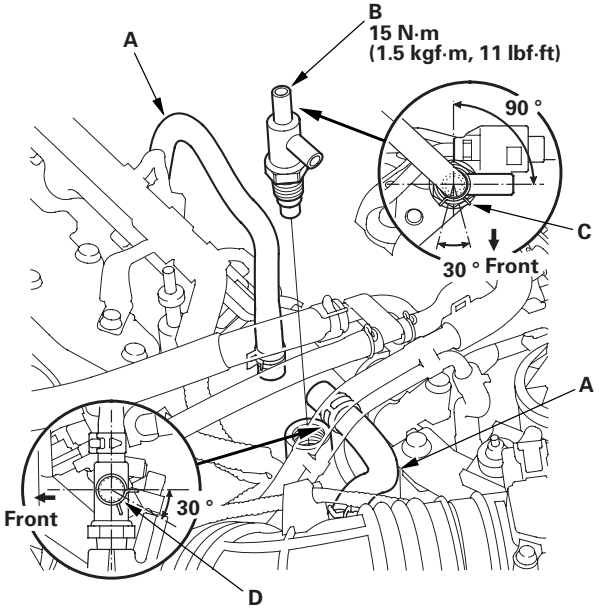
Intake Air Bypass Control Thermal Valve Replacement

1. Remove the engine cover (see step 1 on page 9-3).

2. Remove the intake air duct.

   - K20Z2 engine (see page 11-348)
   - K20Z3 engine (see page 11-349)

3. Disconnect the hoses (A).



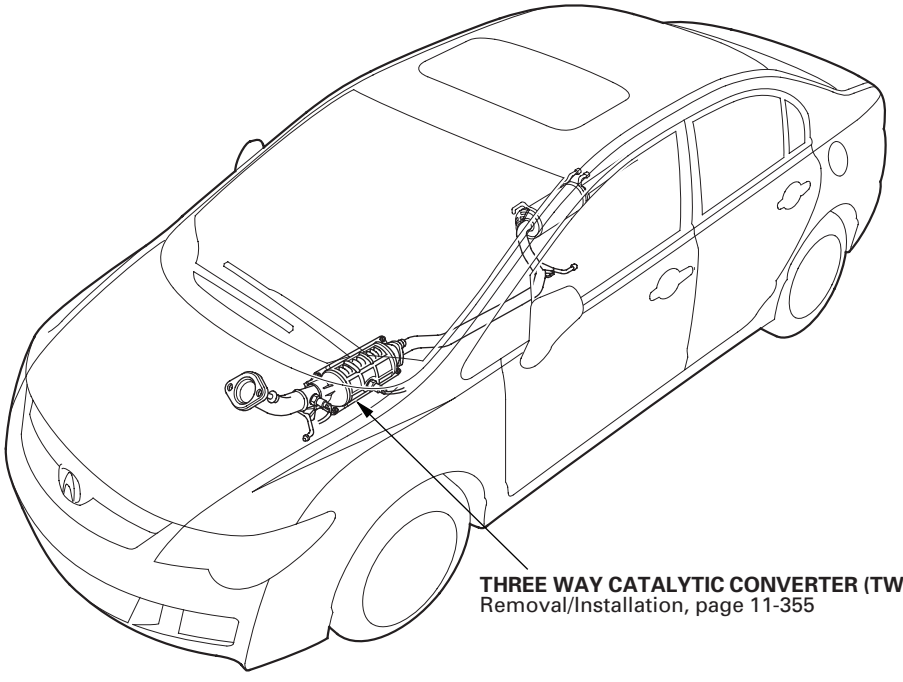
* : This illustration shows K20Z2 engine.

4. Remove the intake air bypass control thermal valve (B).

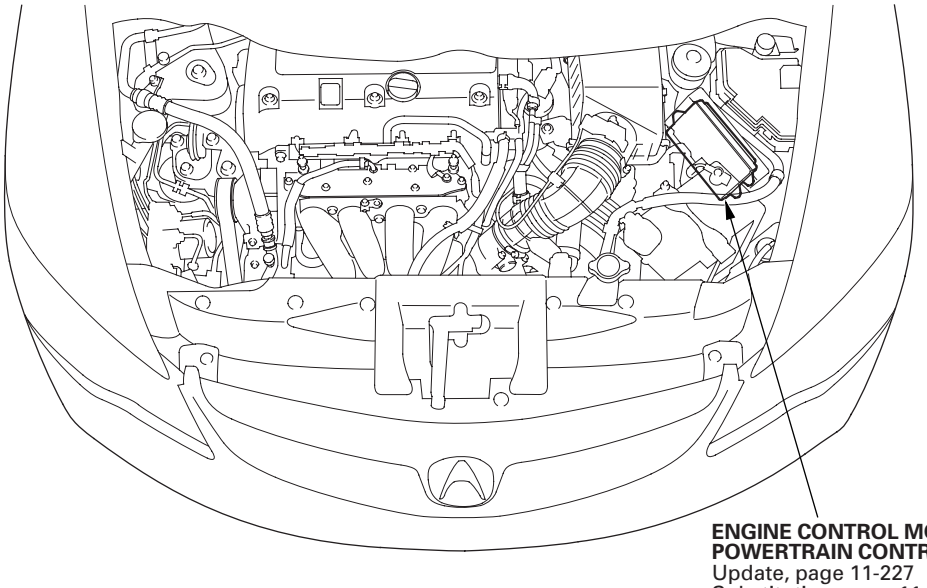
5. Install the parts in the reverse order of removal.

   NOTE:
   - Position the valve angle as shown.
   - Make sure the center of clamp (C) and the lever end of clamp (D) are the position within the range shown.

Component Location Index



THREE WAY CATALYTIC CONVERTER (TWC)
Removal/Installation, page 11-355



ENGINE CONTROL MODULE (ECM)/
POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-227
Substitution, page 11-7
Replacement, page 11-228

DTC P0420: Catalyst System Efficiency Below Threshold

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If some of the DTCs listed below are stored at the same time as DTC P0420, troubleshoot them first, then recheck for DTC P0420.
  P0137, P0138: Secondary HO2S (Sensor 2)
  P0141: Secondary HO2S (Sensor 2) heater
- Poor quality fuel may cause this DTC.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 5th
   - Vehicle speed between 72—120 km/h (45—75 mph) for 5 minutes or more with cruise control set
   - K20Z2 engine: Maintain the vehicle speed at 88 km/h (55 mph) for 5 minutes or more with cruise control set
   - K20Z3 engine: Maintain the vehicle speed at 88 km/h (55 mph) for 30 seconds or more

5. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

   Does the screen indicate EXECUTING?

   YES—Go to step 6.

   NO—If the screen indicates OUT OF CONDITION, go to step 4 and recheck. If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates FAILED, go to step 8.

6. Continue test driving until a result comes on.

7. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 8.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

8. Turn the ignition switch to LOCK (0).

9. Replace the TWC (see page 11-355).

10. Turn the ignition switch to ON (II).

11. Reset the ECM/PCM with the HDS.

12. Do the ECM/PCM idle learn procedure (see page 11-310).

13. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

14. Test-drive for about 10 minutes, varying the vehicle speed.

15. Check the CATA MONITOR CONDITION in the DATA LIST with the HDS.

    Is the condition OK?

    YES—Go to step 16.

    NO—Go to step 13 and recheck.

16. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 5th
    - K20Z2 engine: Vehicle speed at 88 km/h (55mph) for 5 minutes or more with cruise control set
    - K20Z3 engine: Vehicle speed at 88 km/h (55mph) for 30 seconds or more

(cont'd)

DTC Troubleshooting (cont'd)

17. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

    Does the screen indicate EXECUTING?

    YES—Go to step 18.

    NO—Go to step 16 and recheck.

18. Continue test-driving until a result comes on.

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0420 indicated?

    YES—Check the fuel quality, then go to step 1.

    NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

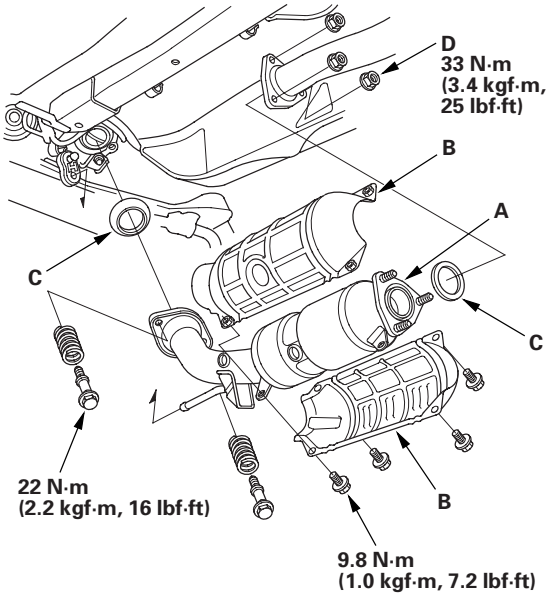
    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13.

Catalytic Converter Removal/Installation

1. Remove the A/F sensor (Sensor 1) (see page 11-221).

2. Remove the secondary HO2S (Sensor 2) (see page 11-221).

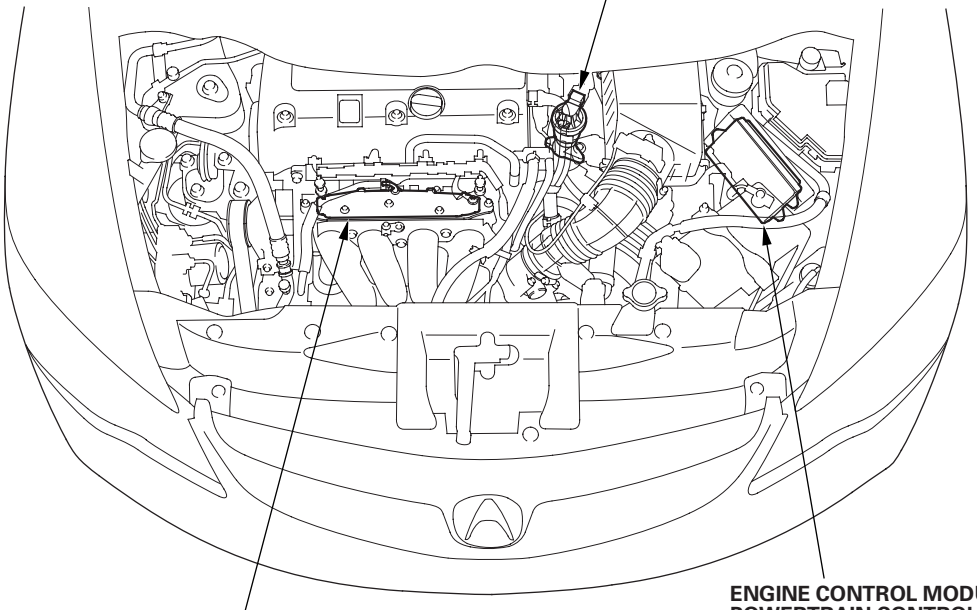
3. Remove the catalytic converter (A).



4. Remove the converter cover (B).

5. Install the parts in the reverse order of removal with new gaskets (C) and new self-locking nuts (D).

Component Location Index



DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 5.

   NO—Go to step 7.
5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - Drive at a steady speed between 88—120 km/h (55—75 mph) for at least 10 seconds
   - During the drive, decelerate (with the throttle fully closed) for 5 seconds
6. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Remove the EGR plate (see page 9-2), and clean the intake manifold port with throttle plate and induction cleaner, then go to step 9.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 5 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Replace the EGR valve (see page 11-370).
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-310).
12. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for at least 10 seconds
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0401 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the connections are OK, go to step 15.

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

15. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

16. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for at least 10 seconds
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTCs P0401 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 16.

DTC P0404: EGR Valve Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Clean any carbon build-up on the EGR valve with throttle plate and induction cleaner. ■

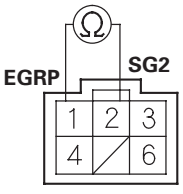
   NO—Go to step 5.

5. Turn the ignition switch to LOCK (0).

6. Disconnect the EGR valve 6P connector.

7. At the EGR valve side, measure the resistance between EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

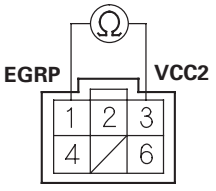
Is there 100 kΩ or more?

YES—Go to step 25.

NO—Go to step 8.

8. At the EGR valve side, measure the resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

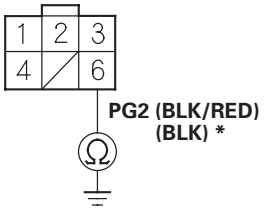
Is there 100 kΩ or more?

YES—Go to step 25.

NO—Go to step 9.

9. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

***: '07-09 models**

Is there continuity?

YES—Go to step 10.

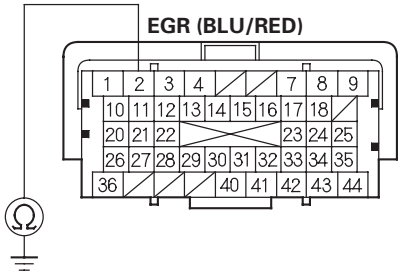
NO—Repair open in the wire between the EGR valve and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 26.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector B (44P).

12. Check for continuity between ECM/PCM connector terminal B2 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

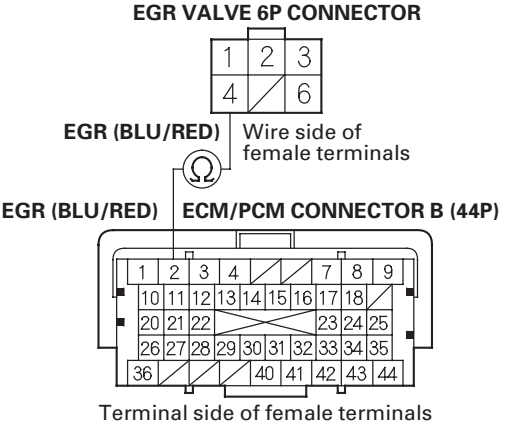
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 26.

NO—Go to step 13.

13. Check for continuity between ECM/PCM connector terminal B2 and EGR valve 6P connector terminal No. 4.

EGR VALVE 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

14. Remove the EGR valve (see page 11-370).

15. Remove the EGR plate (see page 9-2), and clean the intake manifold EGR port with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.

16. Install the EGR valve (see page 11-370).

17. Reconnect the EGR valve 6P connector.

18. Reconnect ECM/PCM connector B (44P).

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

23. Do the EGR TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 32.

    NO—Go to step 24.

24. Turn the ignition switch to LOCK (0).

25. Replace the EGR valve (see page 11-370).

26. Reconnect all connectors.

27. Turn the ignition switch to ON (II).

28. Reset the ECM/PCM with the HDS.

29. Do the ECM/PCM idle learn procedure (see page 11-310).

30. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

31. Do the EGR TEST in the INSPECTION MENU with the HDS.

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0404 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the connections and terminals are OK, go to step 34.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

34. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

35. Start the engine. Hold the engine speed at 3000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

36. Do the EGR TEST in the INSPECTION MENU with the HDS.

37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTCs P0404 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 35. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 38.

38. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 37, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 35. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 35.

DTC P0406: EGR Valve Position Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Check EGR VLS in the DATA LIST with the HDS.

   Is 4.88 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. ■

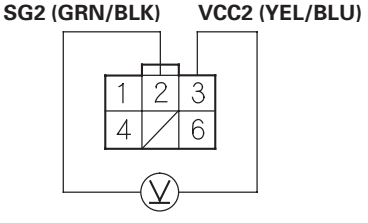
3. Turn the ignition switch to LOCK (0).

4. Disconnect EGR valve 6P connector.

5. Turn the ignition switch to ON (II).

6. Measure the voltage between EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

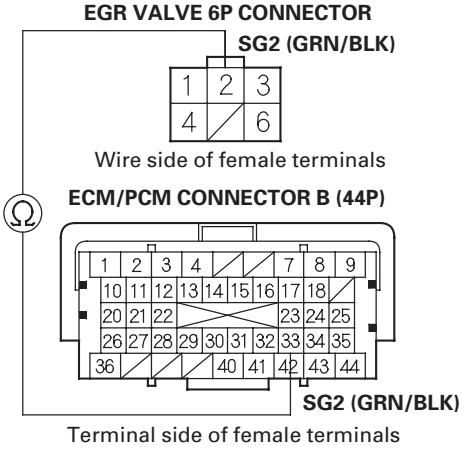
YES—Go to step 11.

NO—Go to step 7.

(cont'd)

DTC Troubleshooting (cont'd)

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between EGR valve 6P connector terminal No. 2 and ECM/PCM connector terminal B33.



Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the ECM/PCM (B33) and the EGR valve, then go to step 13.

11. Turn the ignition switch to LOCK (0).
12. Replace the EGR valve (see page 11-370).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2413: EGR System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. ■

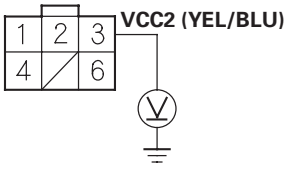
   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Turn the ignition switch to ON (II).
7. Check the EGR VLS in the DATA LIST with the HDS.

   Is about 0 V indicated?

   YES—Go to step 8.

   NO—Go to step 21.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the EGR valve 6P connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

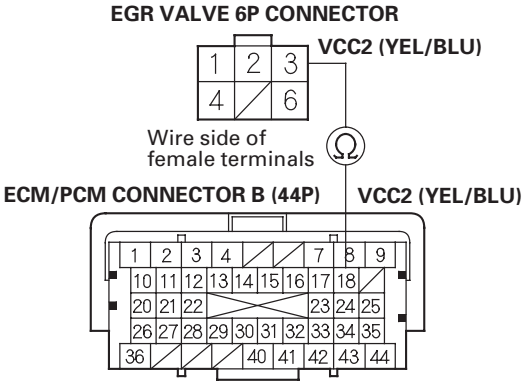
YES—Go to step 16.

NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between ECM/PCM connector terminal B18 and EGR valve 6P connector terminal No. 3.



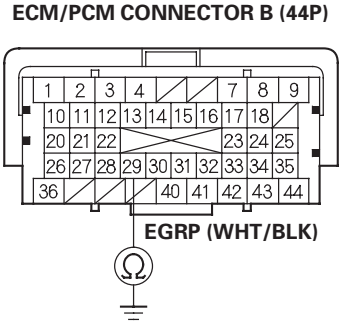
Terminal side of female terminals

Is there continuity?

YES—Go to step 52.

NO—Repair open in the wire between the EGR valve and the ECM/PCM (B18), then go to step 44.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (44P).
19. Check for continuity between ECM/PCM connector terminal B29 and body ground.



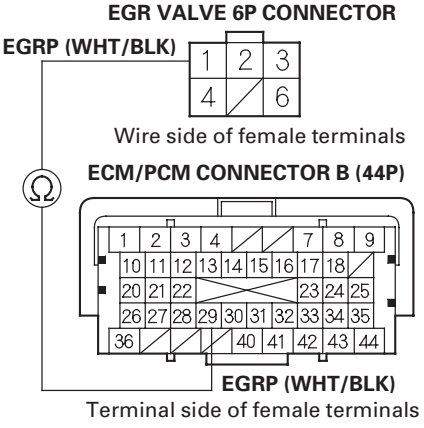
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B29) and the EGR valve, then go to step 44.

NO—Go to step 20.

20. Check for continuity between ECM/PCM connector terminal B29 and EGR valve 6P connector terminal No. 1.



Is there continuity?

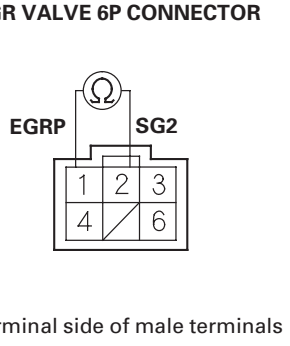
YES—Go to step 21.

NO—Repair open in the wire between the ECM/PCM (B29) and the EGR valve, then go to step 44.

21. Turn the ignition switch to LOCK (0).

22. If not already done, disconnect the EGR valve 6P connector.

23. At the EGR valve side, measure the resistance between EGR valve 6P connector terminals No. 1 and No. 2.



Is there 100 kΩ or more?

YES—Go to step 43.

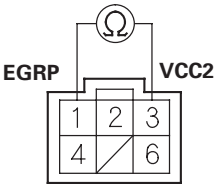
NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

24. At the EGR valve side, measure the resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

Is there 100 kΩ or more?

YES—Go to step 43.

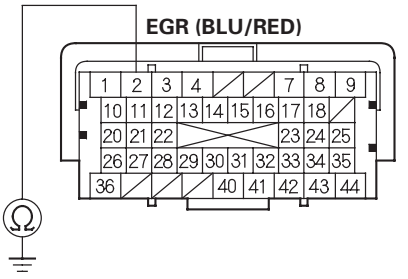
NO—Go to step 25.

25. If not already done, jump the SCS line with the HDS.

26. If not already done, disconnect ECM/PCM connector B (44P).

27. Check for continuity between ECM/PCM connector terminal B2 and body ground.

ECM/PCM CONNECTOR B (44P)



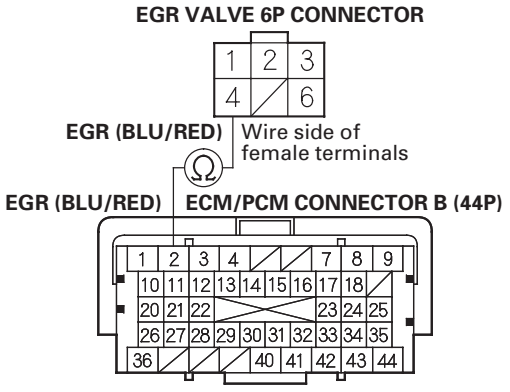
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 44.

NO—Go to step 28.

28. Check for continuity between ECM/PCM connector terminal B2 and EGR valve 6P connector terminal No. 4.



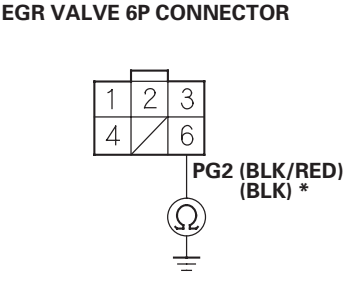
Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 44.

29. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.



Wire side of female terminals

***: '07-09 models**

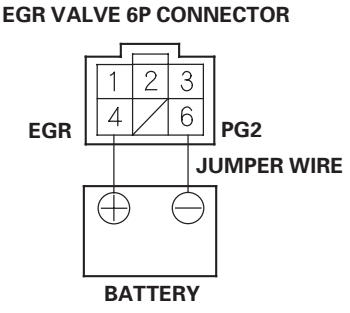
Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the EGR valve and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 44.

30. Reconnect ECM/PCM connector B (44P).

31. Connect the battery positive terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.



Terminal side of male terminals

32. Start the engine, and let it idle. Then connect the battery negative terminal to EGR valve 6P connector terminal No. 6 with a jumper wire.

Does the engine stall or run rough?

YES—Go to step 51.

NO—Go to step 33.

(cont'd)

DTC Troubleshooting (cont'd)

33. Turn the ignition switch to LOCK (0).
34. Remove the EGR valve (see page 11-370).
35. Remove the EGR plate (see page 9-2), and clean the intake manifold EGR port with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.
36. Install the EGR valve (see page 11-370).
37. Reconnect all connectors.
38. Turn the ignition switch to ON (II).
39. Reset the ECM/PCM with the HDS.
40. Do the ECM/PCM idle learn procedure (see page 11-310).
41. Do the EGR TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 49.

    NO—Go to step 42.

42. Turn the ignition switch to LOCK (0).
43. Replace the EGR valve (see page 11-370).
44. Reconnect all connectors.
45. Turn the ignition switch to ON (II).
46. Reset the ECM/PCM with the HDS.
47. Do the ECM/PCM idle learn procedure (see page 11-310).
48. Do the EGR TEST in the INSPECTION MENU with the HDS.
49. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2413 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1.

    NO—Go to step 50.

50. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 49, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 47.

51. Turn the ignition switch to LOCK (0).

52. Reconnect all connectors.

53. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

54. Do the EGR TEST in the INSPECTION MENU with the HDS.

55. Check for Temporary DTCs or DTCs with the HDS.

    Is DTCs P2413 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 54. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 56.

56. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

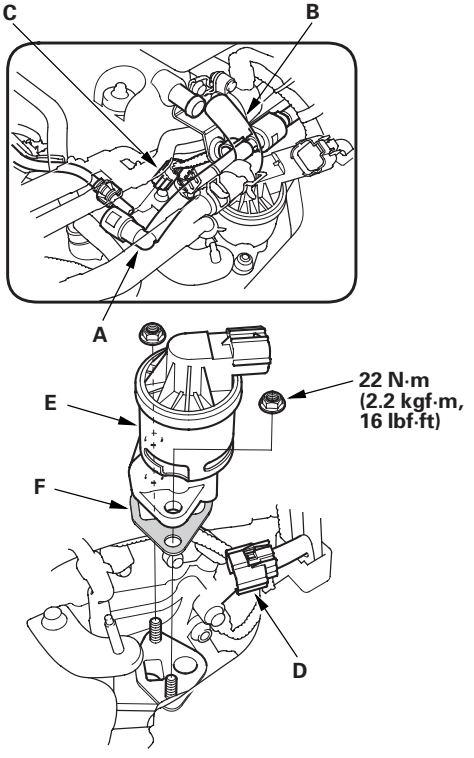
    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 55, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 54. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 54.

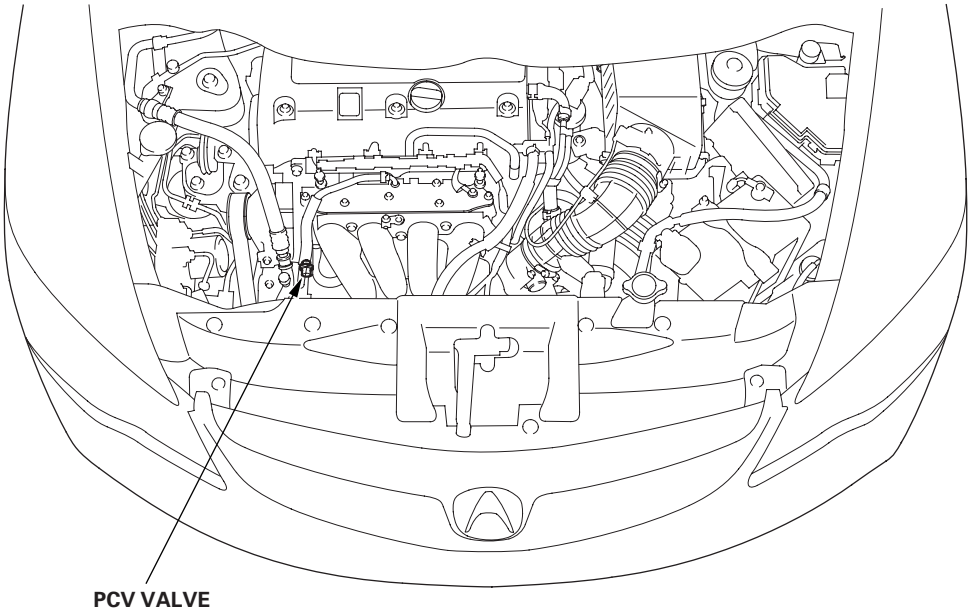
EGR Valve Replacement

1. Remove the air cleaner (see page 11-345).
2. Relieve the fuel pressure (see page 11-322).
3. Remove the fuel line (A). Disconnect the hose (B).



4. Disconnect CMP sensor A connector (C).
5. Remove the EGR valve 6P connector (D).
6. Remove the EGR valve (E).
7. Install the parts in the reverse order of removal with a new gasket (F).

Component Location Index



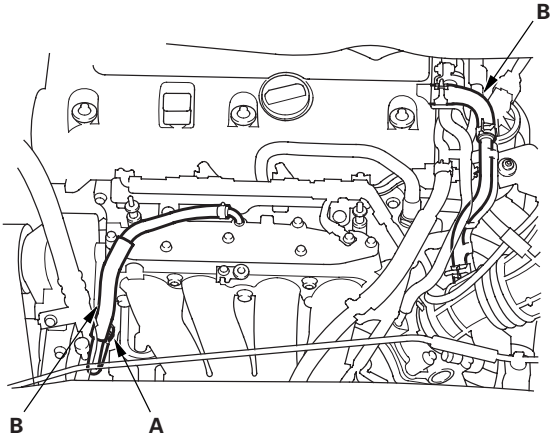
PCV VALVE
Inspection (K20Z2 engine), page 11-372
Inspection (K20Z3 engine), page 11-372
Replacement, page 11-373

* : This illustration shows K20Z2 engine.

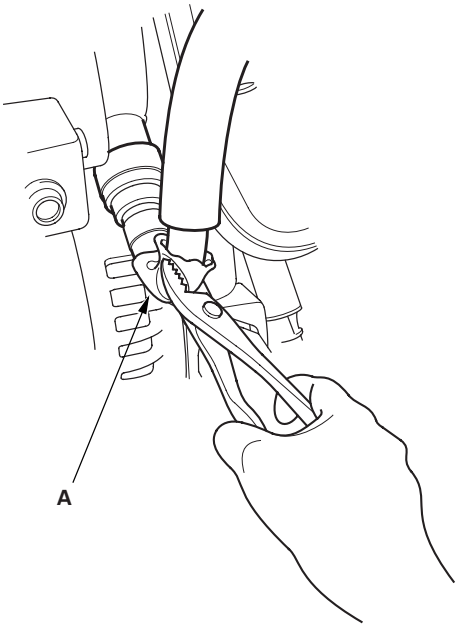
PCV Valve Inspection

K20Z2 engine

1. Check the PCV valve (A), the hoses (B), and the connections for leaks or restrictions.

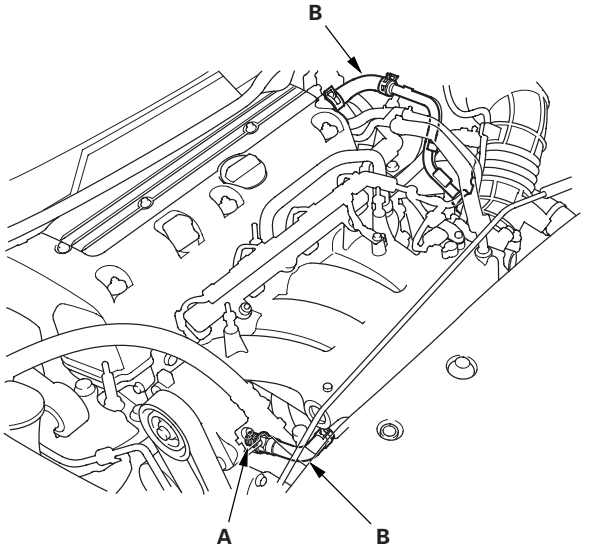


2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve then recheck.

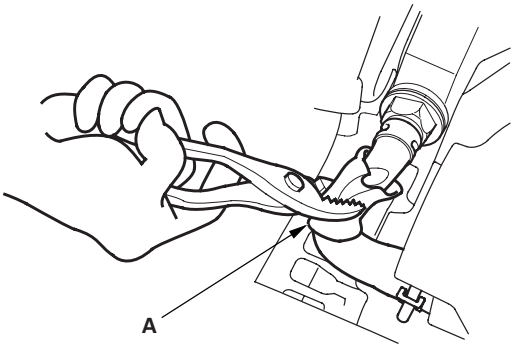


K20Z3 engine

1. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.

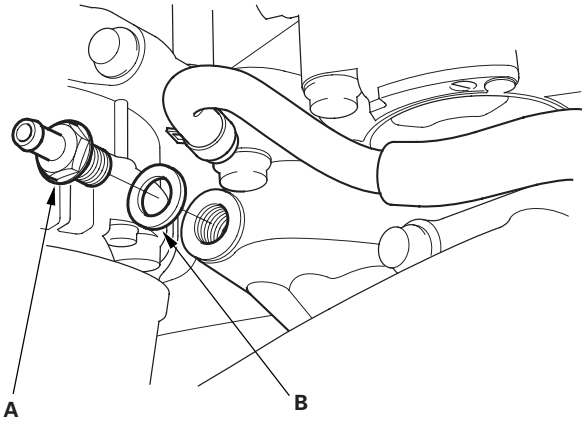


2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve and recheck.



PCV Valve Replacement

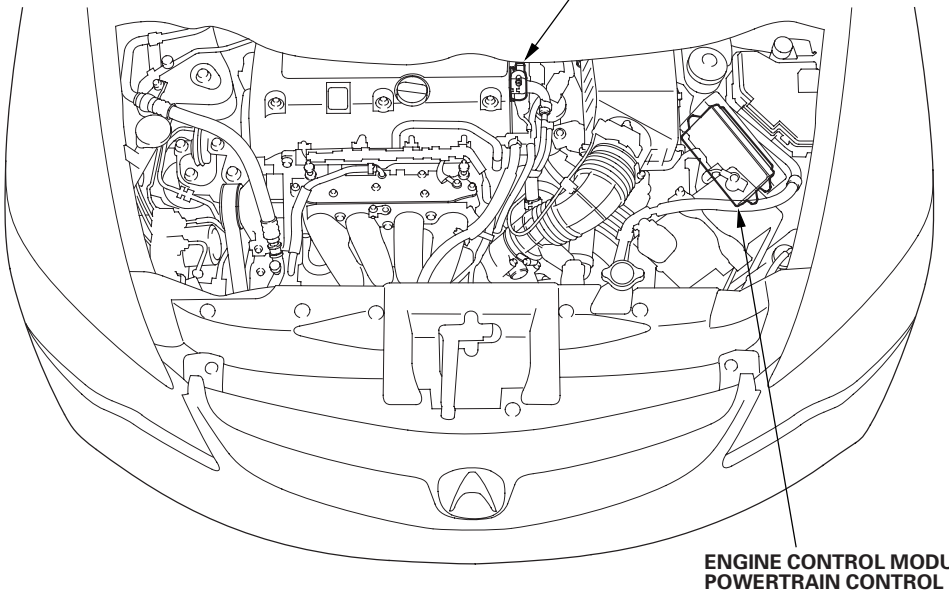
1. Disconnect the PCV hose.
2. Remove the PCV valve (A).



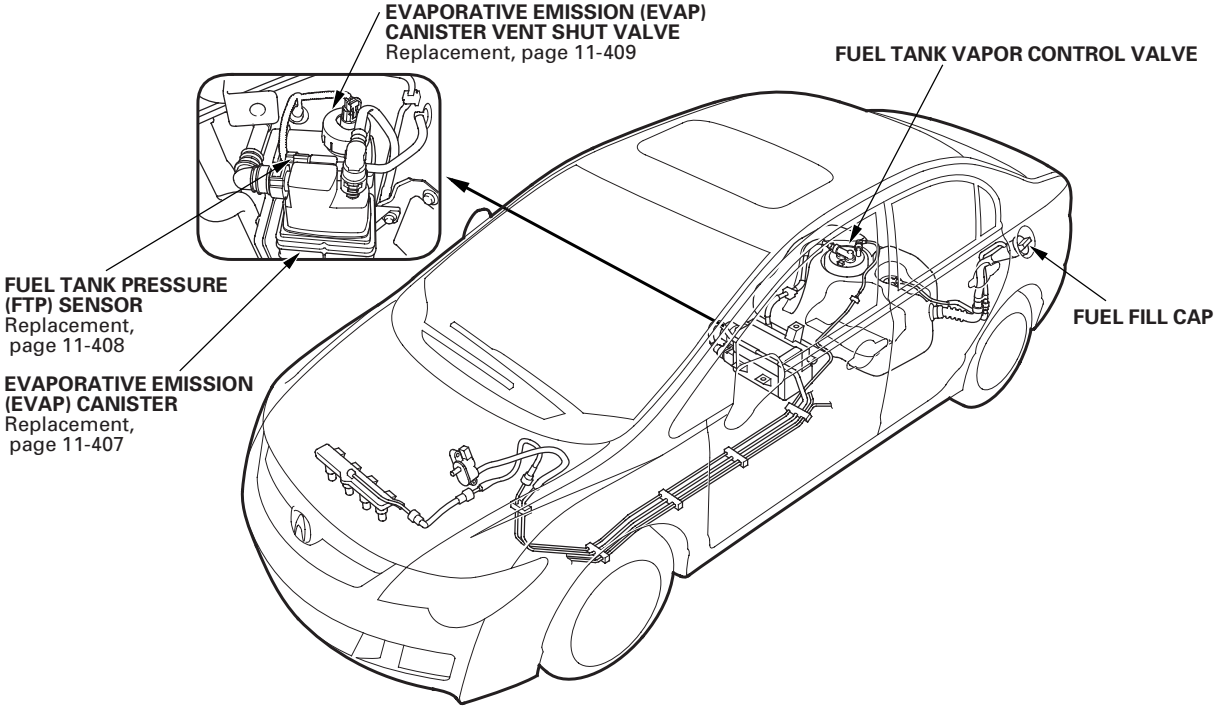
A
44 N·m
(4.5 kgf·m, 33 lbf·ft)

3. Install the parts in the reverse order of removal with a new washer (B).

Component Location Index



* : This illustration shows K20Z2 engine.



DTC P0443: EVAP Canister Purge Valve Circuit Malfunction

Special Tools Required
Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

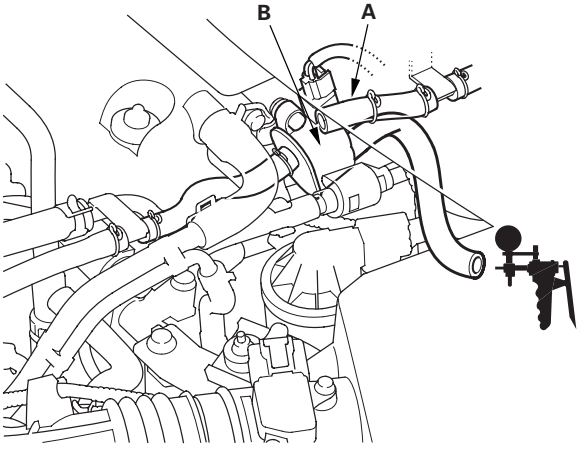
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0443 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0), and allow the engine to cool below 60 ℃ (140 ℉).
6. Disconnect the vacuum hose (A) from the purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the hose.



* : This illustration shows K20Z2 engine.

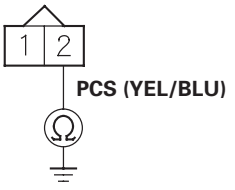
7. Start the engine, and let it idle.

   Is there vacuum?

   YES—Go to step 8.

   NO—Go to step 14.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

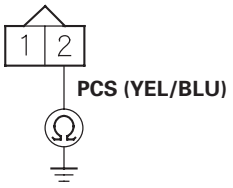
NO—Go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector B (44P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

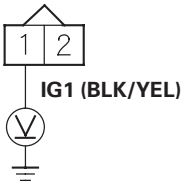
Is there continuity?

YES—Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B3), then go to step 24.

NO—Go to step 30.

14. Turn the ignition switch to LOCK (0).
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch to ON (II).
17. Measure the voltage between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

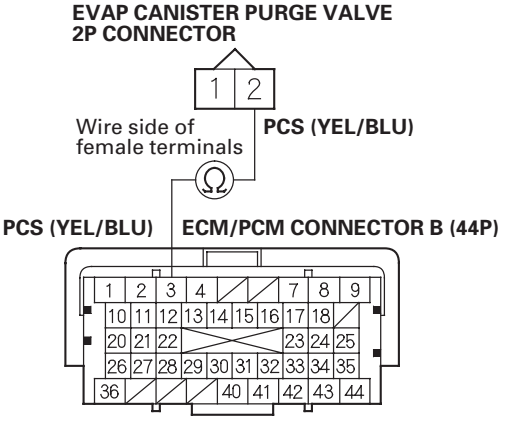
Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the EVAP canister purge valve and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 24.

18. Turn the ignition switch to LOCK (0).
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector B (44P).

21. Check for continuity between ECM/PCM connector terminal B3 and EVAP canister purge valve 2P connector terminal No. 2.



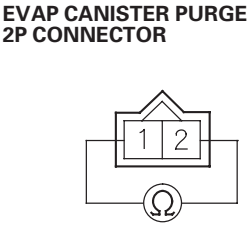
Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B3), then go to step 24.

22. At the valve side, measure the resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.



Terminal side of male terminals

Is there about 25 Ω at room temperature?

YES—Go to step 30.

NO—Go to step 23.

23. Replace the EVAP canister purge valve (see page 11-409).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

(cont'd)

DTC Troubleshooting (cont'd)

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0443 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

32. Start the engine, and let it idle.

33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0443 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

DTC P0451: FTP Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 5.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
5. Turn the ignition switch to LOCK (0).
6. Replace the FTP sensor (see page 11-408).
7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-310).
10. Start the engine, then let it idle for 1 minute.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0451 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

    NO—Go to step 12.
12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P0452: FTP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about −7.3 kPa (−55 mmHg, −2.16 in.Hg), or 0.3 V or less indicated?

   YES—Go to step 10.

   NO—Go to step 7.
7. Install the fuel fill cap.
8. Start the engine, and let it idle.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

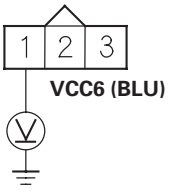
   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.
10. Turn the ignition switch to LOCK (0).
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch to ON (II).
13. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about −7.3 kPa (−55 mmHg, −2.16 in.Hg), or 0.3 V or less indicated?

    YES—Go to step 14.

    NO—Go to step 24.
14. Measure the voltage between FTP sensor 3P connector terminal No. 1 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

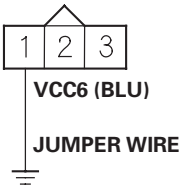
Is there about 5 V?

YES—Go to step 20.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector A (44P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

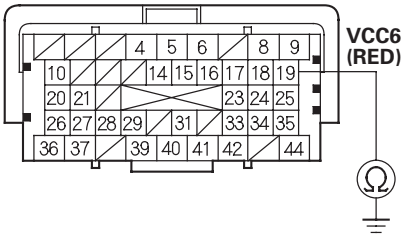
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between ECM/PCM connector terminal A19 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

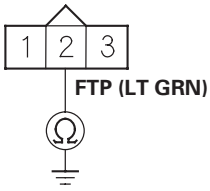
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the ECM/PCM (A19) and the FTP sensor, then go to step 26.

20. Turn the ignition switch to LOCK (0).
21. Jump the SCS line with the HDS.
22. Disconnect ECM/PCM connector A (44P).
23. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A26) and the FTP sensor, then go to step 26.

NO—Go to step 32.

(cont'd)

DTC Troubleshooting (cont'd)

24. Turn the ignition switch to LOCK (0).
25. Replace the FTP sensor (see page 11-408).
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-310).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
34. Start the engine, and let it idle.
35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 36.

36. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0453: FTP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about 7.3 kPa (55 mmHg, 2.16 in.Hg), or 4.7 V or more indicated?

   YES—Go to step 10.

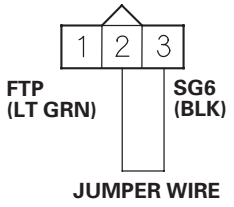
   NO—Go to step 7.
7. Install the fuel fill cap.
8. Start the engine, and let it idle.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.
10. Turn the ignition switch to LOCK (0).
11. Disconnect the FTP sensor 3P connector.
12. Connect FTP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

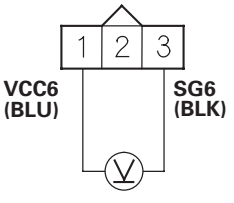
13. Turn the ignition switch to ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (55 mmHg, 2.16 in.Hg), or 4.7 V or more indicated?

    YES—Go to step 15.

    NO—Go to step 26.
15. Measure the voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 21.

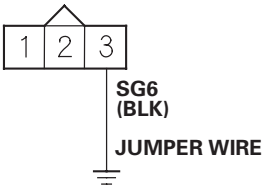
NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (44P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

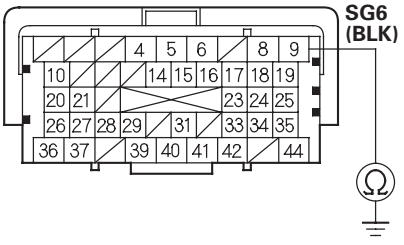
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

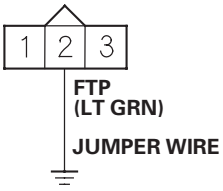
Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the ECM/PCM (A9) and the FTP sensor, then go to step 28.

21. Turn the ignition switch to LOCK (0).
22. Jump the SCS line with the HDS.
23. Disconnect ECM/PCM connector A (44P).
24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

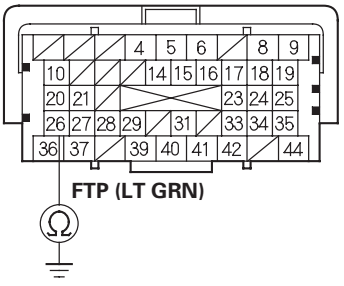
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

25. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the ECM/PCM (A26) and the FTP sensor, then go to step 28.

26. Turn the ignition switch to LOCK (0).

27. Replace the FTP sensor (see page 11-408).

28. Reconnect all connectors.

29. Turn the ignition switch to ON (II).

30. Reset the ECM/PCM with the HDS.

31. Do the ECM/PCM idle learn procedure (see page 11-310).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

34. Reconnect all connectors.

35. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

36. Start the engine, and let it idle.

37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 36. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 38.

38. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 37, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 36. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P0455: EVAP System Large Leak Detected

DTC P0456: EVAP System Very Small Leak Detected

NOTICE

The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required

Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.

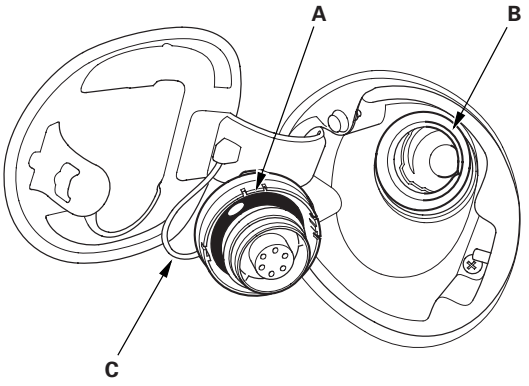
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 turn after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Replace or tighten the cap, then go to step 30.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 29.

   NO—Go to step 3.

3. Turn the ignition switch to ON (II).

4. Clear the DTC with the HDS.

5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM. ■

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

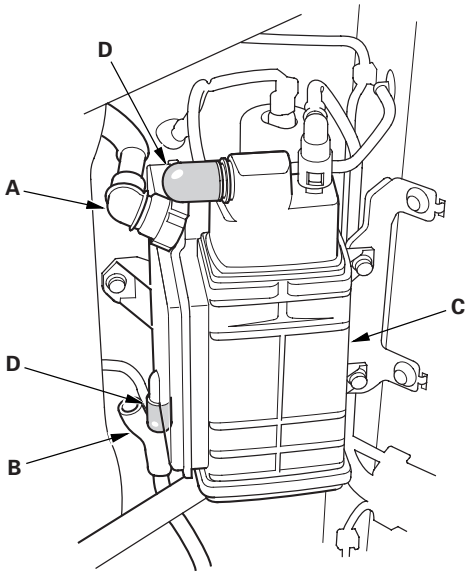
7. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

   Is the tube OK?

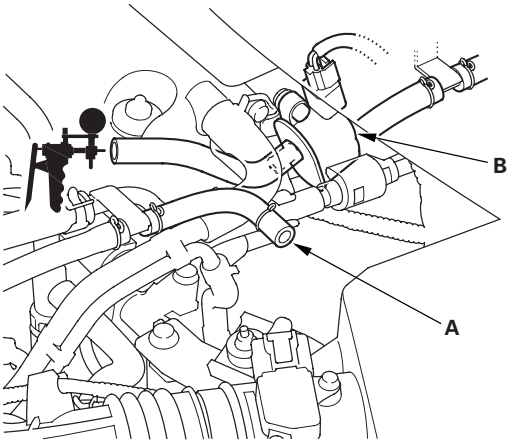
   YES—Go to step 8.

   NO—
   - Replace the fuel tank vapor recirculation tube, then go to step 29.
   - If needed, replace the fuel tank (see page 11-339), then go to step 29.

8. Disconnect the fuel tank vapor recirculation tube (A) and the fresh air hose (B) from the EVAP canister (C), and plug the EVAP canister ports (D).



9. Disconnect the vacuum hose (engine side) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the purge valve as shown.



*: This illustration shows K20Z2 engine.

10. Turn the ignition switch ON (II).

11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

12. Apply vacuum to the hose until the FTP reads 1.90 V (—15.1 mmHg, —0.59 in.Hg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

13. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.

14. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (0.5 mmHg, 0.1 in.Hg)?

    YES—Go to step 15.

    NO—Go to step 22.

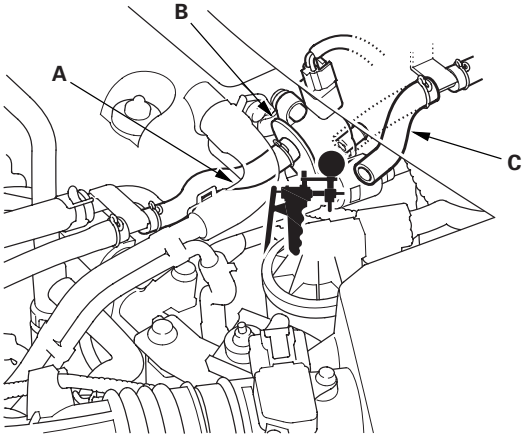
(cont'd)

DTC Troubleshooting (cont'd)

15. Turn the ignition switch to LOCK (0).

16. Disconnect the vacuum pump/gauge from the EVAP canister purge valve.

17. Reconnect the vacuum hose (engine side) (A) to the EVAP canister purge valve (B) and disconnect the vacuum hose (EVAP canister side) (C) from the EVAP canister purge valve, then connect a vacuum pump/gauge 0—30 in.Hg, to the vacuum hose as shown.



*: This illustration shows K20Z2 engine.

18. Turn the ignition switch to ON (II).

19. Apply vacuum to the hose until the FTP reads 1.90 V (—15.1 mmHg, —0.59 in.Hg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

20. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (2.5 mmHg, 0.1 in.Hg)?

    YES—Go to step 21.

    NO—Replace the EVAP canister purge valve (see page 11-409), then go to step 29.

21. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve or a leaking the EVAP canister.

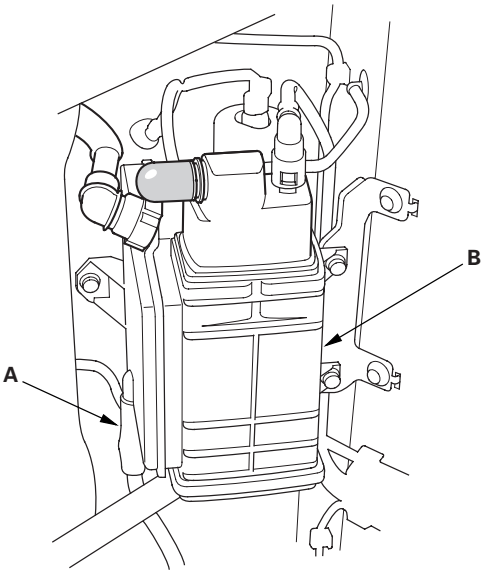
    Are the line and the EVAP canister OK?

    YES—Replace these parts, then go to step 29:

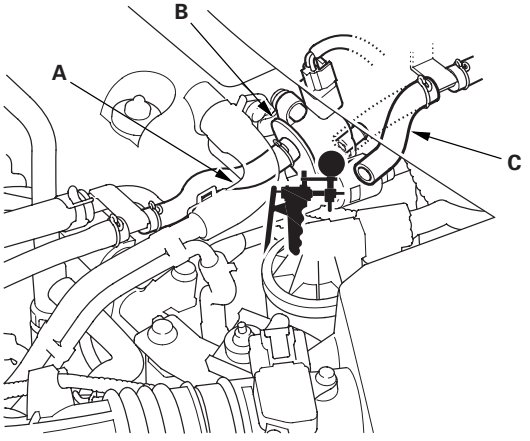
    - FTP sensor O-ring
    - EVAP canister vent shut valve case and O-ring
    - EVAP canister

    NO—Reconnect or repair the EVAP canister purge line, then go to step 29.

22. Reconnect the fresh air hose (A) to the EVAP canister (B).



23. Reconnect the vacuum hose (engine side) (A) to the EVAP canister purge valve (B) and disconnect the vacuum hose (EVAP canister side) (C) from the EVAP canister purge valve, then connect a vacuum pump/gauge 0—30 in.Hg, to the vacuum hose as shown.



*: This illustration shows K20Z2 engine.

24. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

25. Apply vacuum to the EVAP system until the FTP reads 1.90 V (—0.59 in.Hg, —15.1 mmHg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

26. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (2.5 mmHg, 0.1 in.Hg)?

    YES—Replace the EVAP canister vent shut valve (see page 11-409), then go to step 29.

    NO—Go to step 27.

27. Select EVAP CVS OFF in the INSPECTION MENU.

28. Check these parts for looseness or damage:

    - Fuel fill pipe
    - Fuel vapor return pipe

    Are the parts OK?

    YES—Check the fuel tank unit base gasket (see page 11-335), and check the fuel tank, then go to step 29.

    NO—Repair or replace the damaged parts, then go to step 29.

29. Reconnect all hoses and connectors.

30. Turn the ignition switch to ON (II).

31. Reset the ECM/PCM with the HDS.

32. Do the ECM/PCM idle learn procedure (see page 11-310).

33. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC Troubleshooting (cont'd)

DTC P0457: EVAP System Leak Detected/Fuel Fill Cap Loose or Missing

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

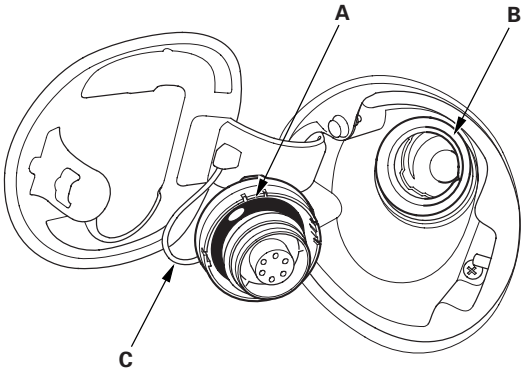
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 turn after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Replace or tighten the cap, then go to step 19.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 19.

   NO—Go to step 3.

3. Turn the ignition switch to ON (II).

4. Clear the DTC with the HDS.

5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM. ■

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

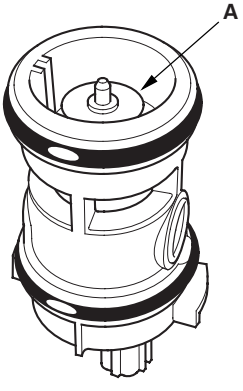
7. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-409).

8. Connect the 2P connector to the EVAP canister vent shut valve.

9. Turn the ignition switch to ON (II).

10. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

11. Check the EVAP canister vent shut valve (A) operation.



   Does the valve operate?

   YES—Check the routing of the EVAP canister vent tube, then go to step 18.

   NO—Go to step 12.

12. Turn the ignition switch to LOCK (0).

13. Replace the EVAP canister vent shut valve (see page 11-409).

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

18. Reinstall the EVAP canister vent shut valve.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0496: EVAP System High Purge Flow Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM. ■

    NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Replace the EVAP canister purge valve (see page 11-409).

6. Turn the ignition switch to ON (II).

7. Reset the ECM/PCM with the HDS.

8. Do the ECM/PCM idle learn procedure (see page 11-310).

9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC Troubleshooting (cont'd)

DTC P0497: EVAP System Low Purge Flow Detected

Special Tools Required
- Vacuum/pressure gauge, 0—4 in.Hg, 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the fuel fill cap installation (The cap must say TIGHTEN TO CLICK. The cap should tighten 1/4 turn after it is tight.).

   Is the fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Properly install the fuel fill cap, then go to step 23.

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM. ■

   NO—Go to step 5.

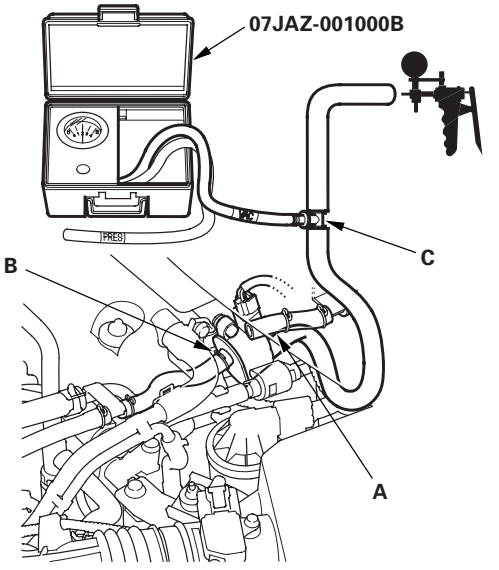
5. Check for a loose or damaged EVAP canister purge line between the intake manifold and the EVAP canister purge valve.

   Is the line OK?

   YES—Go to step 6.

   NO—Reconnect or repair the EVAP canister purge line, then go to step 23.

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) between the vacuum gauge, the vacuum pump/gauge, 0—30 in.Hg, and the vacuum hose as shown.



7. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

8. Slowly apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

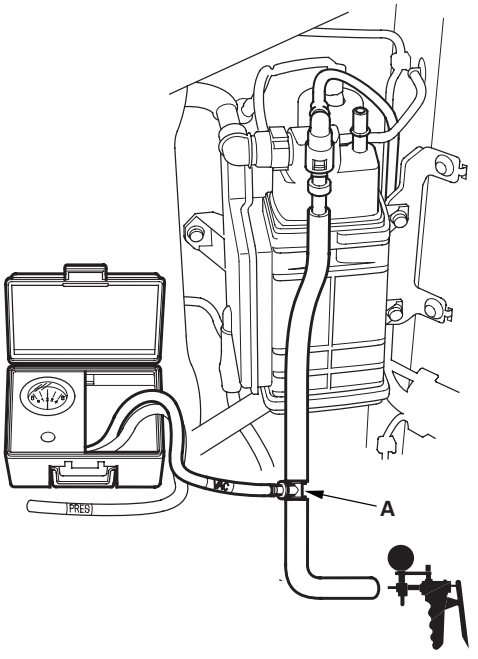
   Does it hold vacuum?

   YES—Replace the EVAP canister purge valve, then go to step 22.

   NO—Go to step 9.

9. Reconnect the vacuum hose to the EVAP canister purge valve.

10. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, as shown.



11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

12. Slowly apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

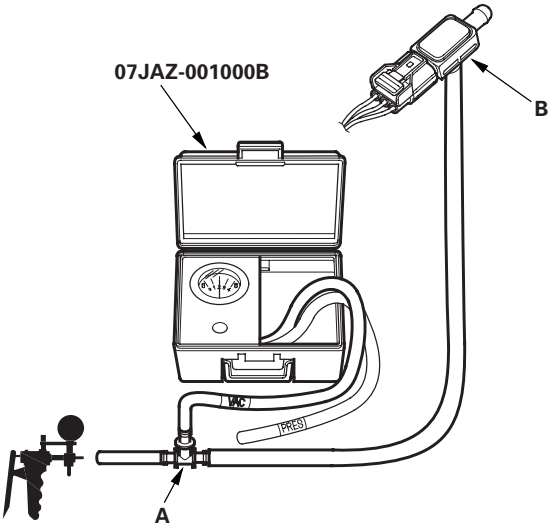
Does it hold vacuum?

YES—Check for a restricted EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 22.

NO—Go to step 13.

13. Remove the FTP sensor with its connector connected (see page 11-408).

14. Connect a T-fitting (A) between the vacuum pump/gauge, 0—30 in.Hg, the vacuum pump, and the FTP sensor (B) as shown.



15. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.

16. Slowly apply about 1.3 kPa (10 mmHg, 0.4 in.Hg) of vacuum to the hose.

(cont'd)

DTC Troubleshooting (cont'd)

17. Check the FTP SENSOR in the DATA LIST with the HDS.

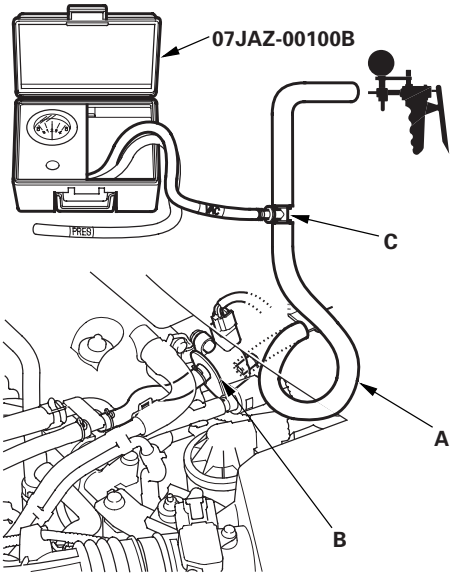
    Is the difference more than 1.1 kPa (8 mmHg, 0.31 in.Hg) before and after applying vacuum?

    YES—Go to step 18.

    NO—Replace the FTP sensor (see page 11-408), then go to step 22.

18. Reconnect the vacuum hoses to the EVAP canister purge line (EVAP canister side), and reinstall the FTP sensor.

19. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B), and connect a T-fitting (C) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, as shown.



20. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

21. Slowly apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

    Does the hose hold vacuum?

    YES—Check for a blockage at the EVAP canister port, then go to step 22.

    NO—Replace the EVAP canister vent shut valve (see page 11-409), then go to step 22.

22. Reconnect all hoses.

23. Turn the ignition switch to ON (II).

24. Reset the ECM/PCM with the HDS.

25. Do the ECM/PCM idle learn procedure (see page 11-310).

26. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0497: EVAP System Low Purge Flow Detected

Special Tools Required
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

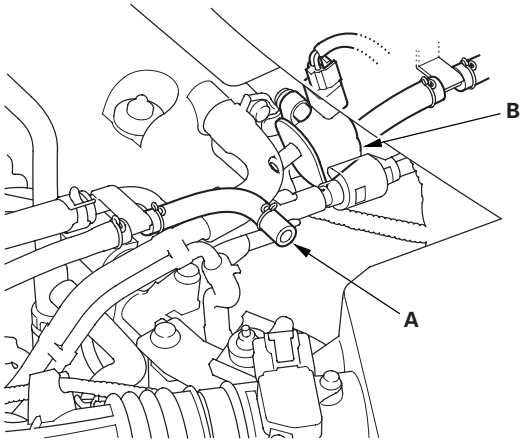
   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM. ■

   NO—Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Check for poor connections, blockage, or damage at the EVAP canister purge line between the throttle body and the EVAP canister.

   Is the line OK?

   YES—Go to step 5.

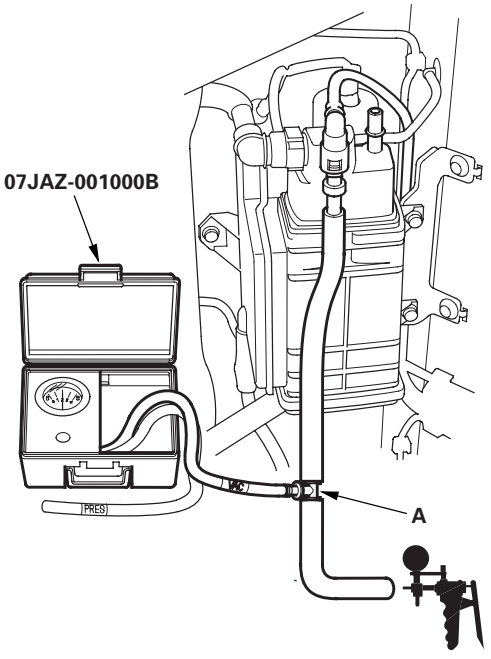
   NO—Reconnect or repair the EVAP canister purge line, then go to step 25.
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).



(cont'd)

DTC Troubleshooting (cont'd)

7. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, as shown.



8. Apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

9. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

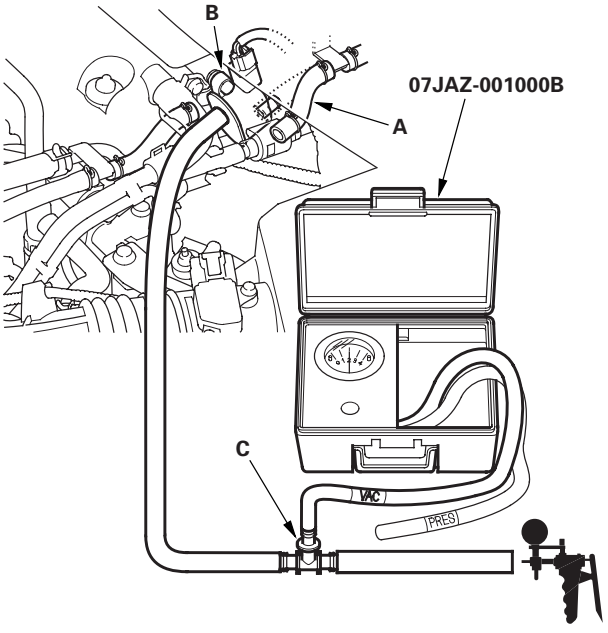
   Does the vacuum release immediately?

   YES—Go to step 15.

   NO—Go to step 10.

10. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.

11. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect a T-fitting (C) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, and the EVAP canister purge valve as shown.



12. Apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

13. Turn the ignition switch to ON (II).

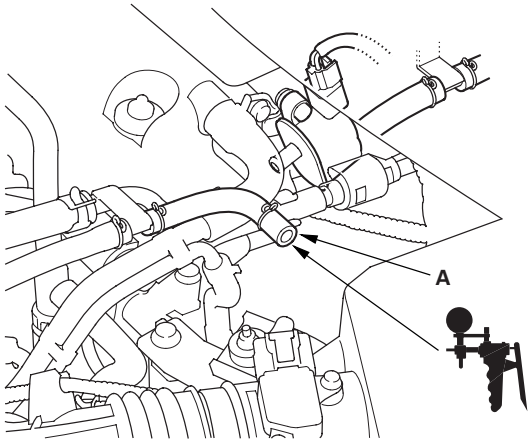
14. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

    Does the vacuum release immediately?

    YES—Check for a blockage in the vacuum hose between the EVAP canister purge valve and the EVAP canister, then go to step 25.

    NO—Replace the EVAP canister purge valve (see page 11-409), then go to step 25.

15. Connect the vacuum pump/gauge, 0—30 in.Hg, to the vacuum hose (A) as shown.



16. Start the engine, and let it idle.

    Is there vacuum?

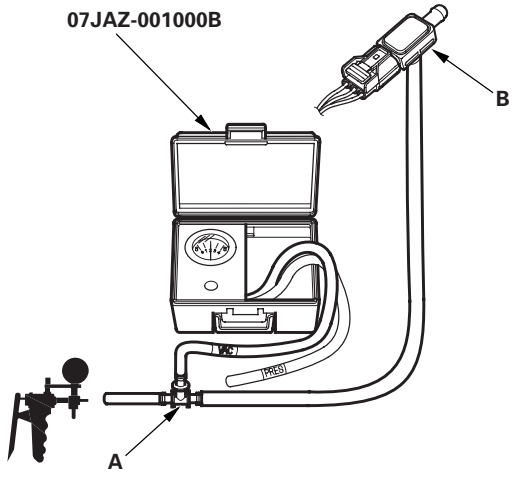
    YES—Go to step 17.

    NO—Check for a blockage at the EVAP purge line between the throttle body and the EVAP canister purge valve, then go to step 25.

17. Turn the ignition switch to LOCK (0).

18. Remove the FTP sensor with its connector connected (see page 11-408).

19. Connect a T-fitting (A) between the vacuum pump/gauge, 0—30 in.Hg and connect the vacuum pump and the FTP sensor (B) as shown.



20. Turn the ignition switch to ON (II).

21. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.

22. Slowly apply about 1.3 kPa (10 mmHg, 0.4 in.Hg) of vacuum to the hose.

23. Check the FTP SENSOR in the DATA LIST with the HDS.

    Does the value change?

    YES—Check for debris or blockage at the EVAP canister port, then go to step 25.

    NO—Go to step 24.

24. Replace the FTP sensor (see page 11-408).

25. Reconnect all hoses.

26. Turn the ignition switch to ON (II).

27. Reset the ECM with the HDS.

28. Do the ECM idle learn procedure (see page 11-310).

29. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor and the ECM, then go to step 1.

DTC Troubleshooting (cont'd)

DTC P0498: EVAP Canister Vent Shut Valve Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0498 indicated?

   YES—Go to step 6.

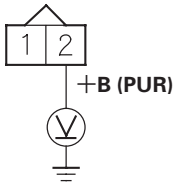
   NO—Go to step 4.
4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0498 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch to ON (II).
9. Measure the voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

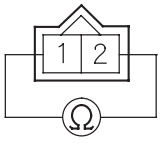
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PGM-FI subrelay, then go to step 18.

10. Turn the ignition switch to LOCK (0).
11. At the valve side, measure the resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 25—30 Ω at room temperature?

YES—Go to step 12.

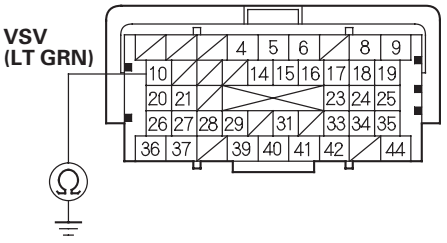
NO—Go to step 17.

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector A (44P).

14. Check for continuity between ECM/PCM connector terminal A10 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

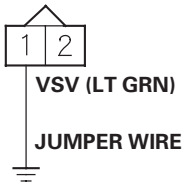
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the ECM/PCM (A10), then go to step 18.

NO—Go to step 15.

15. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

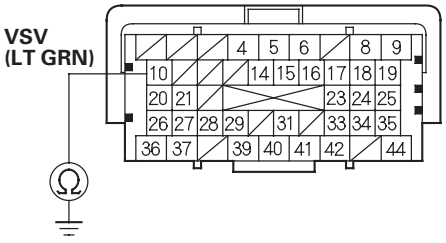
EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminal A10 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the EVAP canister vent shut valve and the ECM/PCM (A10), then go to step 18.

17. Replace the EVAP canister vent shut valve (see page 11-409).

18. Reconnect all connectors.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

27. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 27. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 27. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P0499: EVAP Canister Vent Shut Valve Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0499 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. ■

5. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

6. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0499 indicated?

   YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 6. If the ECM/PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for DTC P0499 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 6. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

DTC P1454: FTP Sensor Range/Performance Problem

DTC P2422: EVAP Canister Vent Shut Valve Stuck Closed Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap, and wait 1 minute.
5. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is it between −0.67 and 0.67 kPa (−5 and 5 mmHg, −0.2 and 0.2 in.Hg), or 2.4 and 2.6 V?

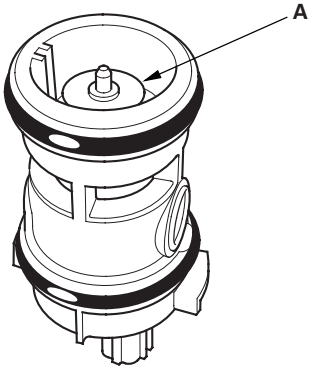
   YES—Go to step 6.

   NO—Go to step 17.
6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
9. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM. Also check for a blockage in the vent hoses and the drain joint. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
10. Clear the DTC with the HDS.
11. Turn the ignition switch to LOCK (0).
12. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-409).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch to ON (II).
15. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.

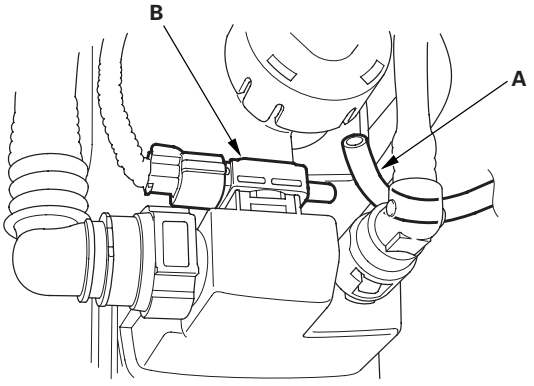


Does the valve operate?

YES—Check for a blockage in the EVAP canister, the vent hoses, and the drain joint, then install the EVAP canister vent shut valve, and go to step 23.

NO—Replace the EVAP canister vent shut valve (see page 11-409), then go to step 23.

17. Disconnect the air tube (A) from the FTP sensor (B).



18. Check the FTP SENSOR in the DATA LIST with the HDS.

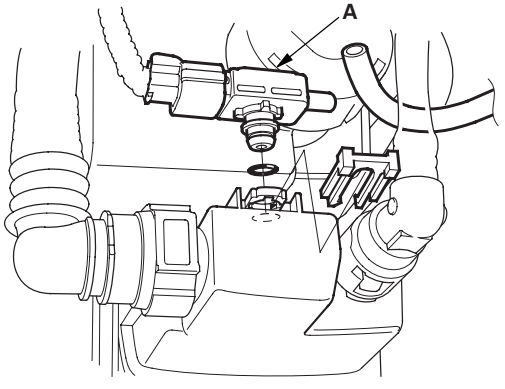
    Is it between −0.67 and 0.67 kPa (−5 and 5 mmHg, −0.2 and 0.2 in.Hg), or 2.4 and 2.6 V?

    YES—Check for a blockage in the FTP sensor air tube or the vent, then go to step 23.

    NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-408).



21. Turn the ignition switch to ON (II).

22. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between −0.67 kPa and 0.67 kPa (−5 and 5 mmHg, −0.2 and 0.2 in.Hg), or 2.4 and 2.6 V?

    YES—Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 23.

    NO—Replace the FTP sensor (see page 11-408), then go to step 23.

23. Turn the ignition switch to ON (II).

24. Reset the ECM/PCM with the HDS.

25. Do the ECM/PCM idle learn procedure (see page 11-310).

26. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1454 and/or P2422 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

    NO—Go to step 28.

(cont'd)

DTC Troubleshooting (cont'd)

28. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P145C: EVAP System Purge Flow Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is representative of an EVAP system purge flow problem. If DTC P145C is indicated alone, troubleshoot P0496 and P0497 using the freeze data for P145C.
- If DTC P0497 and P145C are stored at the same time, check for a poor connection, a blockage, or damage at the EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, or check for a stuck closed EVAP canister purge valve.
- If any of the DTCs listed below are indicated at the same time as DTC P145C, troubleshoot those DTC first, then recheck for P145C:

  P0496, P0497: EVAP system purge flow

Fuel Cap Warning Message System Troubleshooting

Special Tools Required
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

Do this procedure if the fuel cap warning message comes on frequently, or if the message does not go off after the fuel fill cap is tightened and the vehicle is driven several days.

K20Z3 engine

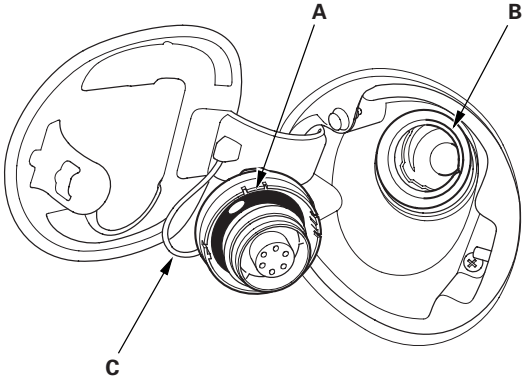
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 after it's tight, then it clicks.

   Is the correct fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Replace or tighten the cap, then go to step 13.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 13.

   NO—Go to step 3.

3. Reinstall and tighten the fuel fill cap.

4. Clear the DTC with the HDS.

5. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle for 1 minute.

6. Test drive at 72 km/h (45 mph) for 1 minute or more.

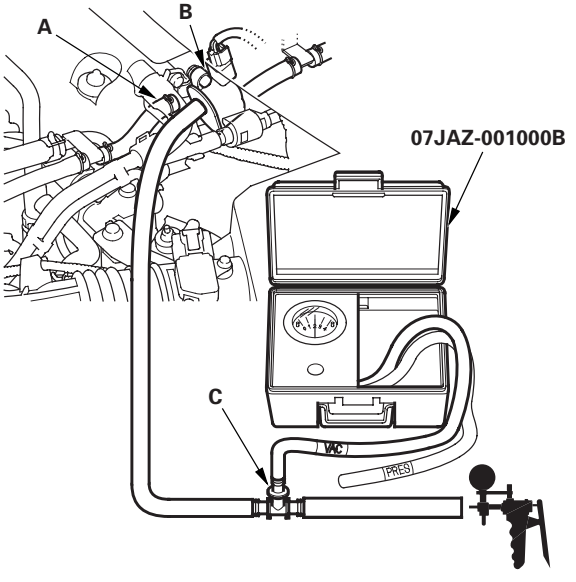
   Does fuel cap warning message come on?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. ■

7. Turn the ignition switch to LOCK (0).

8. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) between the vacuum gauge and the vacuum pump/gauge 0—30 in.Hg, and the EVAP canister purge valve as shown.



(cont'd)

Fuel Cap Warning Message System Troubleshooting (cont'd)

9. Turn the ignition switch to ON (II).
10. Apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.
11. Select the EVAP PCS ON in the INSPECTION MENU with the HDS.

    Does the vacuum release immediately?

    YES—Check for a blockage at the EVAP canister purge line between EVAP canister purge valve and the EVAP canister, then go to step 12.

    NO—Replace the EVAP canister purge valve (see page 11-409), then go to step 12.
12. Reconnect all hoses.
13. Turn the ignition switch to ON (II).
14. Reset the ECM with the HDS.
15. Do the ECM idle learn procedure (see page 11-310).
16. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle for 1 minute.
17. Test drive at 72 km/h (45 mph) for 1 minute or more.

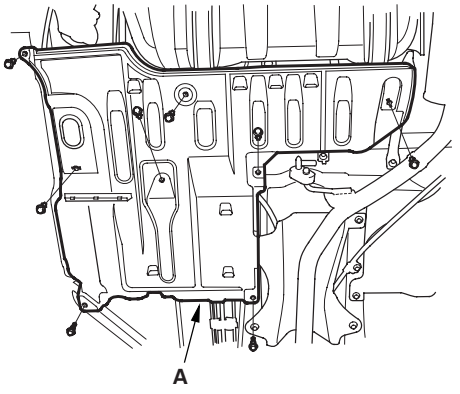
    Does the fuel cap message come on?

    YES—Go to step 1 and recheck.

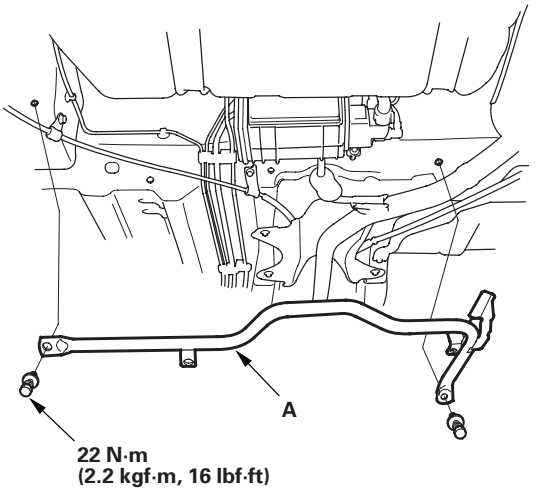
    NO—Troubleshooting is complete. ■

EVAP Canister Replacement

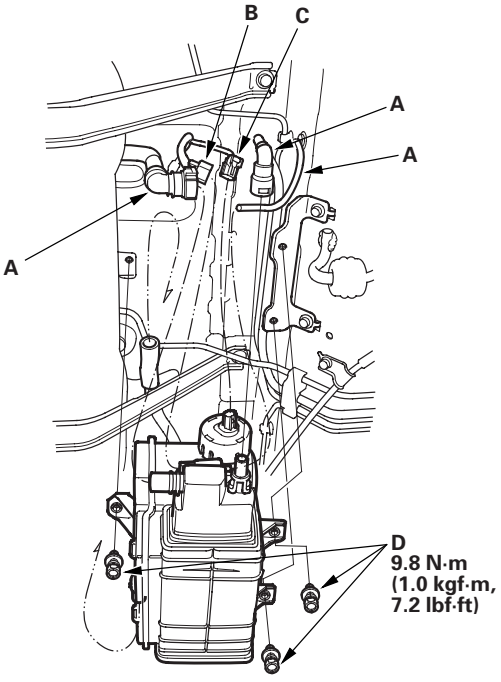
1. Raise the vehicle on a lift.
2. Remove the cover (A).



3. Remove the EVAP canister guard pipe (A).



4. Remove the hoses (A), the FTP sensor connector (B), the EVAP canister vent shut valve connector (C) and the bolts (D).

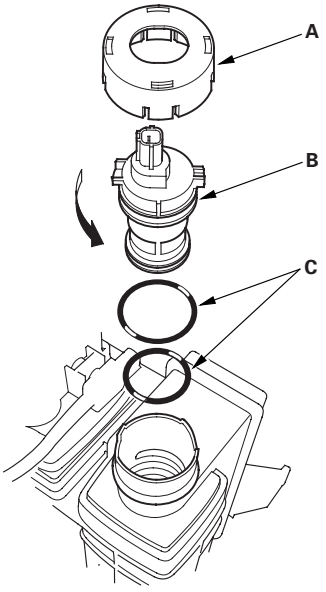


5. Remove the EVAP canister.

(cont'd)

EVAP Canister Replacement (cont'd)

6. Remove the cap (A).



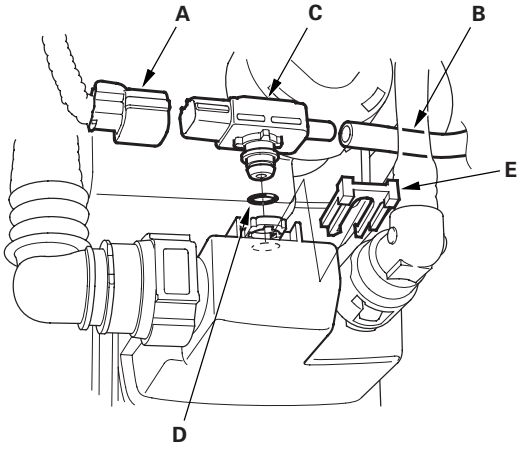
7. Remove the EVAP canister vent shut valve (B).
8. Install the EVAP canister vent shut valve to the new EVAP canister with new O-rings (C).

   NOTE: Do not coat the O-ring with oil.

9. Install the parts in the reverse order of removal.

FTP Sensor Replacement

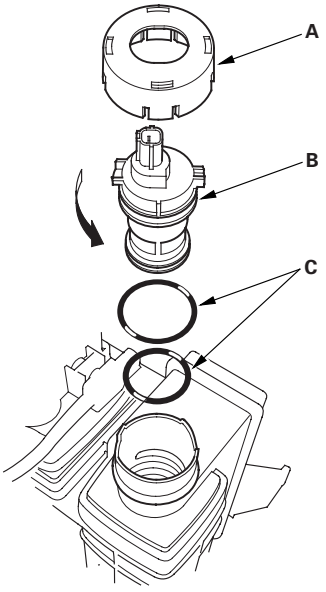
1. Remove the cover (see step 2 on page 11-407).
2. Disconnect the FTP sensor connector (A).



3. Disconnect the hose (B), and then remove the FTP sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D) and retainer (E).

EVAP Canister Replacement (cont'd)

6. Remove the cap (A).



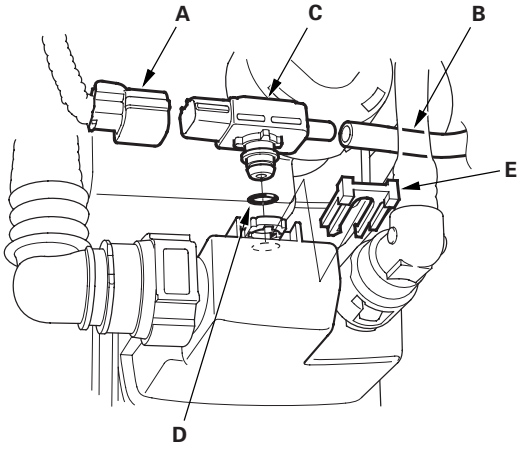
7. Remove the EVAP canister vent shut valve (B).
8. Install the EVAP canister vent shut valve to the new EVAP canister with new O-rings (C).

   NOTE: Do not coat the O-ring with oil.

9. Install the parts in the reverse order of removal.

FTP Sensor Replacement

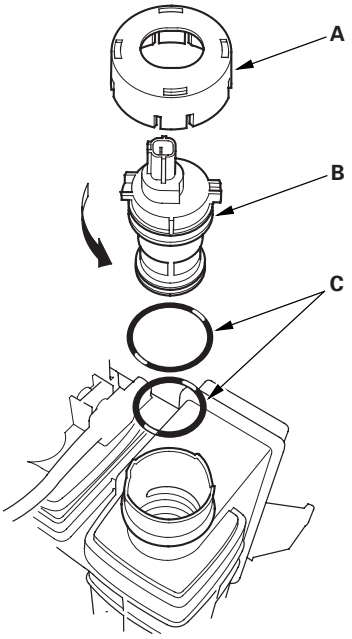
1. Remove the cover (see step 2 on page 11-407).
2. Disconnect the FTP sensor connector (A).



3. Disconnect the hose (B), and then remove the FTP sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D) and retainer (E).

EVAP Canister Vent Shut Valve Replacement

1. Remove the EVAP canister (see page 11-407).
2. Remove the cap (A).

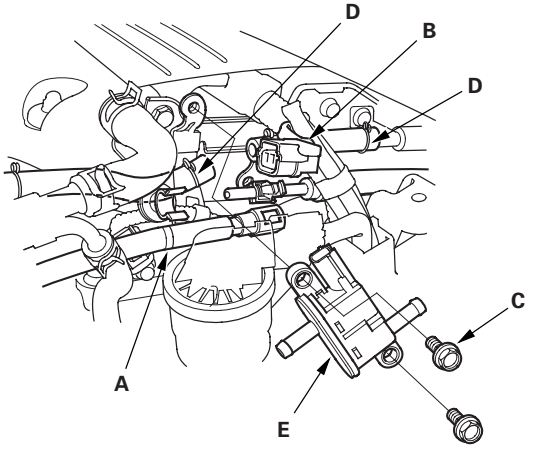


3. Remove the EVAP canister vent shut valve (B).
4. Install the parts in the reverse order of removal with new O-rings (C) and new cap.

   NOTE: Do not coat the O-ring with oil.

EVAP Canister Purge Valve Replacement

1. Remove the engine cover (see step 1 on page 9-3).
2. Remove the air cleaner (see page 11-345).
3. Relieve the fuel pressure (see page 11-322).
4. Remove the fuel line (A).



* : This illustration shows K20Z2 engine.

5. Disconnect the EVAP canister purge valve 2P connector (B).
6. Remove the bolts (C) and the hoses (D), then remove the EVAP canister purge valve (E).
7. Install the parts in the reverse order of removal.

DYNOMITE -2009-

Transaxle

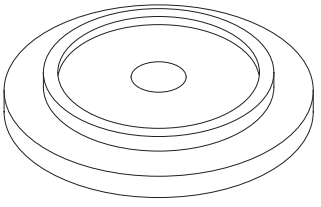
DYNOMITE -2009-

Clutch

Clutch

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07JAF-PM7011A	Clutch Alignment Disc	1
②	07LAB-PV00100	Ring Gear Holder	1
③	07ZAF-PR8A100	Clutch Alignment Shaft	1
④	07936-KC10500	Bearing Remover Shaft	1
⑤	07741-0010201	Slide Hammer	1
⑥	07746-0010800	Bearing Driver Attachment, 22 x 24 mm	1
⑦	07749-0010000	Driver Handle, 15 x 135L	1
⑧	07936-3710100	Remover Handle	1



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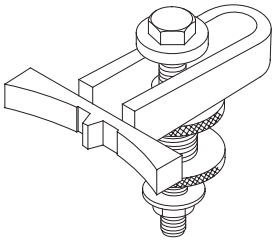

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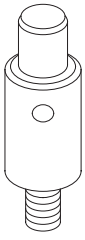

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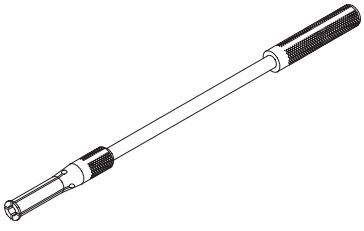

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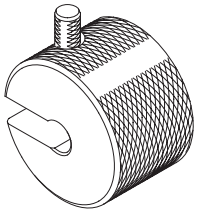

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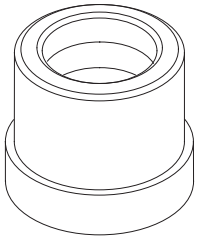

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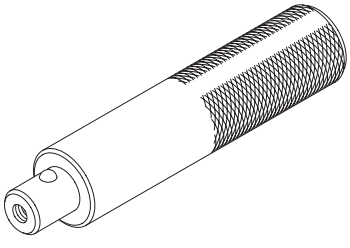

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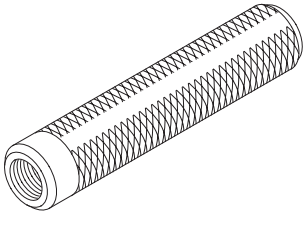
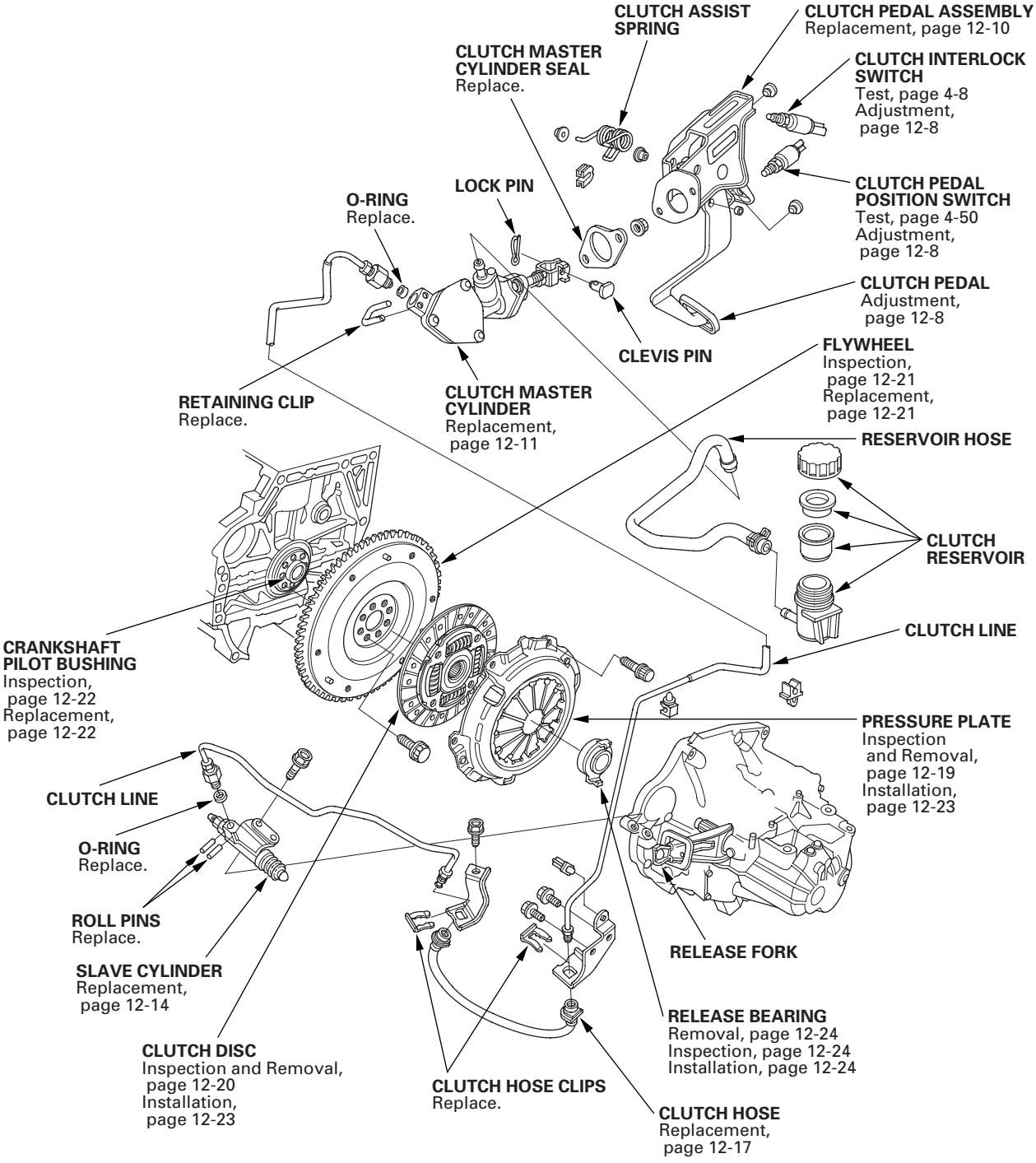


⑧

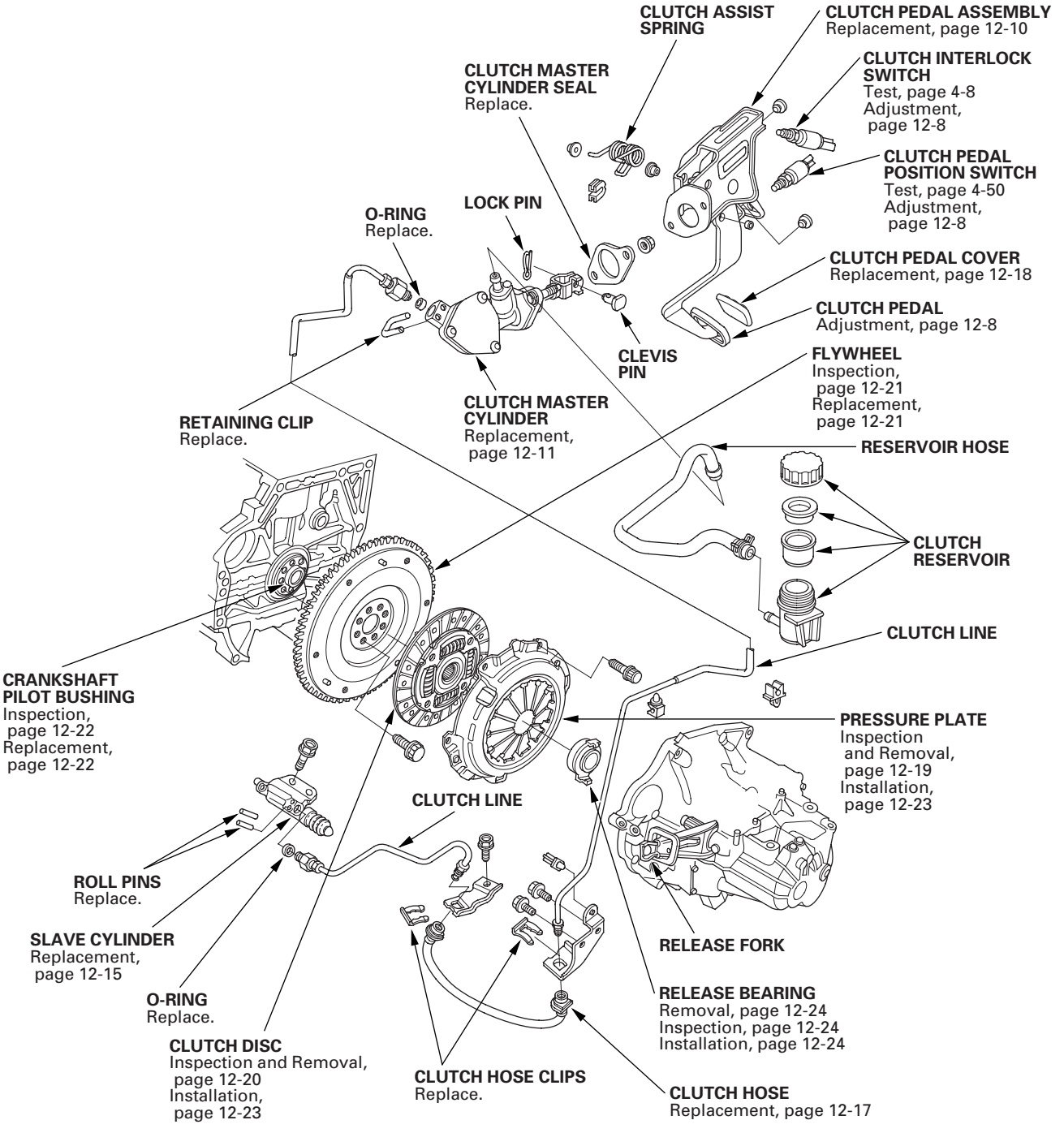
Component Location Index

5-speed Manual Transmission



Component Location Index (cont'd)

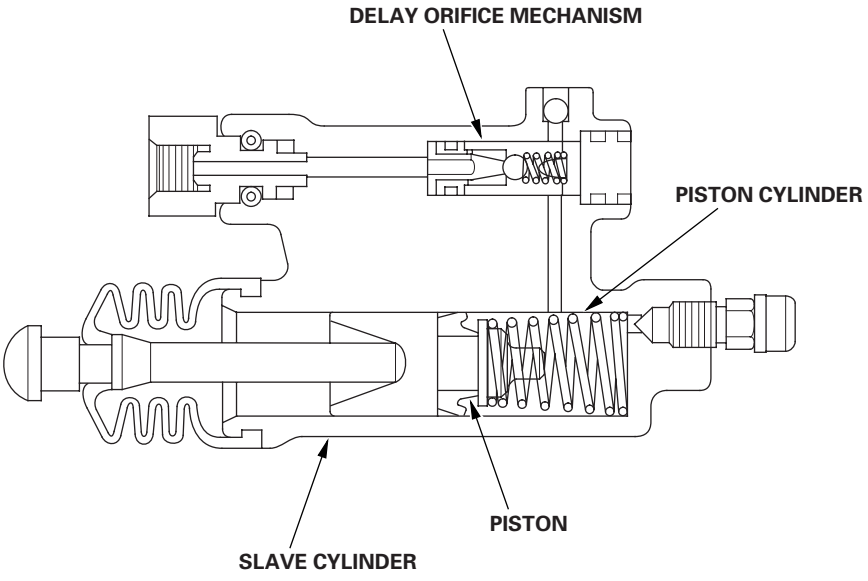
6-speed Manual Transmission



System Description

Delay Orifice Mechanism (6-speed Manual Transmission)

Function
The delay orifice mechanism improves clutch operation by delaying the slave cylinder release speed when the clutch pedal is suddenly released. The delay orifice mechanism is built into the slave cylinder.

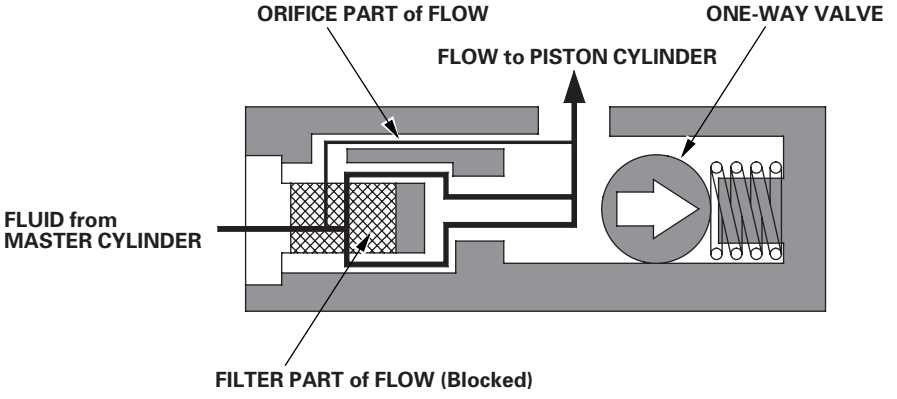


(cont'd)

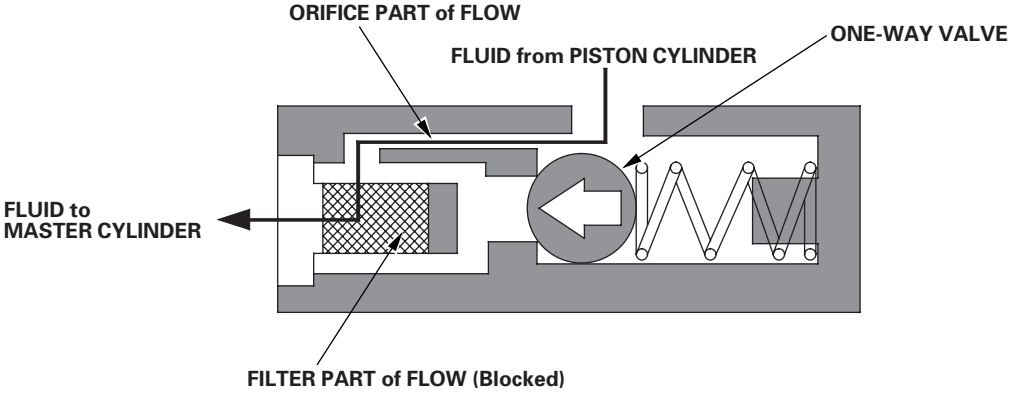
System Description (cont'd)

Fluid Flow Operation

When the clutch pedal is pressed, the fluid pressure from the master cylinder moves the one-way valve in the direction shown in the illustration. The fluid flows through two passages: the orifice part and the filter part. It then flows out to the piston cylinder to release the pressure plate and clutch disc joint.



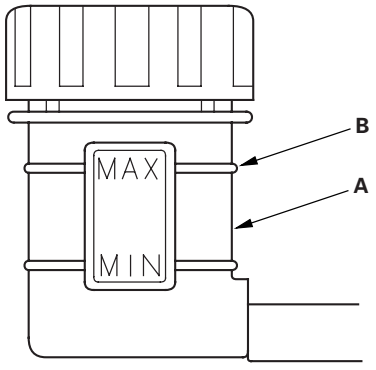
When the clutch pedal is released, the fluid pressure from the piston cylinder moves the one-way valve in the direction shown in the illustration. The one-way valve blocks the filter-part passage and delays the clutch release speed by returning the fluid to the master cylinder through only the orifice-part passage.



Clutch Hydraulic System Bleeding

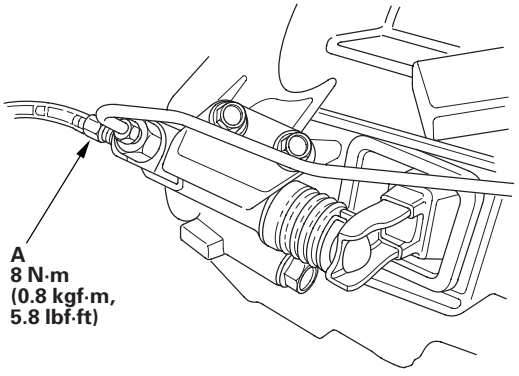
NOTE:
- Do not reuse the drained fluid. Always use Acura DOT 3 Brake Fluid from an unopened container. Using a non-Acura brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid; they may not be compatible.
- Make sure the brake fluid is not contaminated with dirt or other foreign matter.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- If may be necessary to limit the movement of the release fork with a block of wood to remove all the air from the system.
- Use fender covers to avoid damaging painted surfaces.

1. Make sure the brake fluid level in the clutch reservoir (A) is at the MAX (upper) level line (B).

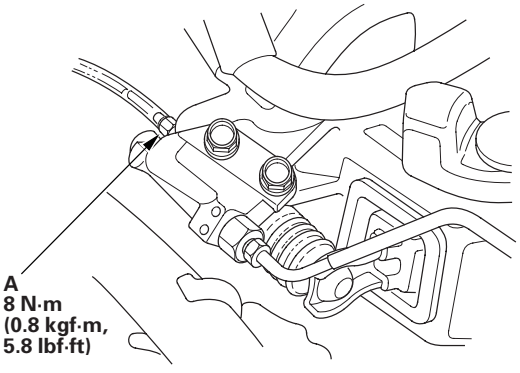


2. Attach the one end of a clear tube to the bleeder screw (A), and put the other end into a container. Loosen the bleeder screw to allow air to escape from the system.

5-speed manual transmission



6-speed manual transmission



3. Make sure there is an adequate supply of fluid in the reservoir, then slowly push the clutch pedal all the way down. Before releasing the pedal, have an assistant temporarily tighten the bleeder screw. Loosen the bleeder screw, and push the pedal down again. Repeat this step until no more bubbles appear at the clear tube.

   NOTE: Make sure the fluid level on the reservoir does not go below MIN.

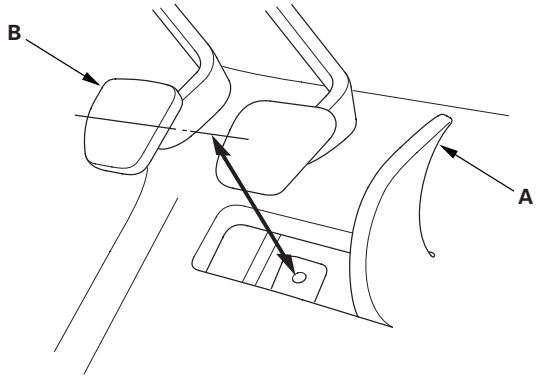
4. Tighten the bleeder screw securely.

5. Refill the brake fluid in the reservoir to the MAX (upper) level line.

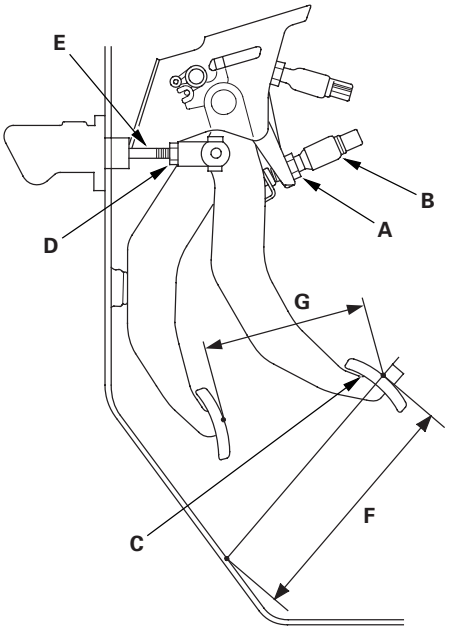
Clutch Pedal, Clutch Pedal Position Switch, and Clutch Interlock Switch Adjustment

NOTE:
- For a cruise control problem, check the clutch pedal position switch (see page 4-50).
- For an engine cranking problem, check the clutch interlock switch (see page 4-8).
- The clutch is self-adjusting to compensate for wear.
- If there is no clearance between the master cylinder piston and the pushrod, the release bearing will be held against the diaphragm spring, which can result in clutch slippage or other clutch problems.

1. Lift up the carpet (A). At the insulator cutout, measure pedal height from the right side of the pedal pad (B).



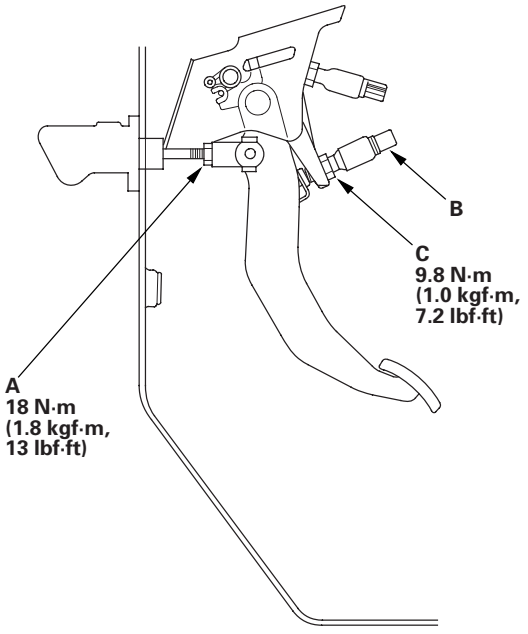
2. Loosen the clutch pedal position switch locknut (A), and back off the clutch pedal position switch (B) until it no longer touches the clutch pedal (C).



3. Loosen the clutch pushrod locknut (D), and turn the pushrod (E) in or out to get the specified height (F) and stroke (G) at the clutch pedal. If adjusting the pushrod causes the clutch pedal to contact the clutch pedal position switch, back off the switch further.

F Clutch Pedal Height:
Except Type S model: 159.3 mm (6.27 in.)
Type S model: 161.3 mm (6.35 in.)
G Clutch Pedal Stroke:
130—140 mm (5.12—5.51 in.)

4. Tighten the clutch pushrod locknut (A).

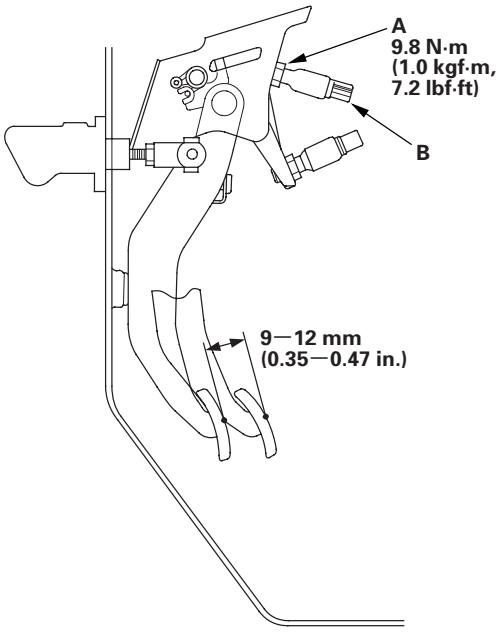


5. With the clutch pedal released, turn in the clutch pedal position switch (B) until it contacts the clutch pedal.

6. Turn in the clutch pedal position switch an additional 3/4 to 1 turn. Make sure the clutch pedal height did not change.

7. While holding the clutch pedal position switch, tighten the locknut (C).

8. Loosen the clutch interlock switch locknut (A).



9. Fully press the clutch pedal to the floor, then release the clutch pedal 9—12 mm (0.35—0.47 in.) and hold it there.

10. Adjust the position of the clutch interlock switch (B), so the engine starts with the clutch pedal in this position.

11. While holding the clutch interlock switch, tighten the locknut.

12. Check the clutch operation.

13. Connect the clutch pedal position switch connector and the clutch interlock switch connector, then check the cruise control and the engine starting.

Clutch Replacement

Special Tools Required
- Clutch alignment disc 07JAF-PM7011A
- Ring gear holder 07LAB-PV00100
- Clutch alignment shaft 07ZAF-PR8A100
- Bearing remover shaft 07936-KC10500
- Slide hammer 07741-0010201
- Bearing driver attachment, 22 x 24 mm 07746-0010800
- Driver handle, 15 x 135L 07749-0010000
- Remover handle 07936-3710100

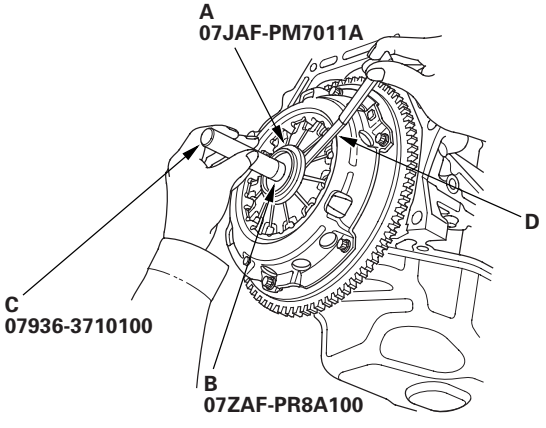
Engine Side

Pressure Plate Inspection and Removal

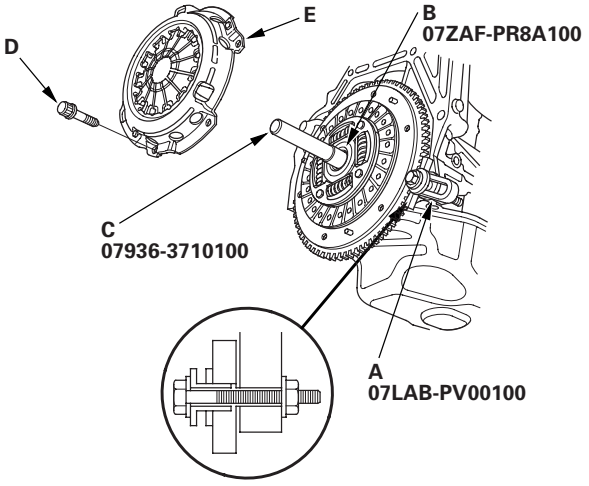
1. Remove the transmission; 5-speed model (see page 13-7), 6-speed model (see page 13-84).

2. Check the evenness of the height of the diaphragm spring fingers using the clutch alignment disc (A), the clutch alignment shaft (B), the remover handle (C), and a feeler gauge (D). If the height is more than the service limit, replace the pressure plate.

   Standard (New): 0.6 mm (0.02 in.) max.
   Service Limit: 0.8 mm (0.03 in.)

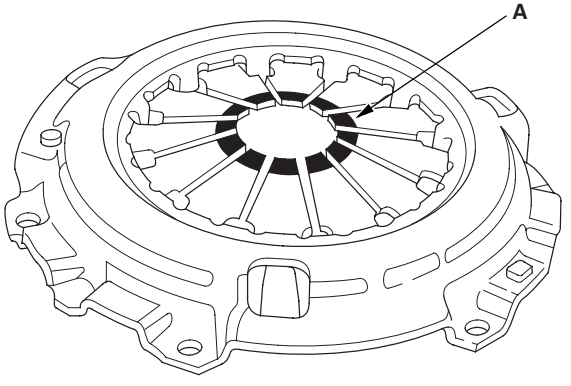


3. Install the ring gear holder (A), the clutch alignment shaft (B), and the remover handle (C).



4. To prevent warping, loosen the pressure plate mounting bolts (D) in a crisscross pattern in several steps, then remove the pressure plate (E).

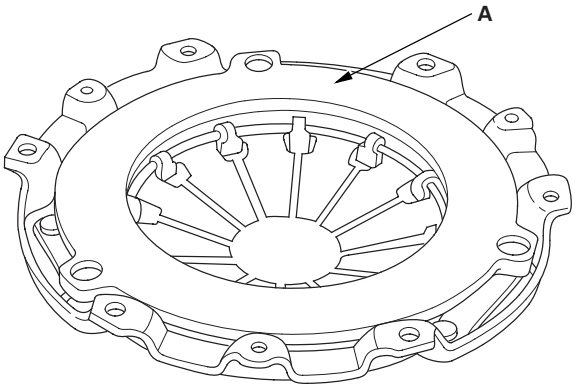
5. Inspect the fingers of the diaphragm spring (A) for wear at the release bearing contact area.



(cont'd)

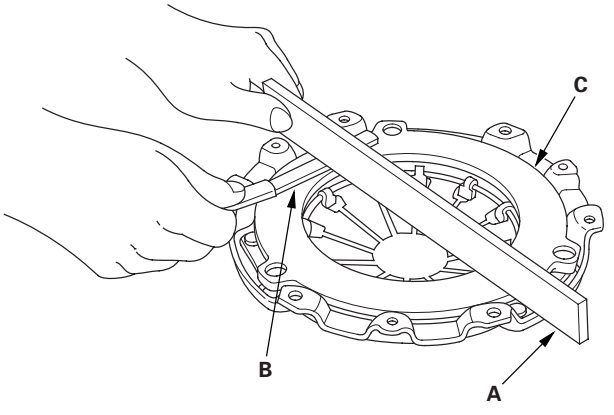
Clutch Replacement (cont'd)

6. Inspect the pressure plate surface (A) for wear, cracks, and burning.



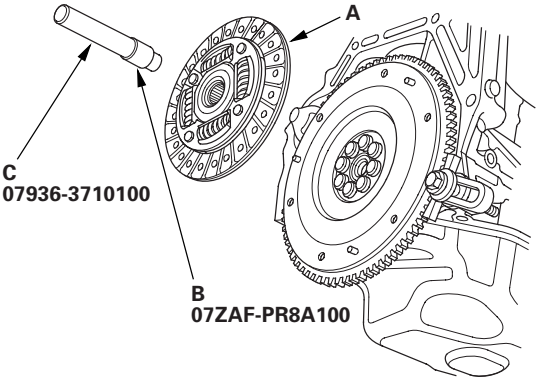
7. Inspect for warpage using a straight edge (A) and a feeler gauge (B). Measure across the pressure plate surface (C). If the most measurement difference is more than the service limit, replace the pressure plate.

Standard (New): 0.03 mm (0.001 in.) max.
Service Limit: 0.15 mm (0.006 in.)



Clutch Disk Inspection and Removal

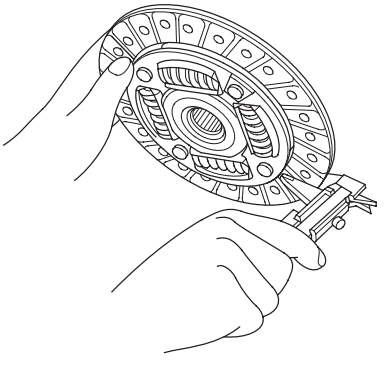
8. Remove the clutch disc (A), the clutch alignment shaft (B), and the remover handle (C).



9. Inspect the lining of the clutch disc for signs of slipping or oil. If the clutch disc looks burnt or is soaked with oil, replace it and the pressure plate as a set. If the clutch disc is oil soaked, find and repair the source of the oil leak.

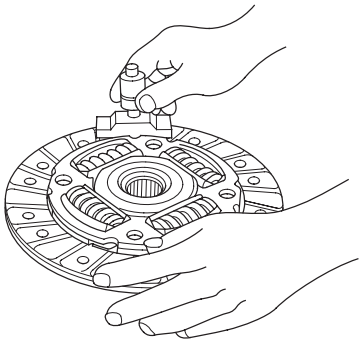
10. Measure the clutch disc thickness. If the measurement is less than the service limit, replace the clutch disc.

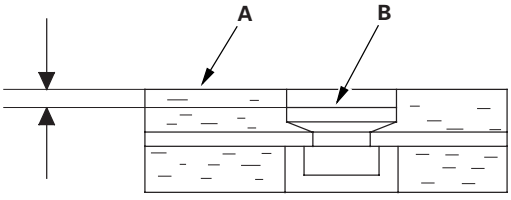
Standard (New): 8.3—8.9 mm (0.33—0.35 in.)
Service Limit: 6.0 mm (0.24 in.)



11. Measure the depth of the rivets from the clutch disc lining surface (A) to the rivets (B) on both sides. If the measurement is less than the service limit, replace the clutch disc.

Standard (New): 1.65—2.25 mm (0.065—0.089 in.)
Service Limit: 0.7 mm (0.03 in.)





12. Remove the ring gear holder.

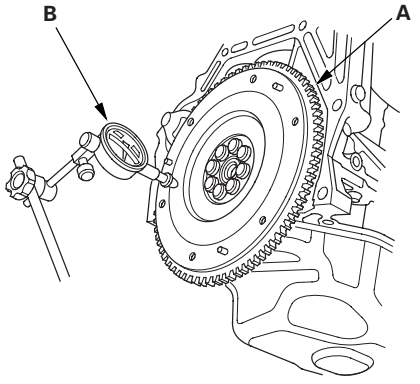
Flywheel Inspection

13. Inspect the ring gear teeth for wear and damage.

14. Inspect the clutch disc mating surface on the flywheel for wear, cracks, and burning.

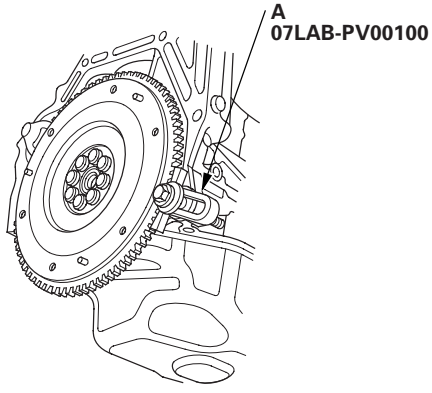
15. Measure the flywheel (A) runout using a dial indicator (B). Through at least two full turns with pushing against the flywheel each time you turn it to take up the crankshaft thrust washer clearance. If the measurement is not within the standard, replace the flywheel, and recheck the runout; go to step 16.

Standard (New): 0.05 mm (0.002 in.) max.
Service Limit: 0.15 mm (0.006 in.)



Flywheel Replacement

16. Install the ring gear holder (A).



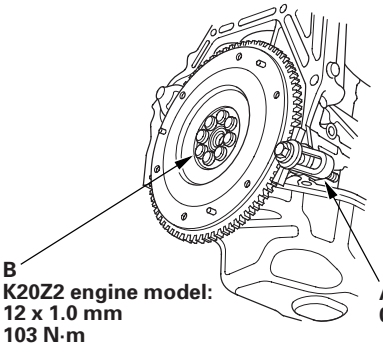
17. Loosen the flywheel mounting bolts in a crisscross pattern in several steps. Remove the bolts, then remove the flywheel and the ring gear holder.

(cont'd)

Clutch Replacement (cont'd)

18. Install the flywheel on the crankshaft, and install the mounting bolts finger-tight.

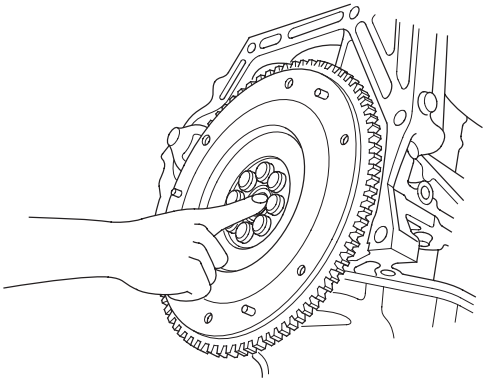
19. Install the ring gear holder (A), then torque the flywheel mounting bolts (B) in a crisscross pattern in several steps.



Crankshaft Pilot Bushing Inspection

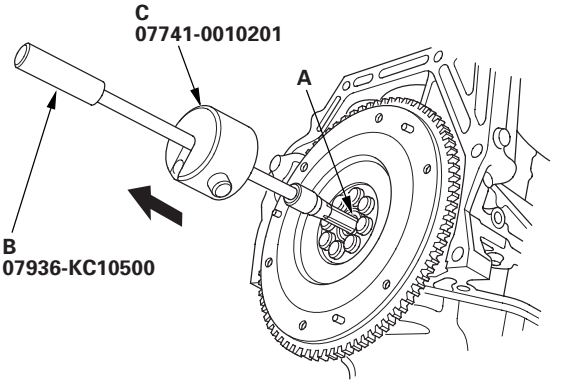
20. Inspect the crankshaft pilot bushing for wear and damage.

21. Inspect the inside surface of the crankshaft pilot bushing with your finger. If the crankshaft pilot bushing is not smooth, replace it; then go to step 22.

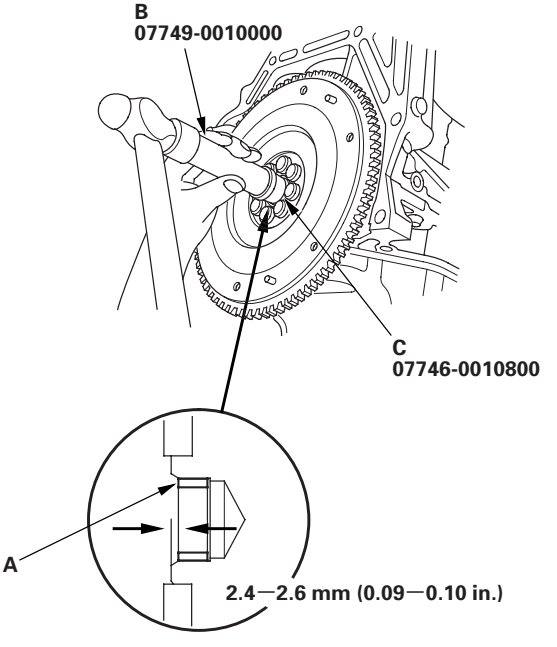


Crankshaft Pilot Bushing Replacement

22. Remove the crankshaft pilot bushing (A) using the bearing remover shaft (B) and the slide hammer (C).



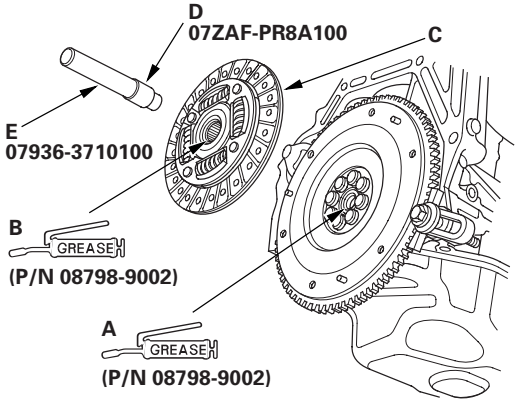
23. Install a new crankshaft pilot bushing (A) into the crankshaft using the 15 x 135L driver handle (B) and the 22 x 24 mm bearing driver attachment (C).



Clutch Disc and Pressure Plate Installation

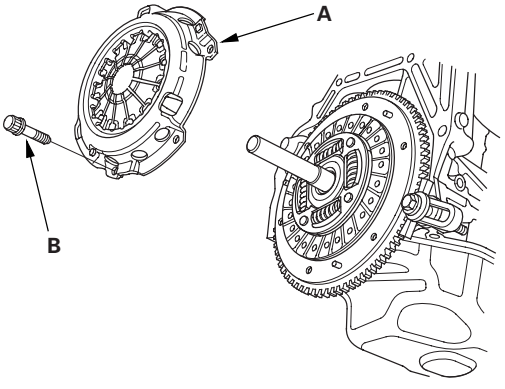
24. Temporarily install the clutch disc onto the splines of the transmission mainshaft. Make sure the clutch disc slides freely on the mainshaft.

25. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the crankshaft pilot bushing (A).



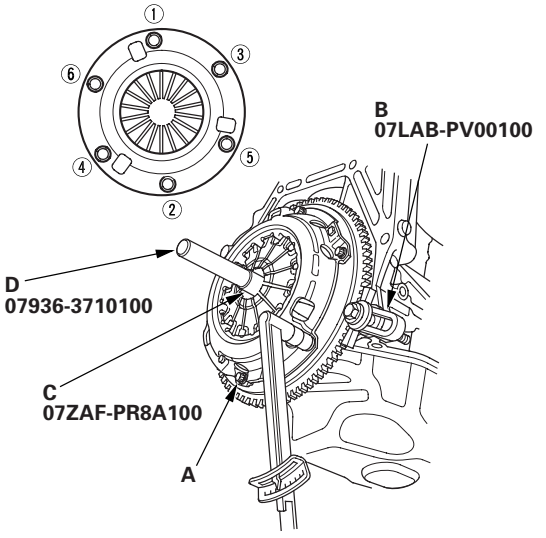
26. Apply super high temp urea grease (P/N 08798-9002) to the splines (B) of the clutch disc (C), then install the clutch disc using the clutch alignment shaft (D) and the remover handle (E).

27. Install the pressure plate (A) and the mounting bolts (B) finger-tight.



28. Torque the mounting bolts (A) in a crisscross pattern. Tighten the bolts in several steps to prevent warping the diaphragm spring.

Specified Torque: 25 N·m (2.6 kgf·m, 19 lbf·ft)



29. Remove the ring gear holder (B), the clutch alignment shaft (C), and the remover handle (D).

30. Make sure the diaphragm spring fingers are all the same height.

31. Do the release bearing inspection, and replace it if necessary.

32. Install the transmission; 5-speed model (see page 13-14), 6-speed model (see page 13-91).

(cont'd)

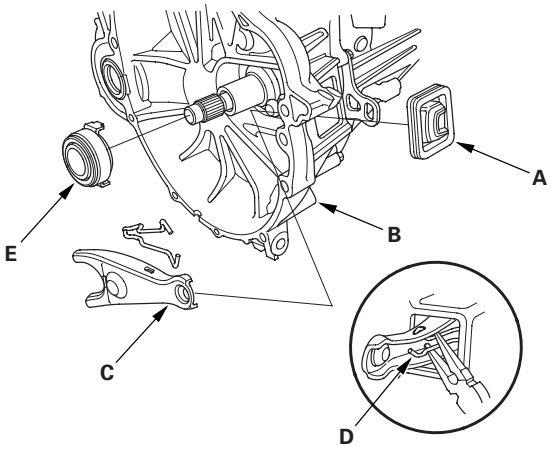
Clutch Replacement (cont'd)

Transmission Side

Release Bearing Removal

1. Remove the transmission; 5-speed model (see page 13-7), 6-speed model (see page 13-84).

2. Remove the release fork boot (A) from the clutch housing (B).

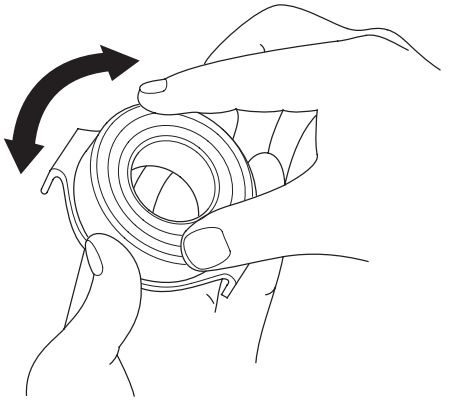


3. Remove the release fork (C) from the clutch housing by squeezing the release fork set spring (D) with pliers. Remove the release bearing (E).

Release Bearing Inspection

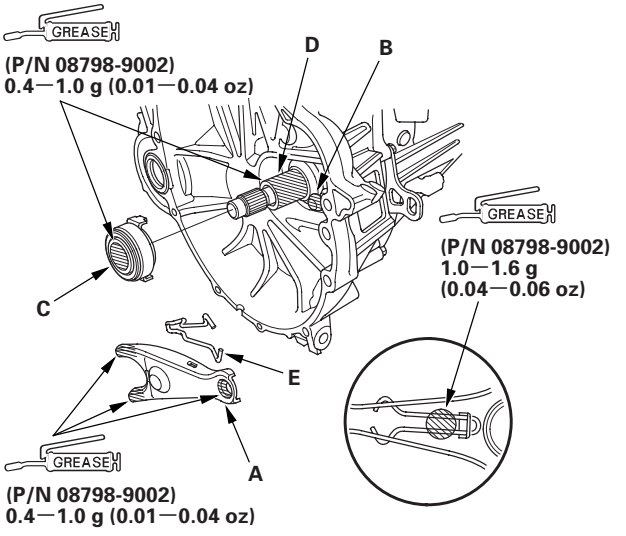
4. Check the play of the release bearing by spinning it by hand. If there is excessive play or noise, replace the release bearing.

   NOTE: The release bearing is packed with grease. Do not wash it in solvent.

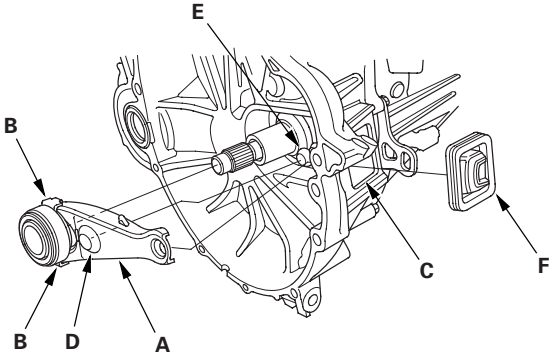


Release Bearing Installation

5. Apply super high temp urea grease (P/N 08798-9002) to the release fork (A), the release fork bolt (B), the release bearing (C), and the release bearing guide (D), in the shaded areas, then set the release fork set spring (E).



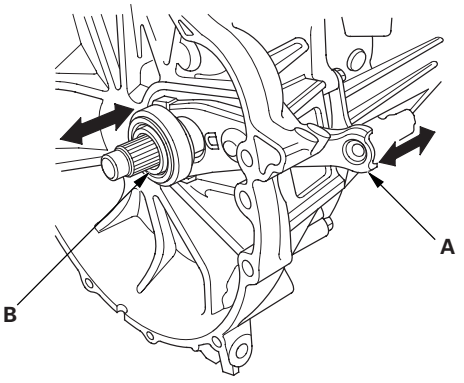
6. With the release fork (A) slid between the release bearing pawls (B), install the release bearing on the mainshaft while inserting the release fork through the hole (C) in the clutch housing.



7. Align the detent (D) of the release fork with the release fork bolt (E), then press the detent of the release fork over the release fork bolt squarely.

8. Install the release fork boot (F). Make sure the boot seals around the release fork and the clutch housing.

9. Move the release fork (A) right and left to make sure that it fits properly against the release bearing (B) and that the release bearing slides smoothly. Wipe off any excess grease.

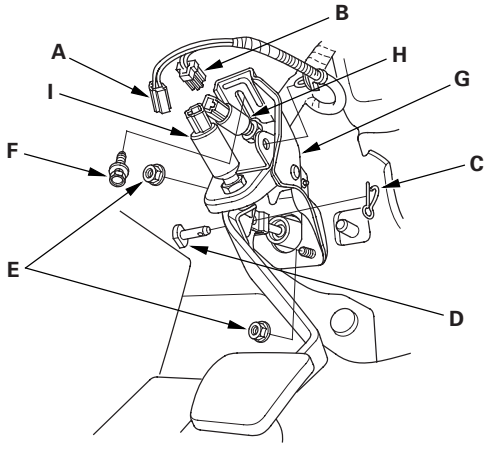


10. Install the transmission; 5-speed model (see page 13-14), 6-speed model (see page 13-91).

DYNOMITE -2009-

Clutch Pedal Assembly Replacement

1. Disconnect the clutch pedal position switch connector (A) and the clutch interlock switch connector (B).



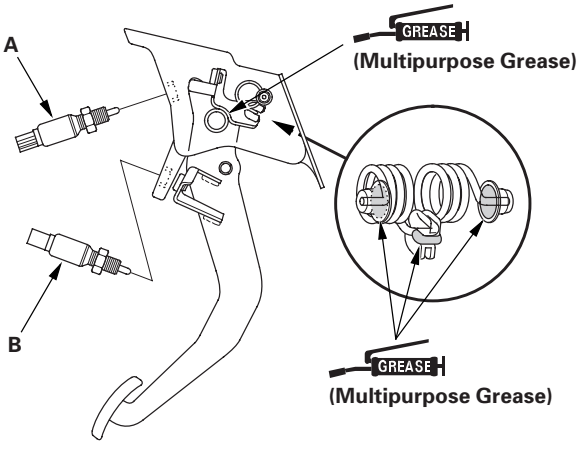
2. Pry out the lock pin (C), and pull the clevis pin (D) out of the clevis.

3. Remove the master cylinder mounting nuts (E) and the clutch pedal mounting bolt (F).

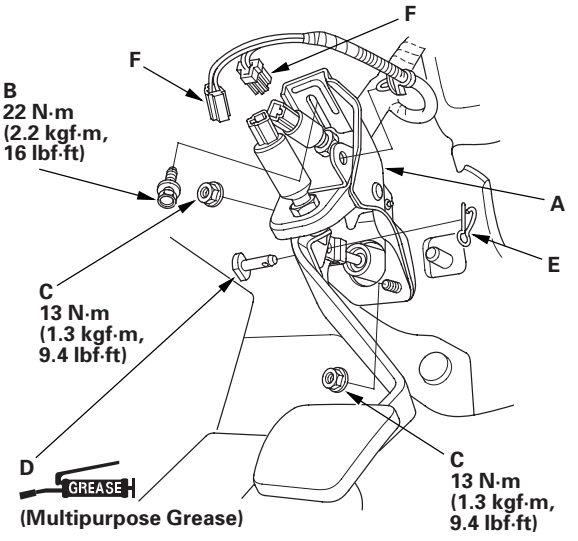
4. Remove the clutch pedal assembly (G).

5. Remove the clutch interlock switch (H), and the clutch pedal position switch (I).

6. Loosely install the clutch interlock switch (A), and the clutch pedal position switch (B).



7. Install the clutch pedal assembly (A).



8. Install the clutch pedal mounting bolt (B) and the master cylinder mounting nuts (C).

9. Apply grease to the clevis pin (D) and the mating surfaces of the clevis and the pedal. Slide the clevis pin into the clevis, then install a lock pin (E).

10. Adjust the clutch pedal, the clutch pedal position switch, and the clutch interlock switch (see page 12-8).

    NOTE: Connect the switch connectors (F) after adjusting them.

11. Check the clutch operation.

Clutch Master Cylinder Replacement

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.

1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe or other suitable device.

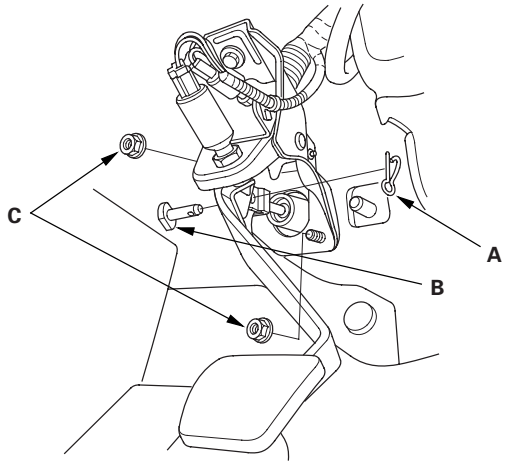
2. Do the battery removal procedure (see page 22-69).

3. Remove the driver's dashboard undercover (see page 20-103).

4. Remove the air cleaner assembly (see page 11-345).

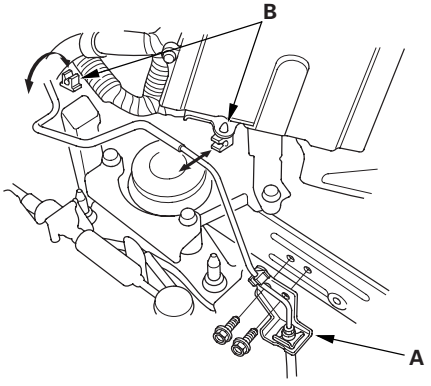
5. Remove the battery base.

6. Pry out the lock pin (A), and pull the clevis pin (B) out of the clevis. Remove the master cylinder mounting nuts (C).



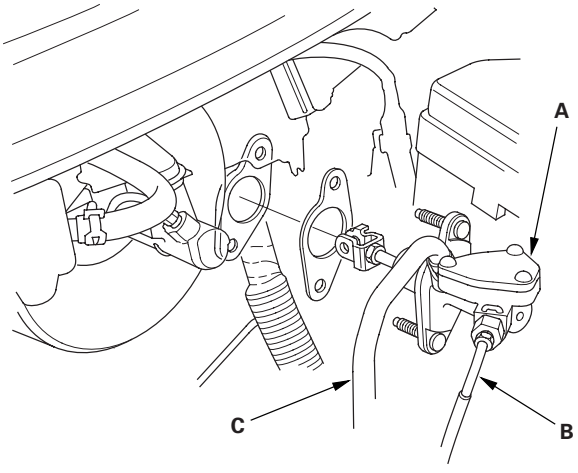
7. Remove the cowl cover and the under-cowl panel (see page 20-163).

8. Remove the clutch line bracket (A).



9. Remove the clutch line from the clamps (B).

10. Remove the clutch master cylinder (A) with the clutch line (B) and the reservoir hose (C).

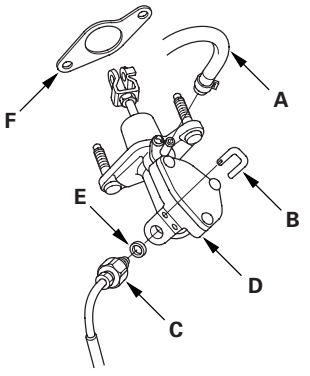


(cont'd)

Clutch Master Cylinder Replacement (cont'd)

11. Remove the reservoir hose (A), then remove the retaining clip (B) for disconnecting the clutch line (C) from the clutch master cylinder (D). Plug or wrap the end of the reservoir hose and the clutch line with a clean shop towel to prevent brake fluid from coming out.

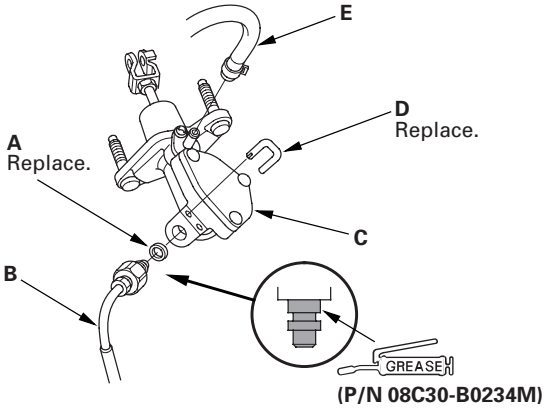
    NOTE: Inspect the hose. If the hose has damage, leaks, interference, or twisting, replace it.



12. Remove the O-ring (E) and the clutch master cylinder seal (F) from the clutch master cylinder.

13. Install a new O-ring (A) on the clutch line (B), then apply silicone grease (P/N 08C30-B0234M) to the end of the clutch line. Install the clutch line in the clutch master cylinder (C) with a new retaining clip (D).

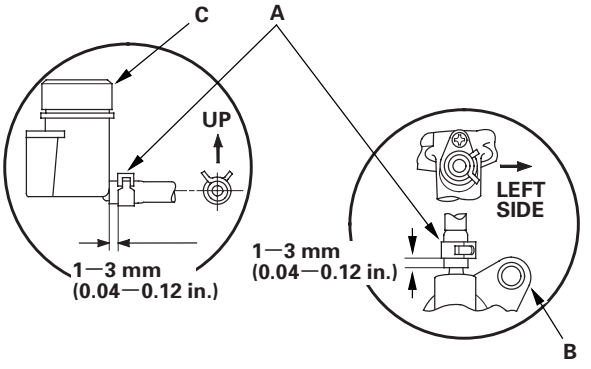
    NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.



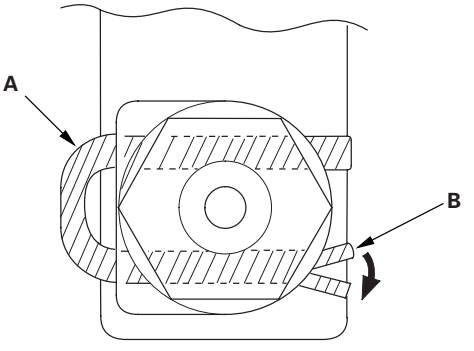
(P/N 08C30-B0234M)

14. Install the reservoir hose (E).

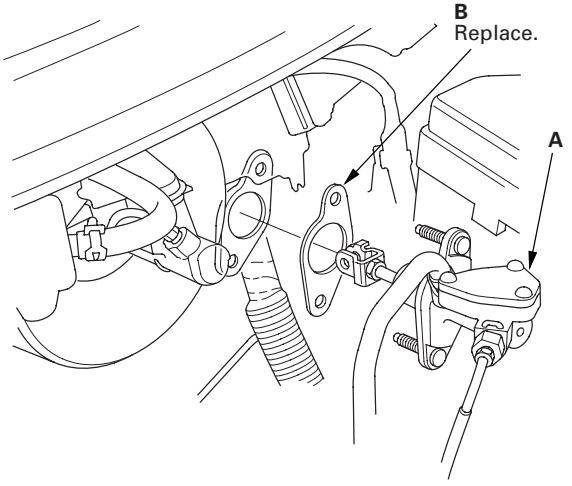
15. Make sure the hose clamps (A) are positioned on the master cylinder (B) and the reservoir (C) as shown.



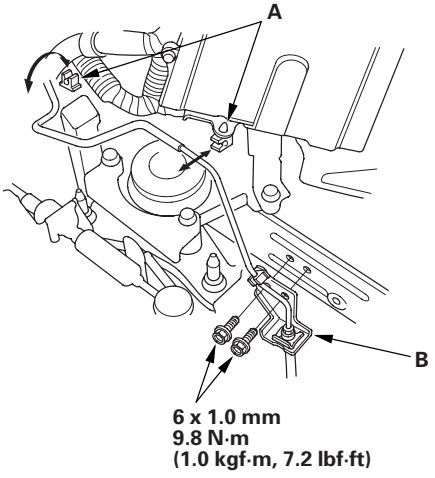
16. To prevent the retaining clip (A) from coming off, pry apart the tip (B) of the clip with a screwdriver.



17. Install the clutch master cylinder (A) with a new clutch master cylinder seal (B).



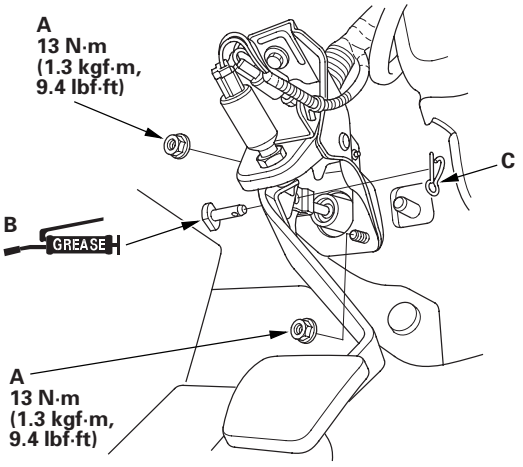
18. Install the clutch line to the clamps (A).



19. Install the clutch line bracket (B).

20. Install the cowl cover and the under-cowl panel (see page 20-163).

21. Install the master cylinder mounting nuts (A).



22. Apply multipurpose grease to the clevis pin (B) and the mating surface of the clevis and the pedal. Slide the clevis pin into the clevis, then install a lock pin (C).

23. Do the clutch hydraulic system bleeding (see page 12-7).

24. Adjust the clutch pedal, the clutch pedal position switch, and the clutch interlock switch (see page 12-8).

25. Install the battery base.

26. Install the air cleaner assembly (see page 11-345).

27. Install the driver's dashboard undercover (see page 20-103).

28. Do the battery installation procedure (see page 22-69).

29. Check the clutch operation, and check for leaks.

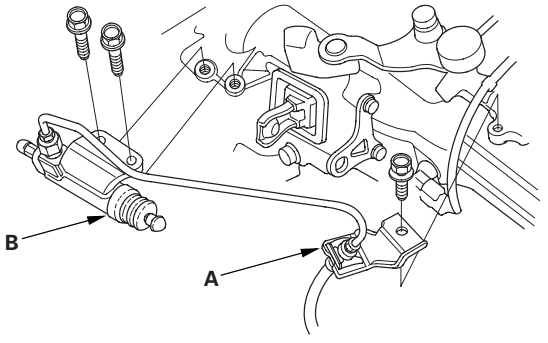
30. Test-drive the vehicle.

Slave Cylinder Replacement

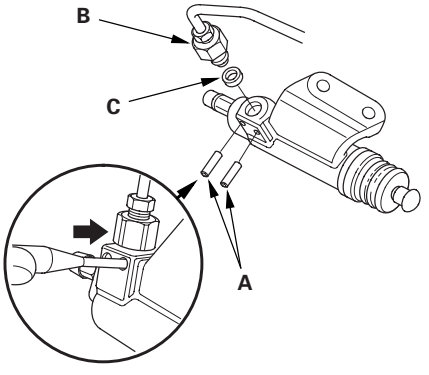
5-speed Manual Transmission

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

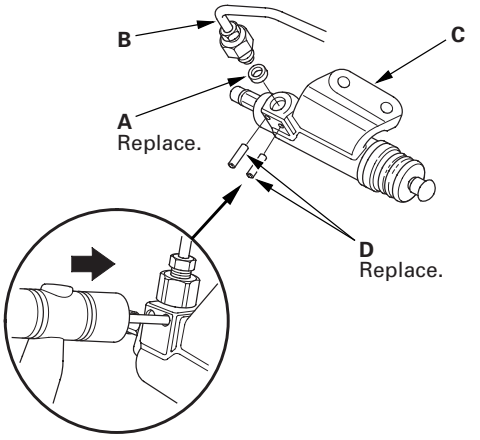
1. Remove the clutch line bracket (A) and the slave cylinder (B).



2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.

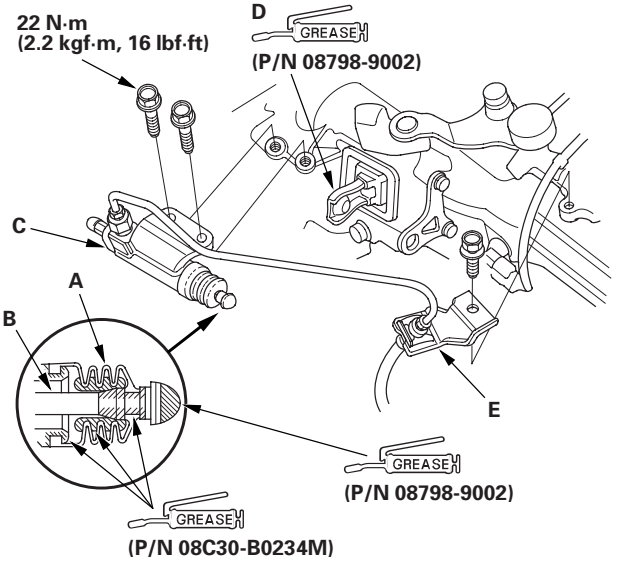


3. Install a new O-ring (A) on the clutch line (B), then connect the clutch line to the slave cylinder (C).



4. Set in new roll pins (D) to the slave cylinder.

5. Pull back the boot (A), and apply silicone grease (P/N 08C30-B0234M) to the boot and the slave cylinder pushrod (B). Reinstall the boot.



6. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the pushrod of the slave cylinder (C) and the release fork (D).

7. Install the slave cylinder and the clutch line bracket (E).

8. Do the clutch hydraulic system bleeding (see page 12-7).

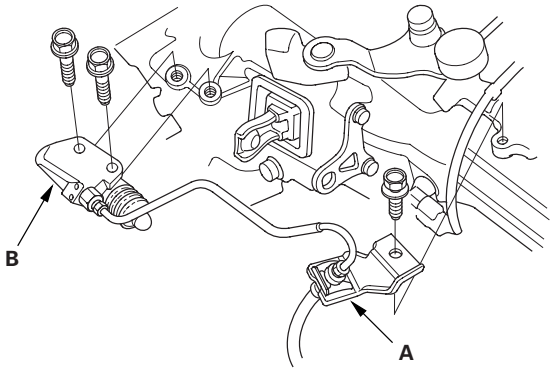
9. Check the clutch operation and check for leaks.

10. Test-drive the vehicle.

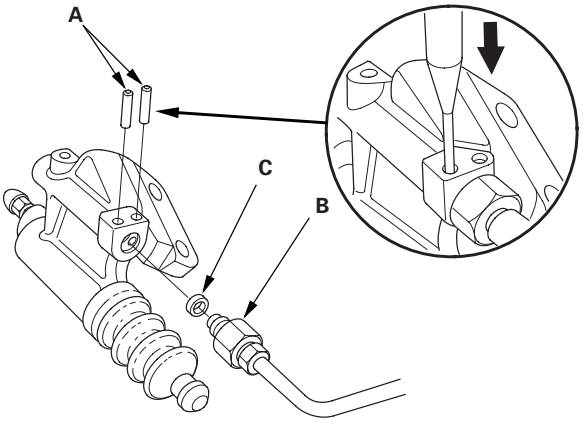
6-speed Manual Transmission

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the clutch line bracket (A) and the slave cylinder (B).



2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.



(cont'd)

8. Do the clutch hydraulic system bleeding (see page 12-7).

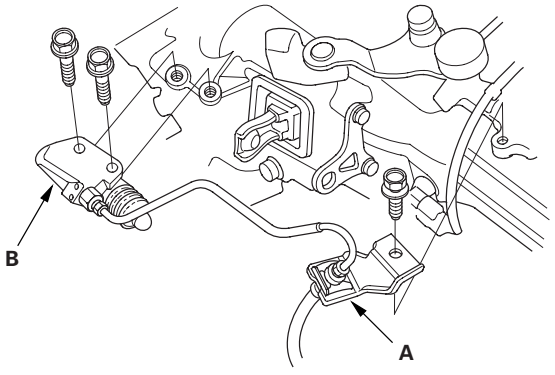
9. Check the clutch operation and check for leaks.

10. Test-drive the vehicle.

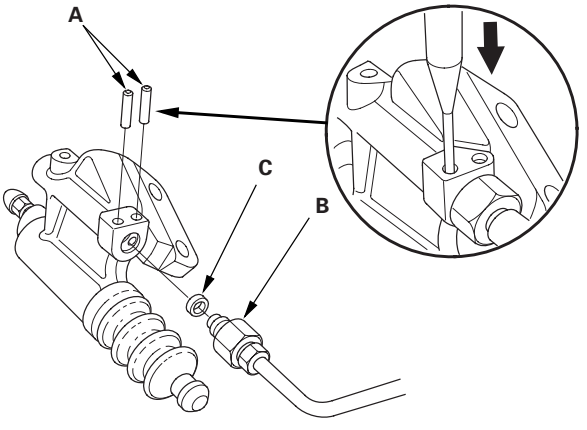
6-speed Manual Transmission

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle; it may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately with water.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the clutch line bracket (A) and the slave cylinder (B).



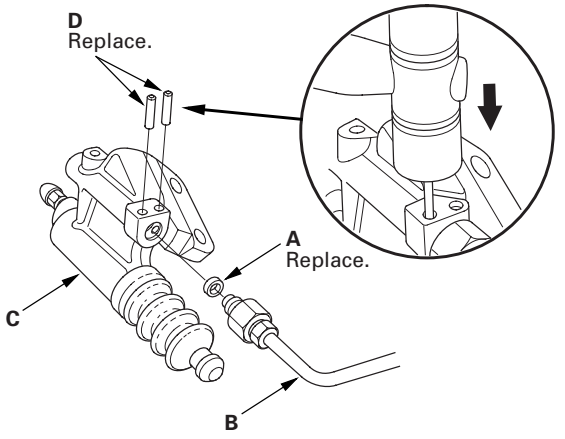
2. Remove the roll pins (A). Disconnect the clutch line (B), and remove the O-ring (C). Plug or wrap the end of the clutch line with a clean shop towel to prevent brake fluid from coming out.



(cont'd)

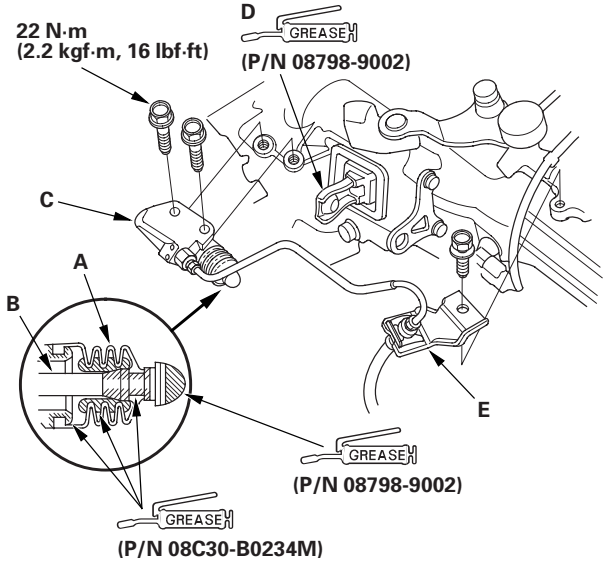
Slave Cylinder Replacement (cont'd)

3. Install a new O-ring (A) on the clutch line (B), then connect the clutch line to the slave cylinder (C).



4. Set in new roll pins (D) to the slave cylinder.

5. Pull back the boot (A), and apply silicone grease (P/N 08C30-B0234M) to the boot and the slave cylinder pushrod (B). Reinstall the boot.



6. Apply a light coat of super high temp urea grease (P/N 08798-9002) to the pushrod of the slave cylinder (C) and the release fork (D).

7. Install the slave cylinder and the clutch line bracket (E).

8. Do the clutch hydraulic system bleeding (see page 12-7).

9. Check the clutch operation, and check for leaks.

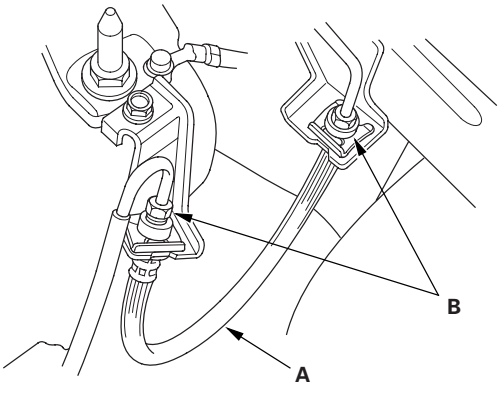
10. Test-drive the vehicle.

Clutch Hose Replacement

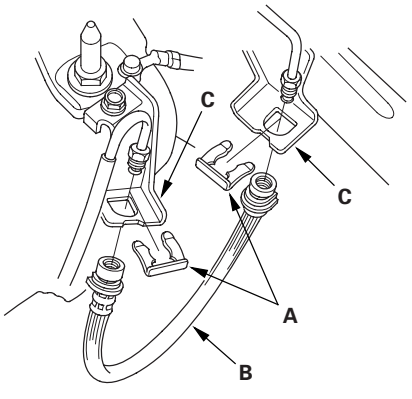
NOTE:
- Replace the clutch hose if it is twisted, cracked, or if it leaks.
- Use fender covers to avoid damaging painted surfaces.
- Do not spill brake fluid on the vehicle. It may damage the paint or plastic. If brake fluid does contact the paint or plastic, wash it off immediately water.

1. Remove the brake fluid from the clutch master cylinder reservoir with a syringe or other suitable device.

2. Disconnect the clutch hose (A) from the clutch lines (B).



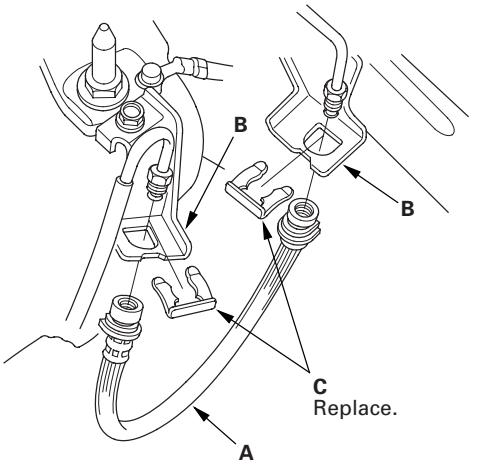
3. Remove the clutch hose clips (A) from the clutch hose (B).



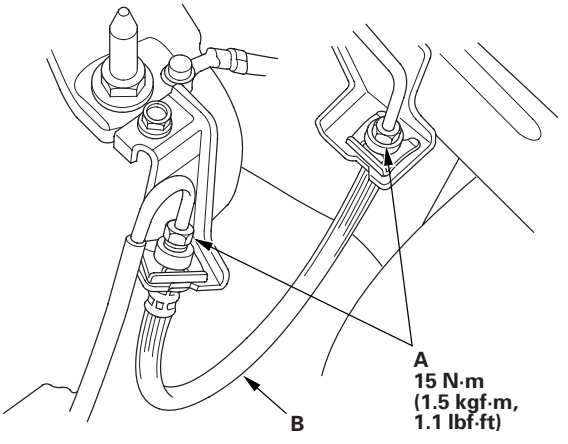
4. Remove the clutch hose from the clutch hose brackets (C).

5. Install the new clutch hose (A) into the clutch hose brackets (B) with new clutch hose clips (C).

   NOTE: Check the clutch hose for interference and twisting.



6. Connect the clutch lines (A) to the clutch hose (B).



7. Do the clutch hydraulic system bleeding (see page 12-7).

8. Check the clutch operation, and check for leaks.

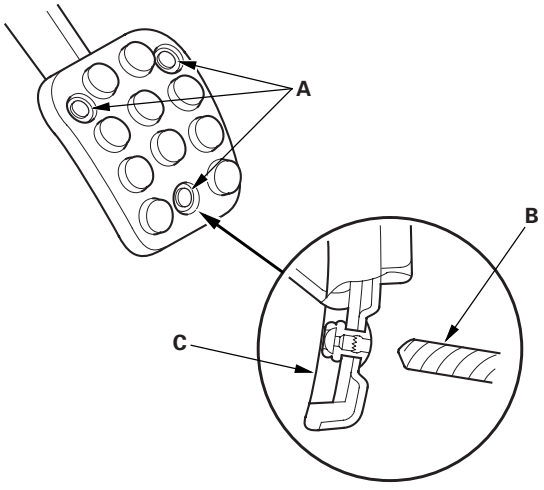
9. Test-drive the vehicle.

Clutch Pedal Cover Replacement

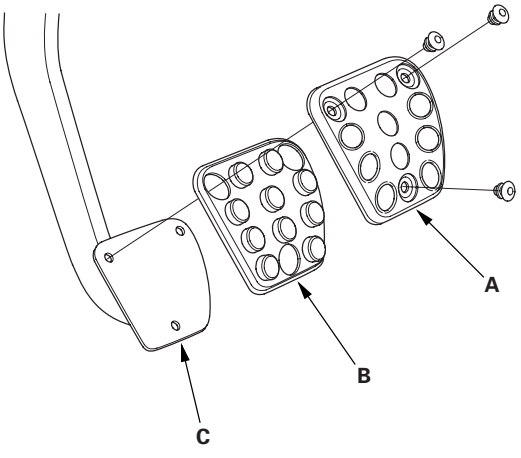
NOTE: This procedure is for models equipped with a metal clutch pedal plate model.

1. Cover the carpet under the clutch pedal to prevent metal shavings from getting on the carpet.
2. Center-punch each of the rivets (A), and drill their heads off with a 3 mm (0.12 in.) drill bit (B).

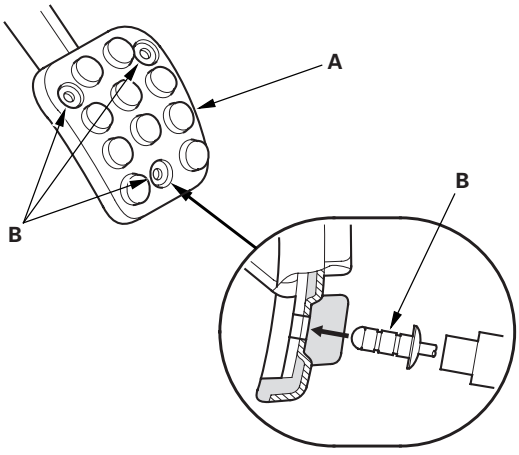
   NOTE: Do not drill the clutch pedal pad (C).



3. Remove the clutch pedal plate (A) and the clutch pedal cover (B) from the clutch pedal pad (C).



4. Set the clutch pedal cover to the clutch pedal plate.
5. Install the clutch pedal plate (A) with the rivets (B) firmly.



6. Using your hand, make sure the clutch pedal cover is firmly fastened to the pedal.
7. Check the clutch pedal height (see page 12-8).

Manual Transmission

DYNOMITE -2009-

5-Speed Manual Transmission

Manual Transmission

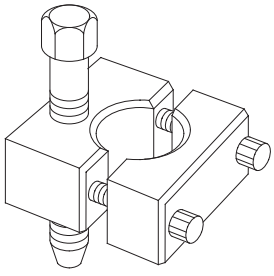
M/T Differential

Special Tools

Ref. No.	Tool Number	Description	Qty
*①	07GAJ-PG20110	Catch Adapter	1
*②	07GAJ-PG20130	Base Adapter	1
③	07JAD-PL90100	Oil Seal Driver, 65 mm	1
④	07NAD-P20A100	Oil Seal Driver Attachment	1
**⑤	07736-A01000B	Adjustable Bearing Puller, 20—40 mm	1
⑥	07746-0010300	Bearing Driver Attachment, 42 x 47 mm	1
⑦	07746-0030100	Inner Driver Handle, 40 mm	1
⑧	07746-0030300	Inner Bearing Driver Attachment, 30 mm	1
⑨	07749-0010000	Driver Handle, 15 x 135L	1

*: Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.

**: Must be used with commercially available 3/8''-16 UNF Slide Hammer.



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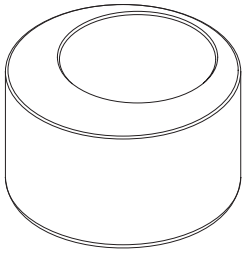

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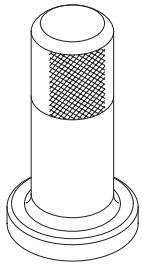

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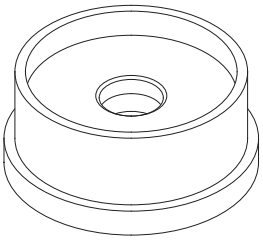

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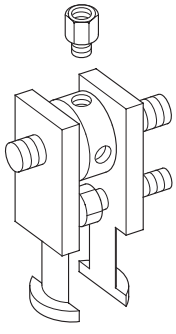

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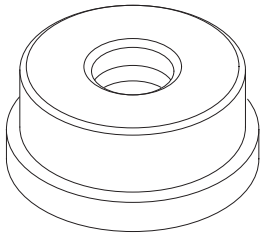

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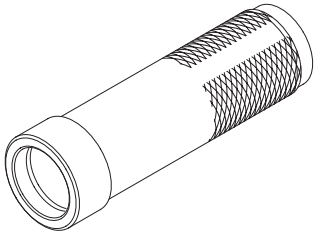

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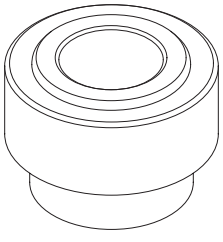

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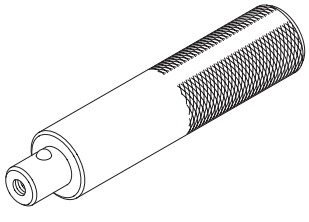
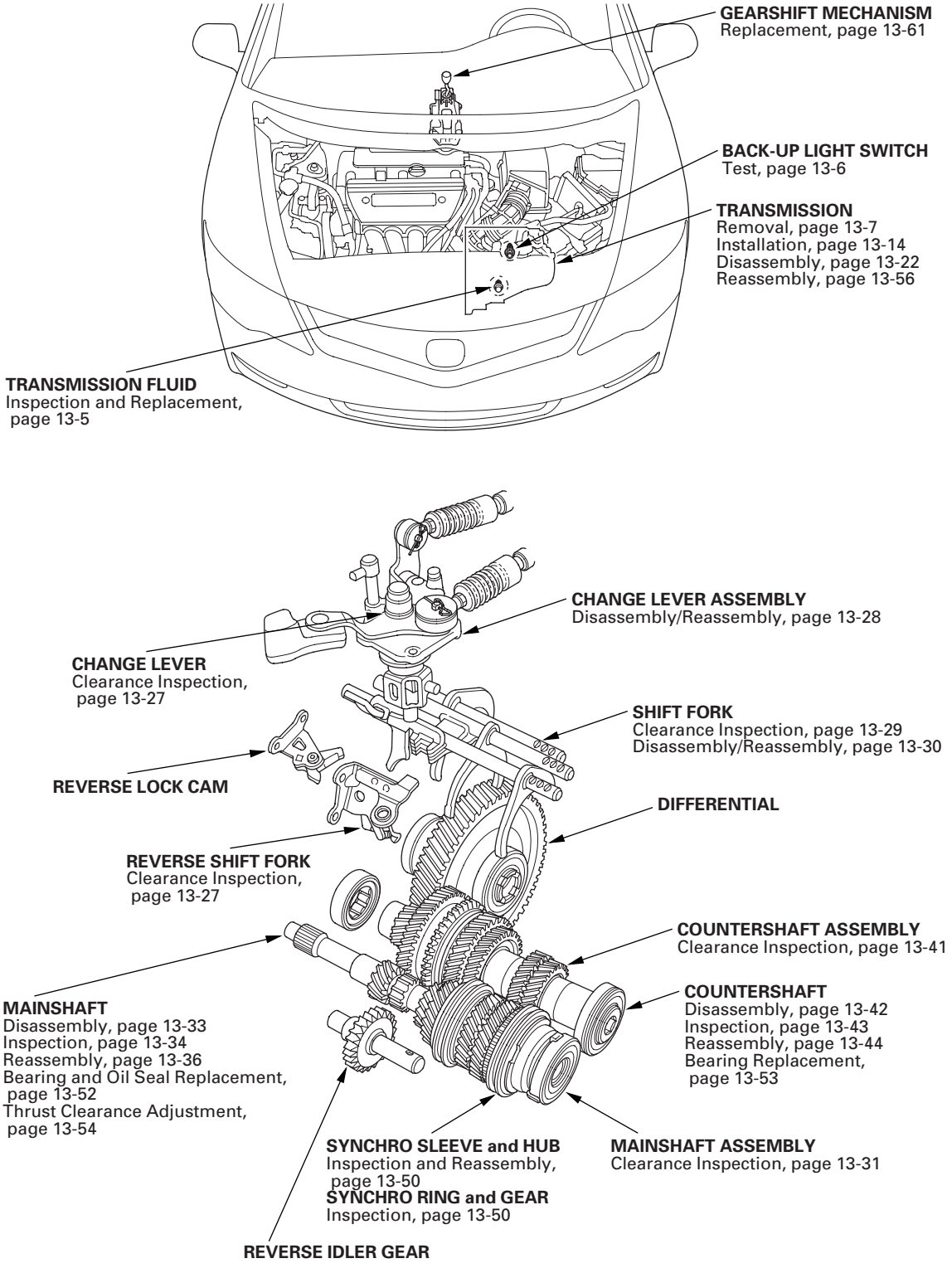


⑨

Component Location Index



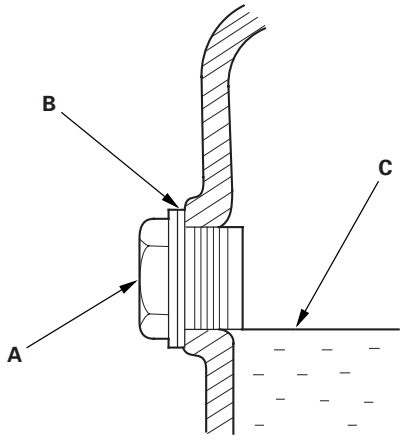
Symptom Troubleshooting Index

Symptom	Diagnostic procedure
Hard to shift into 1st gear	• Check and/or replace the MTF (see page 13-5). • Check the clutch (see page 12-19). • Check the 1st synchro ring and 1st gear (see page 13-50). • Check the 1st/2nd synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 2nd gear	• Check and/or replace the MTF (see page 13-5). • Check the 2nd synchro ring and 2nd gear (see page 13-50). • Check the 1st/2nd synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 3rd gear	• Check and/or replace the MTF (see page 13-5). • Check the 3rd synchro ring and 3rd gear (see page 13-50). • Check the 3rd/4th synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 4th gear	• Check and/or replace the MTF (see page 13-5). • Check the 4th synchro ring and 4th gear (see page 13-50). • Check the 3rd/4th synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into 5th gear	• Check and/or replace the MTF (see page 13-5). • Check the 5th synchro ring and 5th gear (see page 13-50). • Check the 5th synchro sleeve and hub (see page 13-50). • Check the change lever assembly (see page 13-28).
Hard to shift into reverse	• Check and/or replace the MTF (see page 13-5). • Check the clutch (see page 12-19). • Check the reverse shift fork and the reverse idler gear (see page 13-27). • Check reverse gear. • Check the change lever assembly (see page 13-28).
Noise from the transmission	• Check and/or replace the MTF (see page 13-5). • Check the transmission gears. • Check the transmission bearings. • Check the differential carrier, the final driven gear, and the carrier bearings.
Shift lever does not operate smoothly	• Check and/or replace the MTF (see page 13-5). • Check the shift cable and their joints (see page 13-61). • Check the shift lever housing with the shift lever shaft.
Transmission jumps out of gear	• Check and/or replace the MTF (see page 13-5). • Check the detent ball springs. • Check the teeth of the synchro rings and gears (see page 13-50). • Check for bent, deform, or damage of the shift forks.

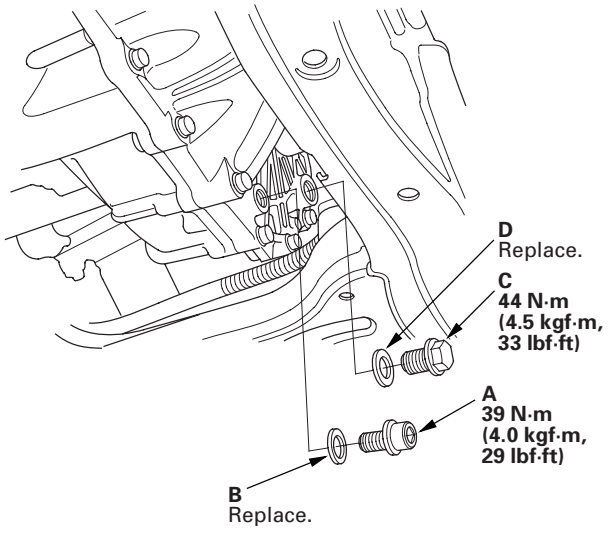
Transmission Fluid Inspection and Replacement

1. Raise the vehicle on a lift.

2. Remove the filler plug (A) and the sealing washer (B). Check the condition of the MTF, and make sure it is at the proper level (C).



3. If the MTF is dirty, remove the drain plug (A) and the sealing washer (B), and drain it.



4. Install the drain plug with a new sealing washer, and refill the transmission with MTF to the proper level. Always use Acura Manual Transmission Fluid (MTF).

   Fluid Capacity
   1.5 L (1.6 US qt) at fluid change
   1.7 L (1.8 US qt) at overhaul

5. Install the filler plug (C) with a new sealing washer (D).

6. If the maintenance minder required to replace the MTF, reset the maintenance minder (see page 3-4). If it did not reset, go to step 7.

7. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

8. Turn the ignition switch to ON (II).

9. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it does not communicate, go to the DLC circuit troubleshooting (see page 11-204).

10. Select BODY ELECTRICAL with the HDS.

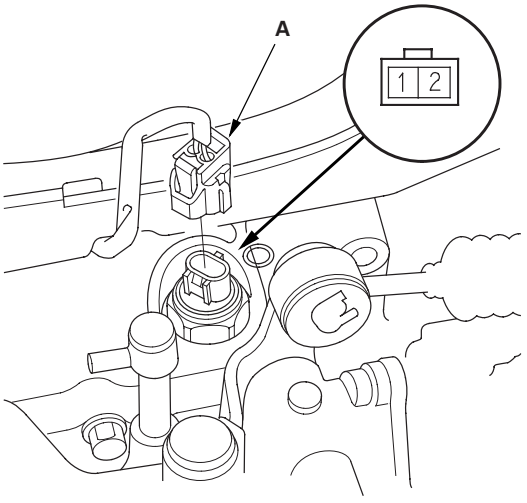
11. Select ADJUSTMENT in the GAUGES MENU with the HDS.

12. Select RESET in the MAINTENANCE MINDER with the HDS.

13. Select MAINTENANCE SUB ITEM 3, and reset the MTF life with the HDS.

Back-up Light Switch Test

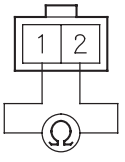
1. Disconnect the back-up light switch 2P connector (A).



2. Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity only when the shift lever is in reverse.

   - If the test result is OK, go to step 5.
   - If the test result is faulty, go to step 3.

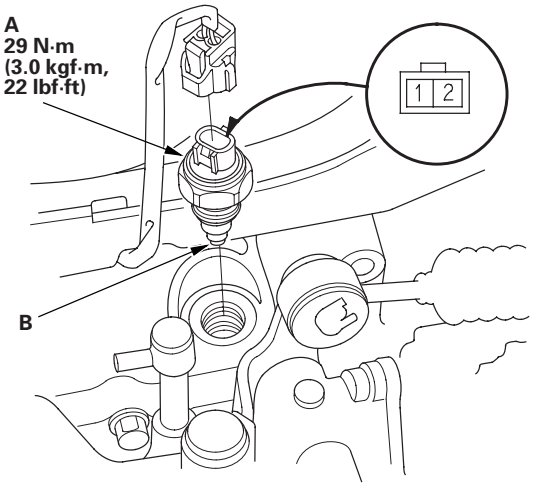
BACK-UP LIGHT SWITCH 2P CONNECTOR



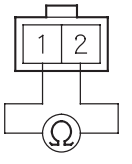
Terminal side of male terminals

3. Remove the back-up light switch (A). Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity when the actuator (B) is pressed, and no continuity when the actuator is released.

   - If the test result is OK, check the reverse shift mechanism in the transmission.
   - If the test result is faulty, replace the back-up light switch.



BACK-UP LIGHT SWITCH 2P CONNECTOR



Terminal side of male terminals

4. Apply liquid gasket (08C70-K0230M, 08C70-K0334M, or 08C70-X0331S) to the threads of the back-up light switch, and install it on the transmission housing.

5. Connect the back-up light switch 2P connector.

Transmission Removal

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

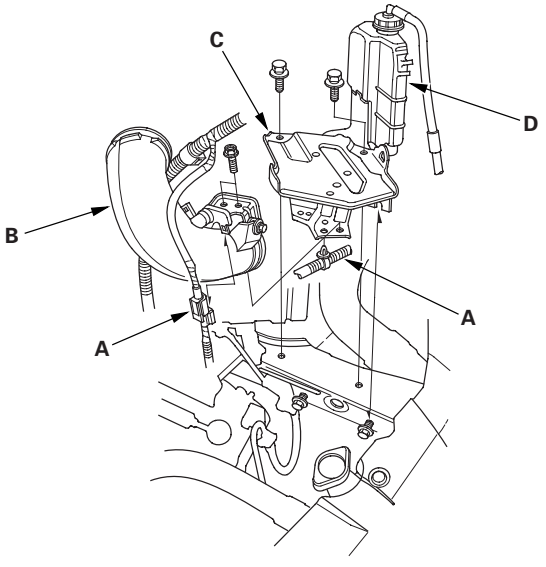
NOTE: Use fender covers to avoid damaging painted surfaces.

1. Do the battery removal procedure (see page 22-69).

2. Remove the cowl cover and the under-cowl panel (see page 20-163).

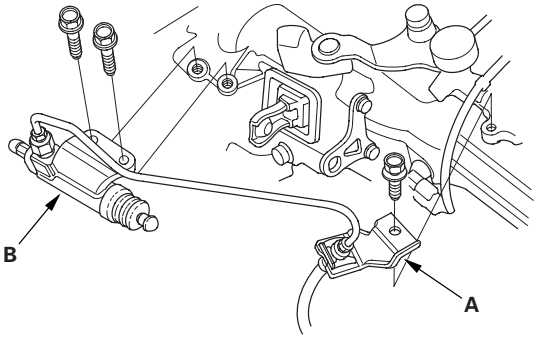
3. Remove the air cleaner assembly (see page 11-345).

4. Remove the harness clips (A) and the intake air duct (B), then remove the battery base (C) with the coolant reservoir (D).

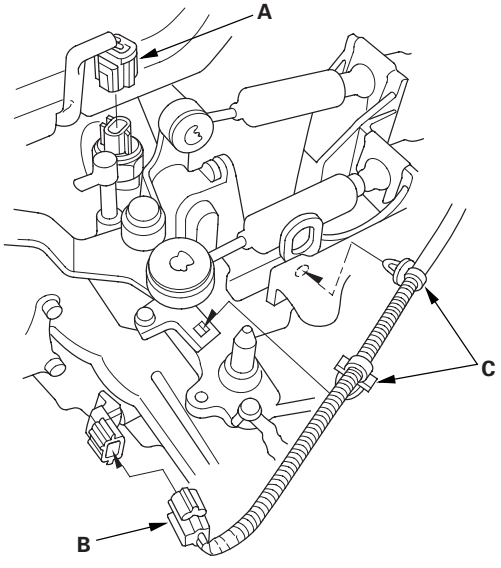


5. Remove the clutch line bracket (A), then carefully move the slave cylinder (B) out of the way to avoid bending the clutch line.

   NOTE: Do not press the clutch pedal after the slave cylinder has been moved.



6. Disconnect the back-up light switch connector (A), the output shaft (countershaft) speed sensor connector (B), and the harness clips (C).

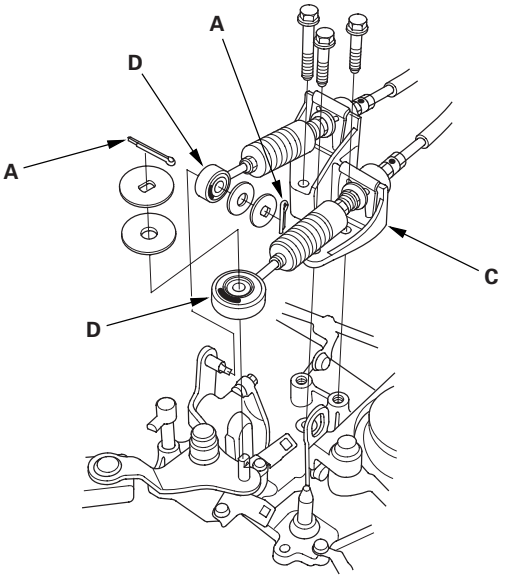


(cont'd)

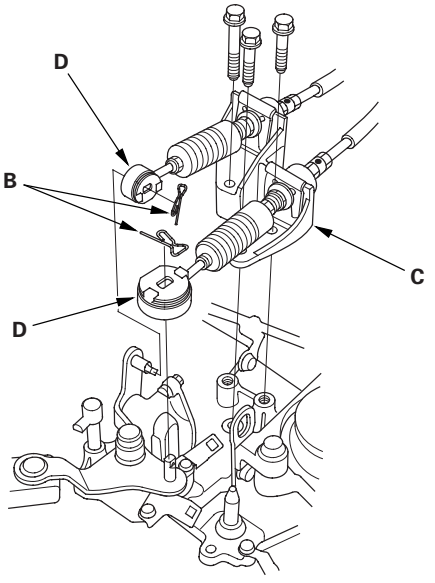
Transmission Removal (cont'd)

7. Remove the cotter pins (A) or the lock pins (B) and the shift cable bracket (C), then disconnect the shift cables (D) from the change lever assembly. Carefully remove both cables and the bracket together to avoid bending the cables.

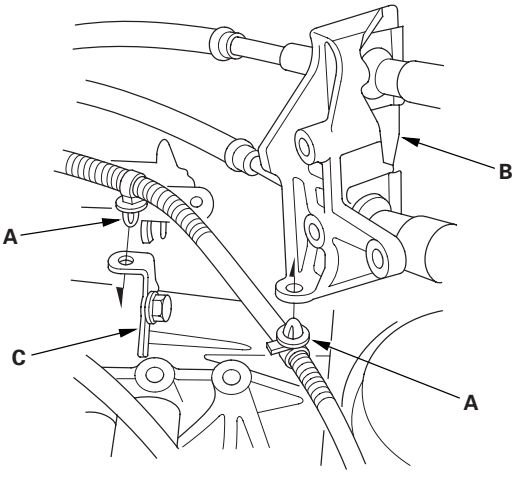
'06 model



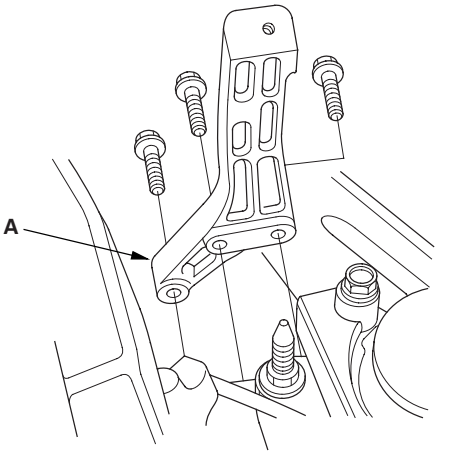
'07-09 models



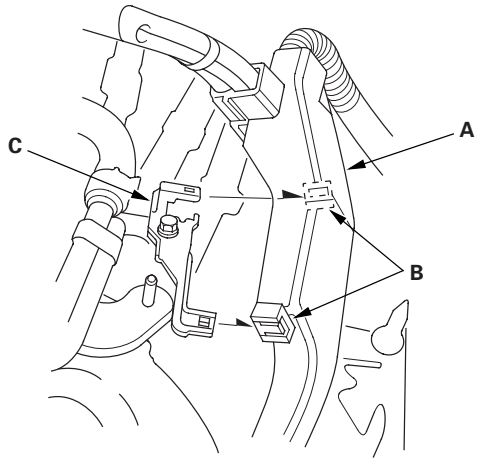
8. Remove the harness clips (A) from the clutch cable bracket (B) and the harness bracket (C).



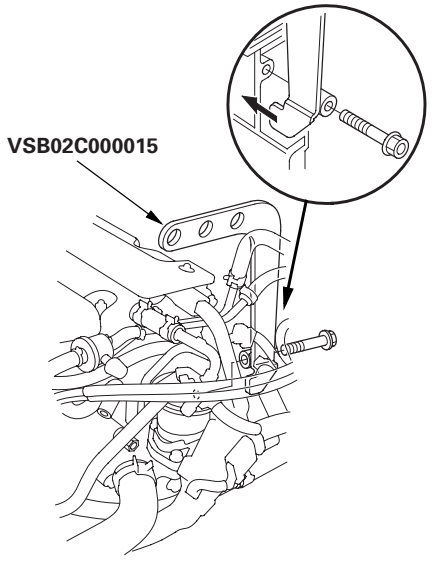
9. Remove the air cleaner housing bracket (A).



10. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness cover forward off the bracket (C).

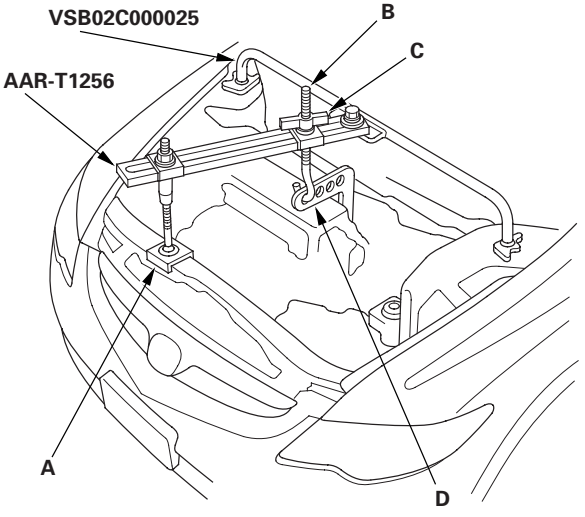


11. Attach the engine hanger adapter (VSB02C000015) to the threaded holes in the cylinder head.

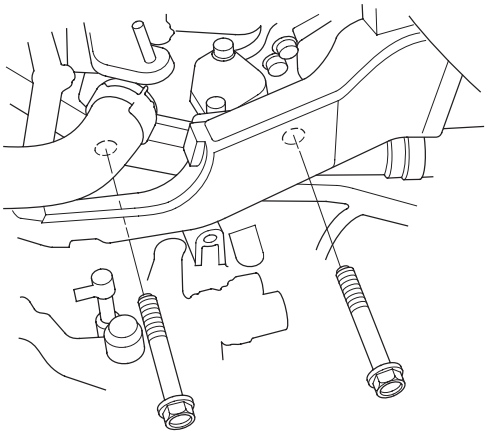


12. Install the front leg assembly (A), the hook (B), and the wingnut (C) from an A and Reds engine support hanger (AAR-T1256) onto the 2006 Civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wingnut by hand to lift and support the engine/transmission assembly.

    NOTE: Use care when working around the windshield.



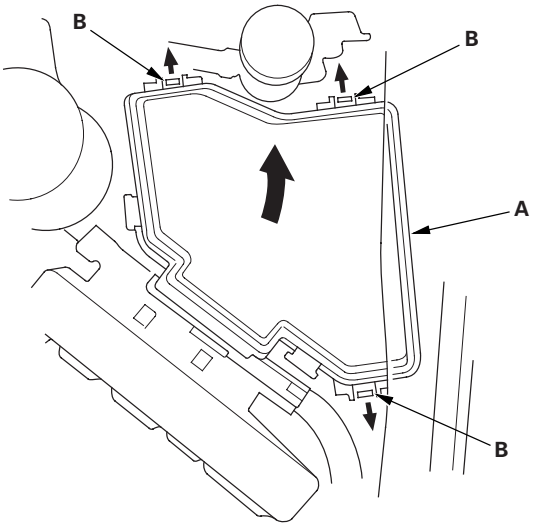
13. Remove the two upper transmission mounting bolts.



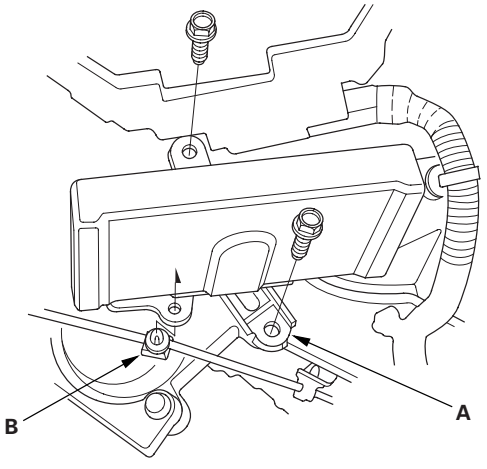
(cont'd)

Transmission Removal (cont'd)

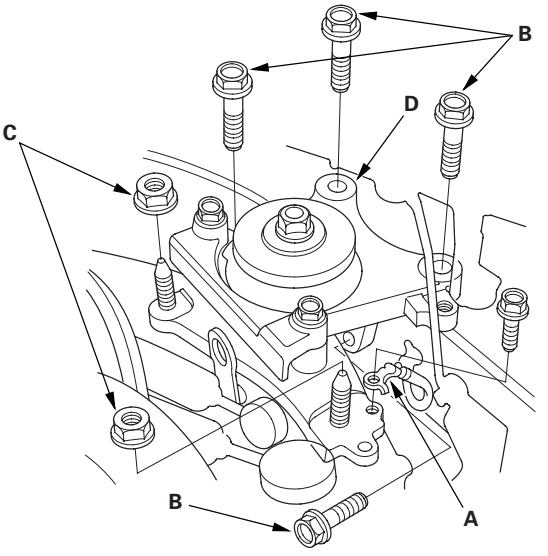
14. Remove the under-hood fuse/relay box (A) by lifting up on the lock tabs (B), then move it aside.



15. Remove the engine control module (ECM) bracket (A), then move it aside. Remove the clutch pipe clamp (B).

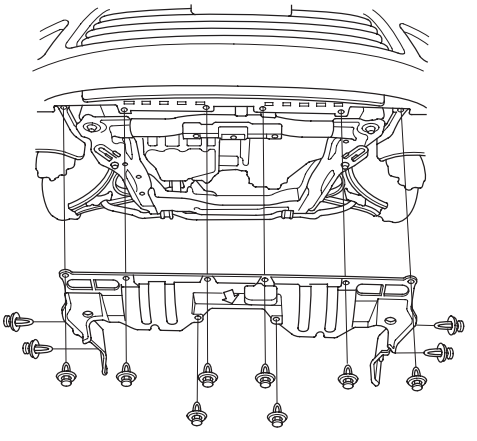


16. Disconnect the ground cable (A), then remove the transmission mount bracket bolts (B) and nuts (C). Remove the transmission mount bracket (D).



17. Raise the vehicle on a lift.

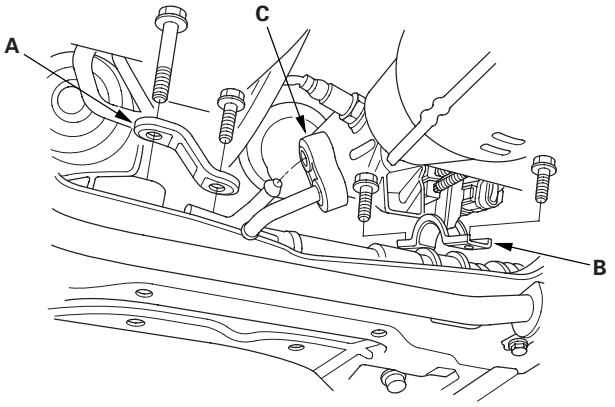
18. Remove the splash shield.



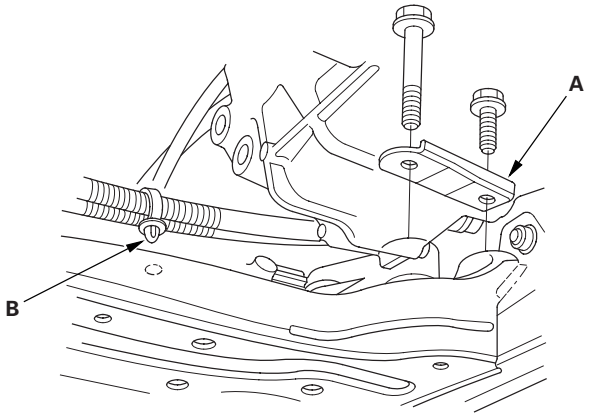
19. Drain the MTF. Reinstall the drain plug with a new sealing washer (see page 13-5).

20. Separate the lower arm (see step 5 on page 16-4).

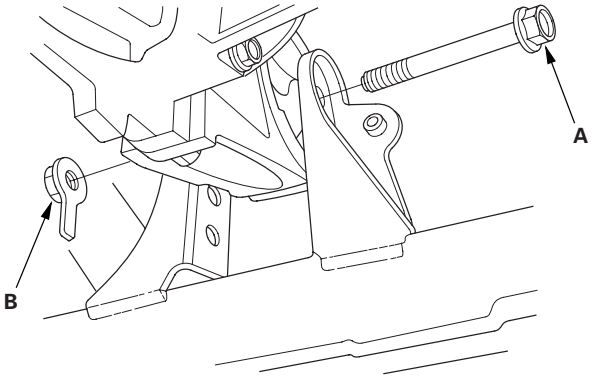
21. Remove the stiffener plate (A) from the left side of the steering gearbox, and the mounting bracket (B) from the right side of the steering gearbox. Disconnect the exhaust mounting rubber (C).



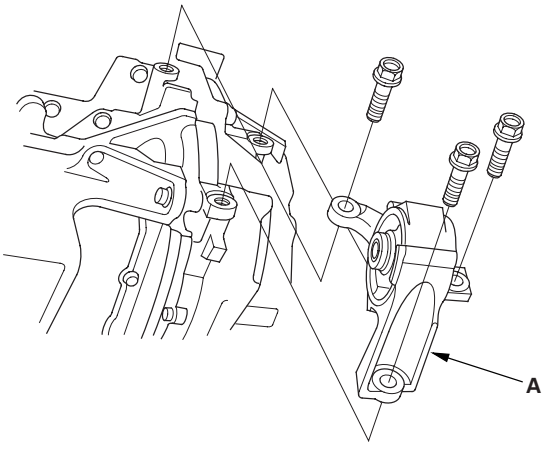
22. Remove the stiffener plate (A) and the harness clip (B).



23. Remove the front engine mount mounting bolt (A) and nut (B), then remove the lower radiator hose from the front engine mount bracket.



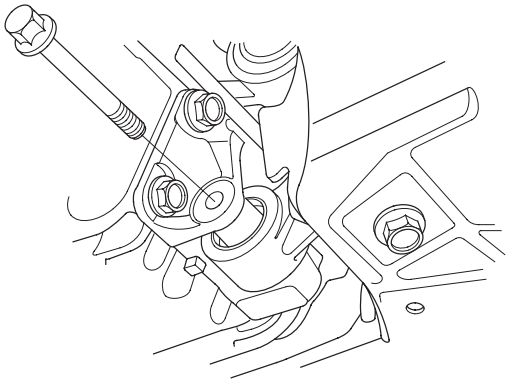
24. Remove the front engine mount (A) from the transmission and the engine.



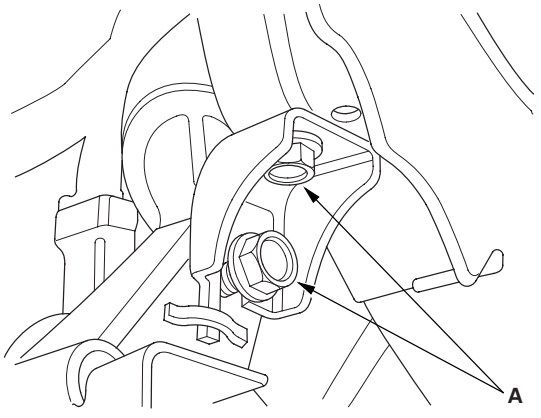
(cont'd)

Transmission Removal (cont'd)

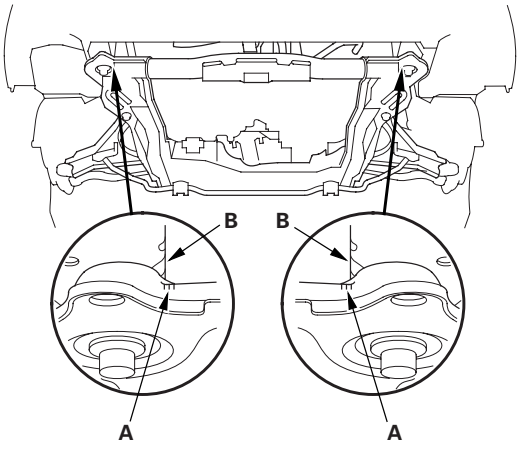
25. Remove the lower torque rod mounting bolt.



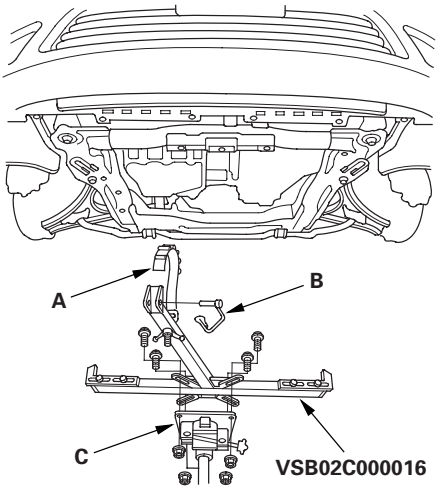
26. Remove the middle subframe mounting bolts (A).



27. Note the reference marks (A) on both sides of the front subframe that lines up with the body (B).



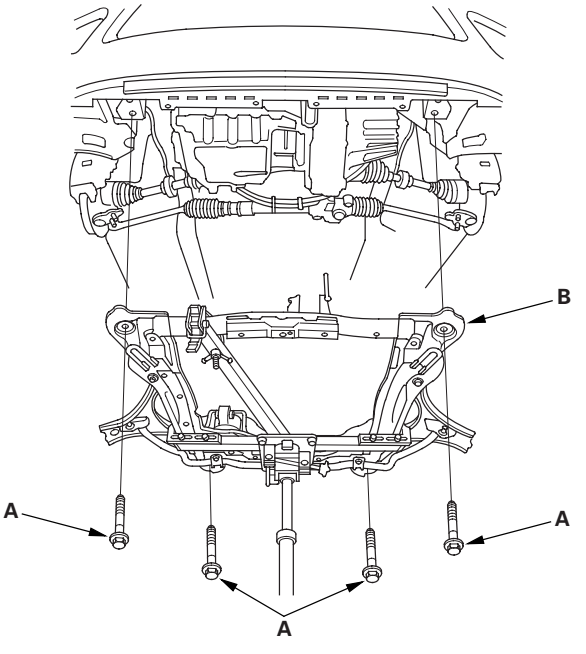
28. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt (A) of the subframe attachment over the front subframe, then secure the belt with the stop (B).



29. Raise the jack, and line up the slots in the arms with the bolt holes on the corner of the jack base (C), then attach them securely.

30. Remove the front subframe mounting bolts (A) and the front subframe (B).

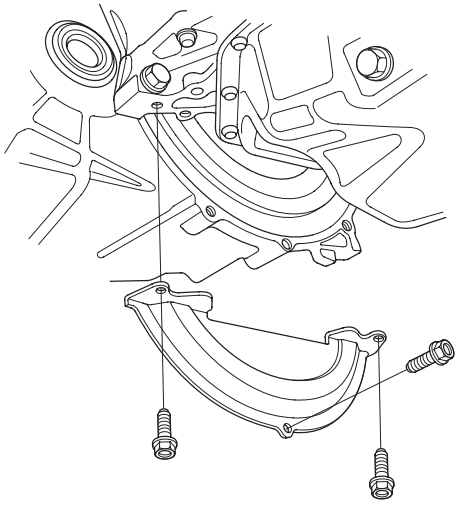
    NOTE: Suspend the steering gearbox with an appropriate size wire.



31. Pry out the driveshafts inboard joint (see step 8 on page 16-5).

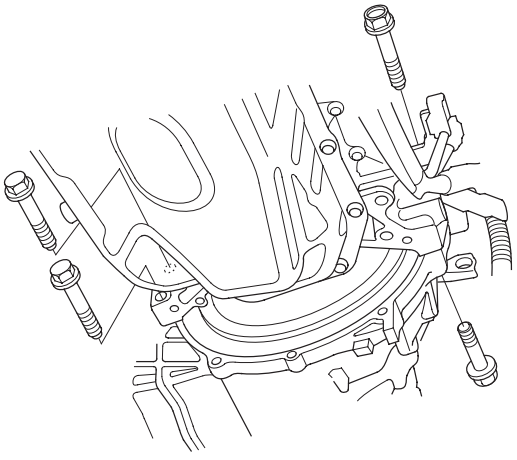
32. Remove the intermediate shaft (see page 16-23).

33. Remove the clutch cover.



34. Support the transmission with a transmission jack.

35. Remove the transmission mounting bolts.



36. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate.

37. Slowly lower the transmission about 150 mm (6 in.). Check once again that all hoses and harnesses are disconnected and free from the transmission, then lower it completely.

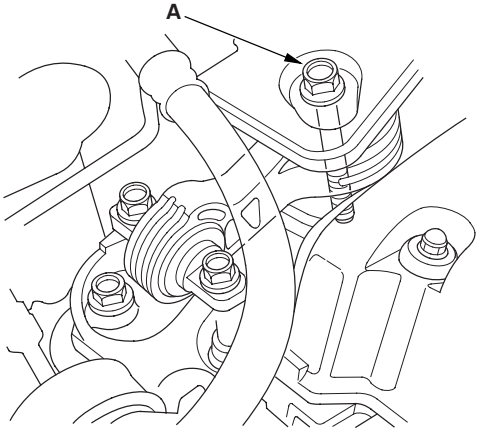
Transmission Installation

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

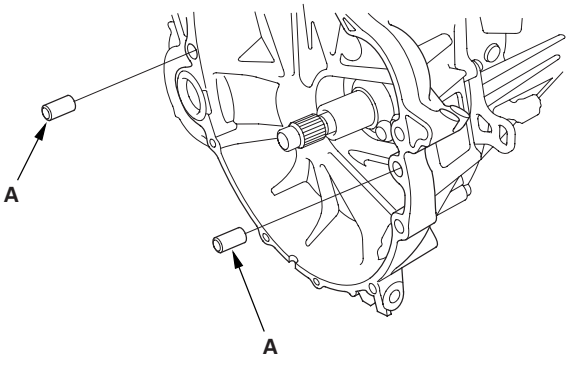
These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Loosen the upper torque rod mounting bolt (A).



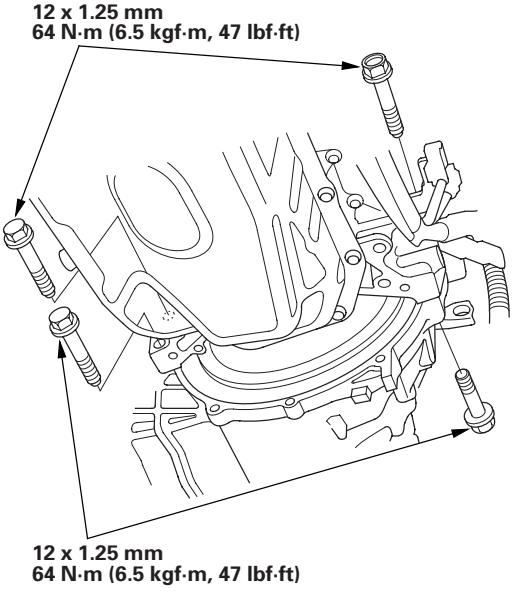
2. Made sure that the two dowel pins (A) are installed in the clutch housing.



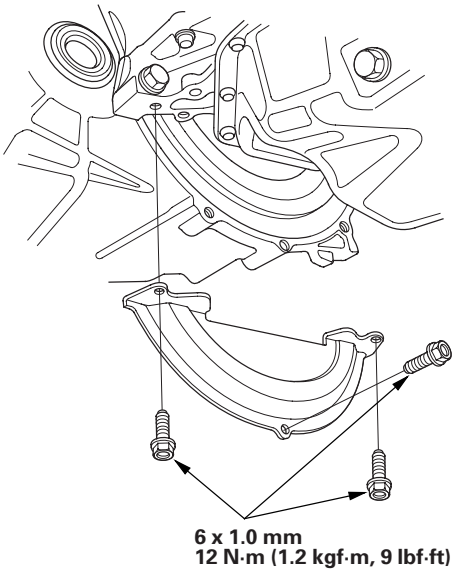
3. Check the release fork and the release bearing, and reinstall them with the appropriate grease (see page 12-24).

4. Place the transmission on the transmission jack, and raise it to the engine level.

5. Install the transmission mounting bolts.



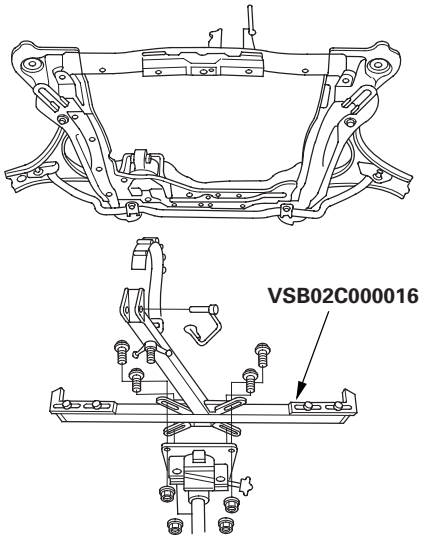
6. Install the clutch cover.



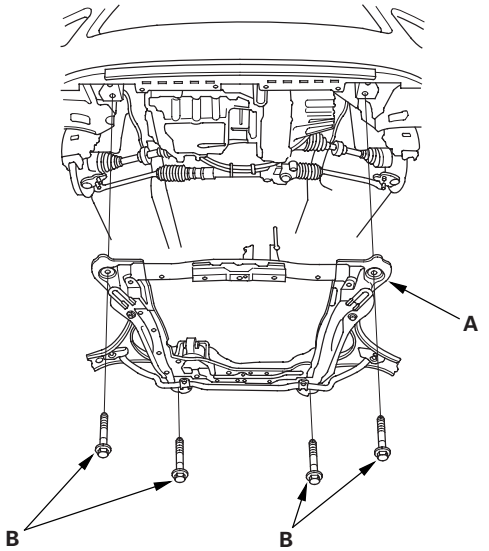
7. Install the intermediate shaft (see page 16-27).

8. Install the driveshafts inboard joint (see step 6 on page 16-21).

9. Support the front subframe with the subframe adapter (VSB02C000016) and a jack.



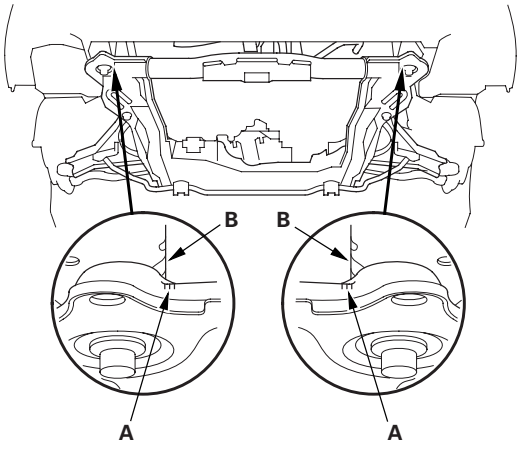
10. Install the front subframe (A). Loosely install new subframe mounting bolts (B).



B
14 x 1.5 mm
103 N·m
(10.5 kgf·m, 76 lbf·ft)
Replace.

B
14 x 1.5 mm
103 N·m
(10.5 kgf·m, 76 lbf·ft)
Replace.

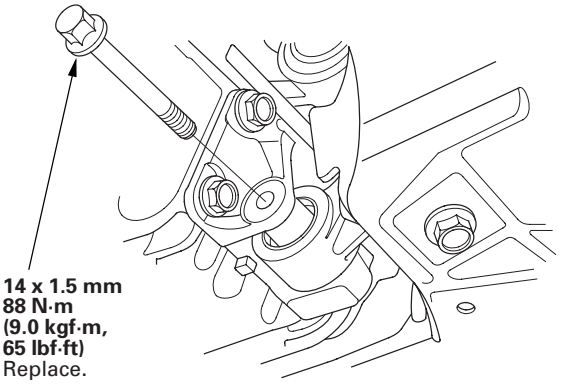
11. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the front subframe mounting bolts to the specified torque.



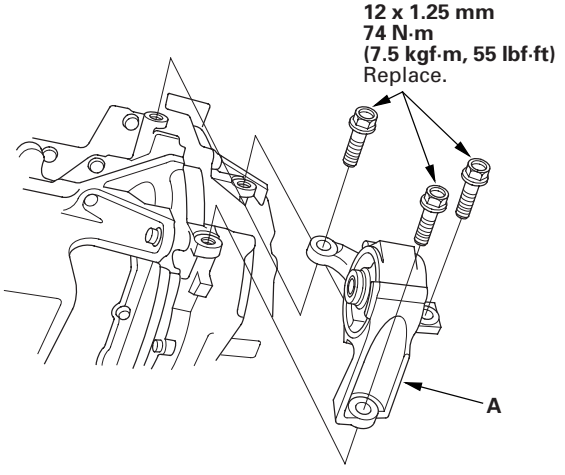
(cont'd)

Transmission Installation (cont'd)

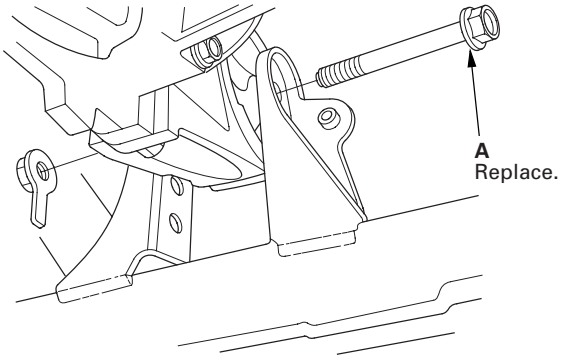
12. Install a new lower torque rod bracket mounting bolt.



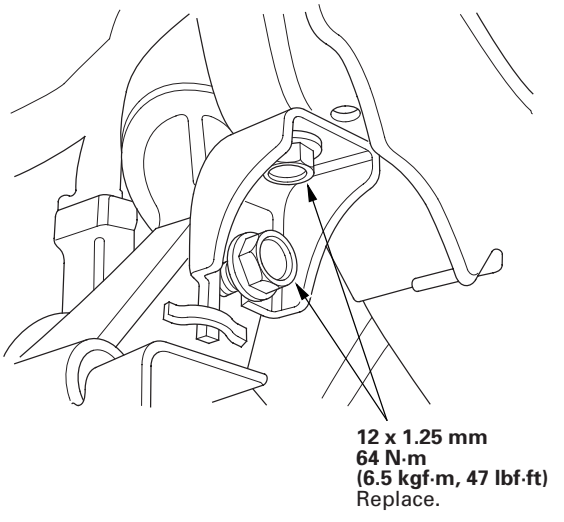
13. Install the front engine mount bracket (A) on the transmission and the engine with new bolts.



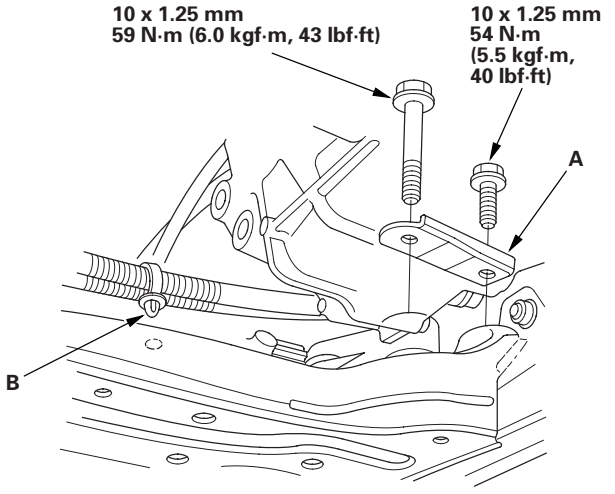
14. Loosely tighten a new front engine mount mounting bolt (A), then attach the lower radiator hose to the front engine mount bracket.



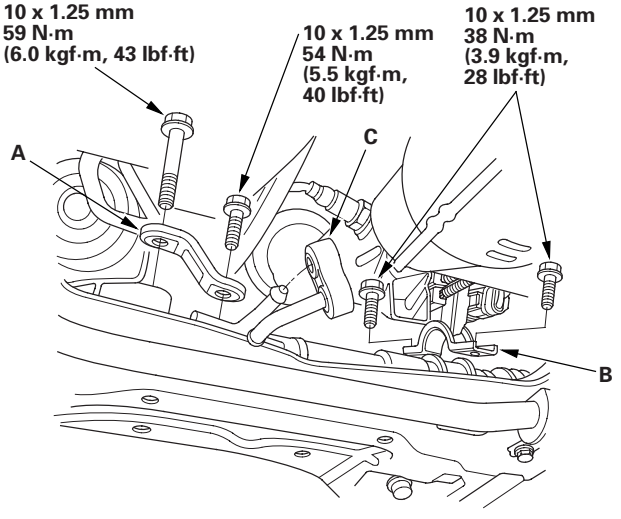
15. Install new middle subframe mounting bolts.



16. Install the steering gearbox stiffener plate (A) and the harness clip (B).



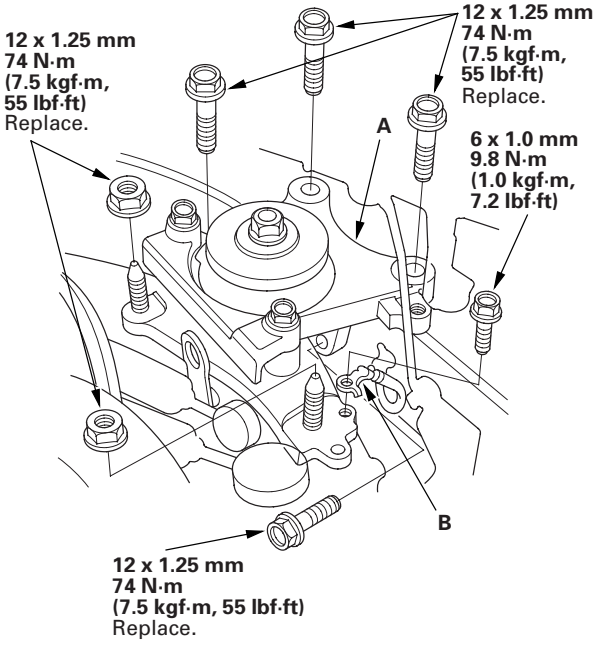
17. Install the stiffener plate (A) and the mounting bracket (B). Connect the exhaust mounting rubber (C).



18. Connect the lower ball joint and the lower arm (see step 8 on page 16-21).

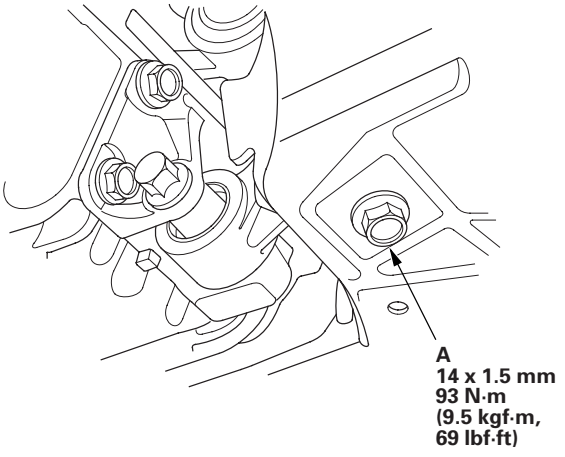
19. Lower the vehicle on the lift.

20. Install the transmission mount bracket (A), and connect the ground cable (B).



21. Raise the vehicle on the lift.

22. Loosen and retighten the lower torque rod mounting bolt (A).



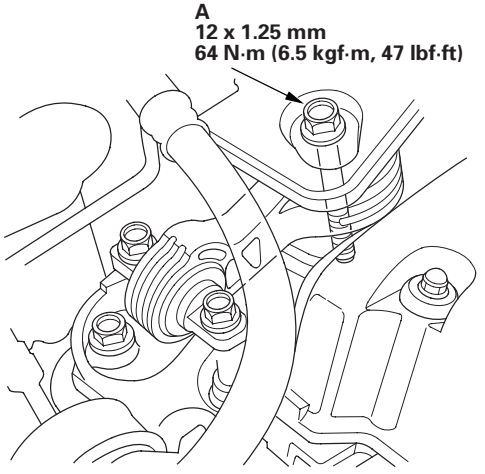
23. Refill the transmission with the recommended transmission fluid (see page 13-5).

24. Lower the vehicle on the lift.

(cont'd)

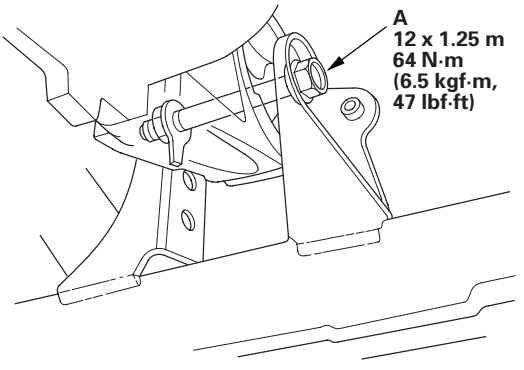
Transmission Installation (cont'd)

25. Tighten the upper torque rod mounting bolt (A).

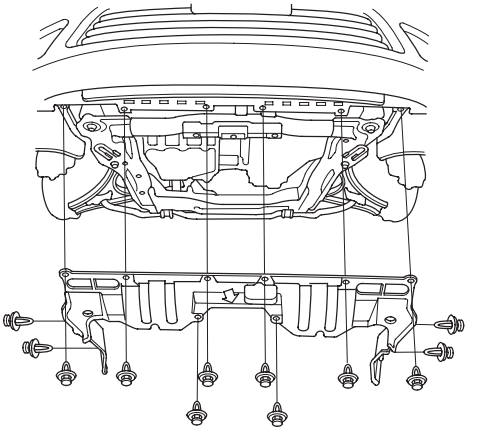


26. Raise the vehicle on the lift.

27. Tighten the front mount mounting bolt (A).



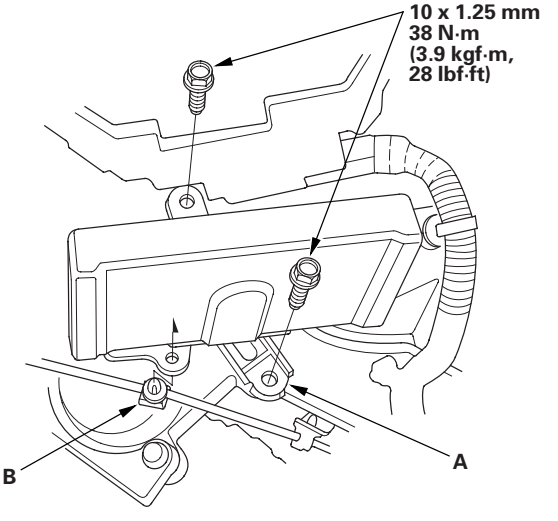
28. Install the splash shield.



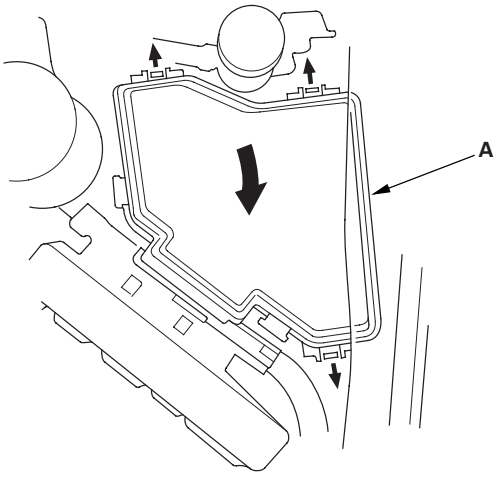
29. Lower the vehicle on the lift.

30. Remove the engine support hanger and the engine hanger adapter from the engine.

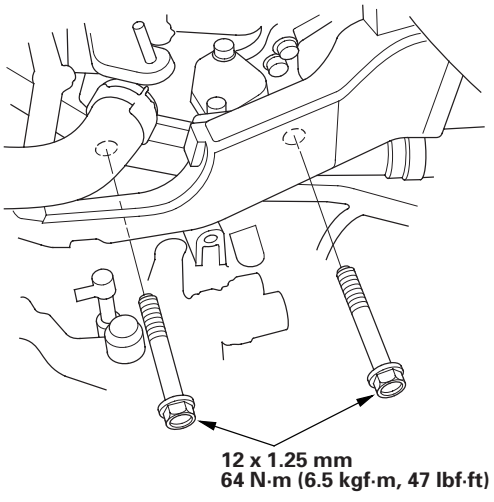
31. Install the engine control module (ECM) bracket (A), then install the clutch pipe clamp (B).



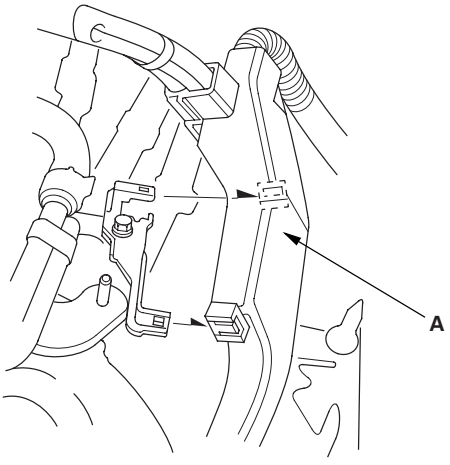
32. Install the under-food fuse/relay box (A) on the under-hood fuse/relay bracket.



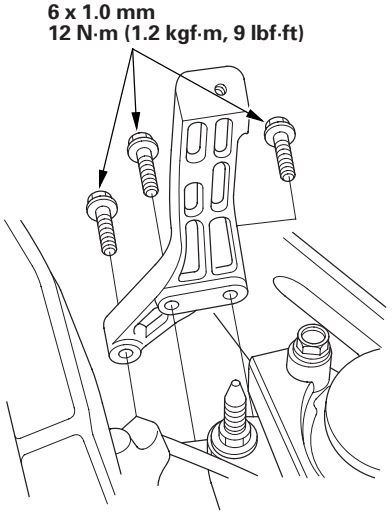
33. Install the two upper transmission mounting bolts.



34. Install the engine harness cover (A).



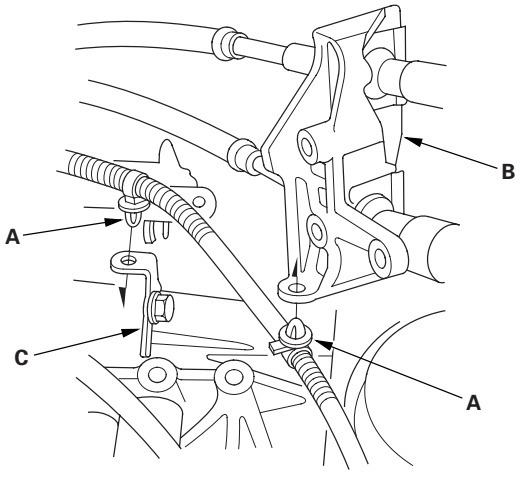
35. Install the air cleaner housing mounting bracket.



(cont'd)

Transmission Installation (cont'd)

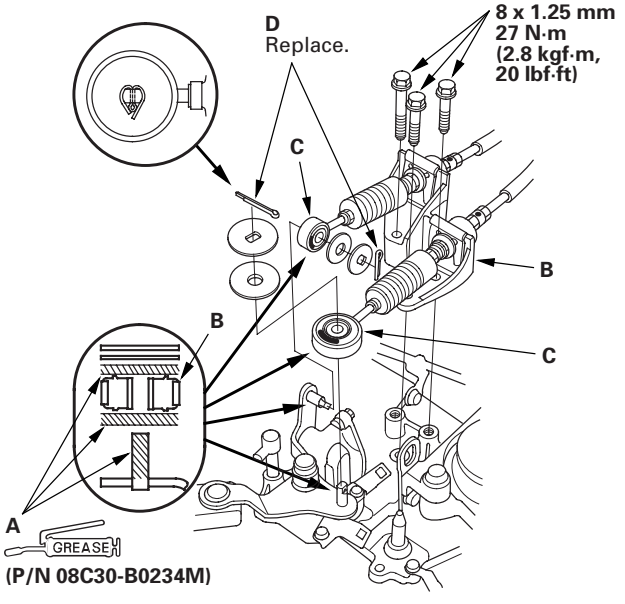
36. Install the harness clips (A) on the shift cable bracket (B) and the harness bracket (C).



37. Apply a light coat of silicone grease (P/N 08C30-B0234M) to the shift cable ends (A).

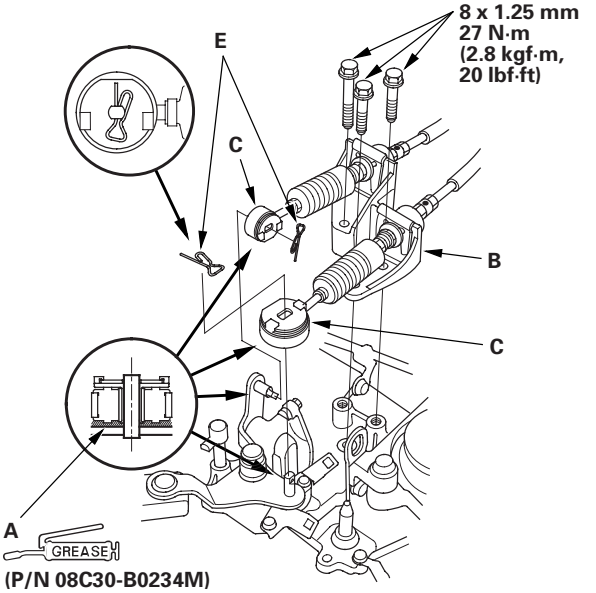
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

'06 model



(P/N 08C30-B0234M)

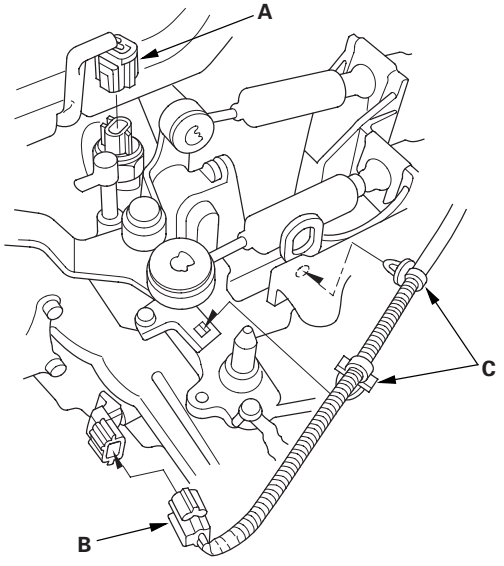
'07-09 models



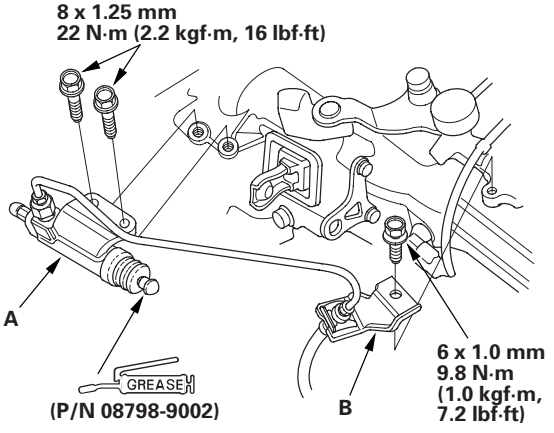
(P/N 08C30-B0234M)

38. Install the shift cable bracket (B) and the shift cables (C), then install new cotter pins (D) or lock pins (E).

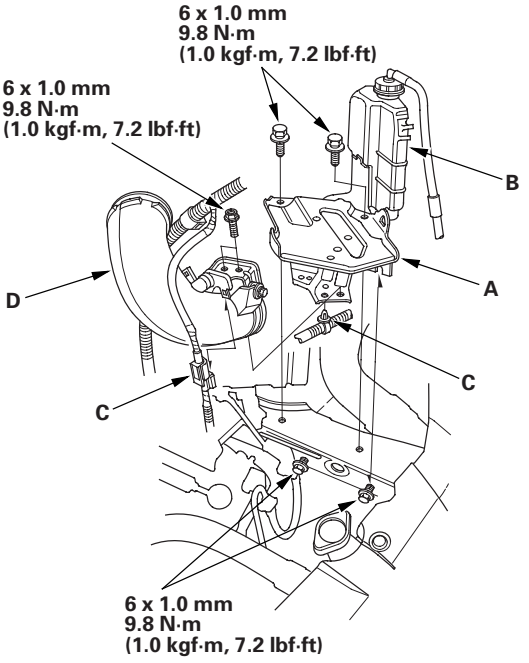
39. Connect the back-up light switch connector (A) and the output shaft (countershaft) speed sensor connector (B). Install the harness clips (C).



40. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder pushrod. Install the slave cylinder (A), then install the clutch line bracket (B). Be careful not to bend the clutch line.



41. Install the battery base (A) with the coolant reservoir (B).



42. Install the harness clips (C) and the intake air duct (D).

43. Install the air cleaner assembly (see page 11-345).

44. Do the battery installation procedure (see page 22-69).

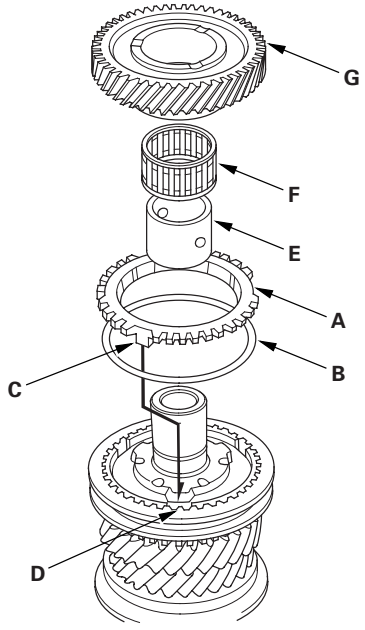
45. Install the under-cowl panel and the cowl cover (see page 20-163).

46. Check the shift lever and the clutch operation.

47. Check the wheel alignment (see page 18-5).

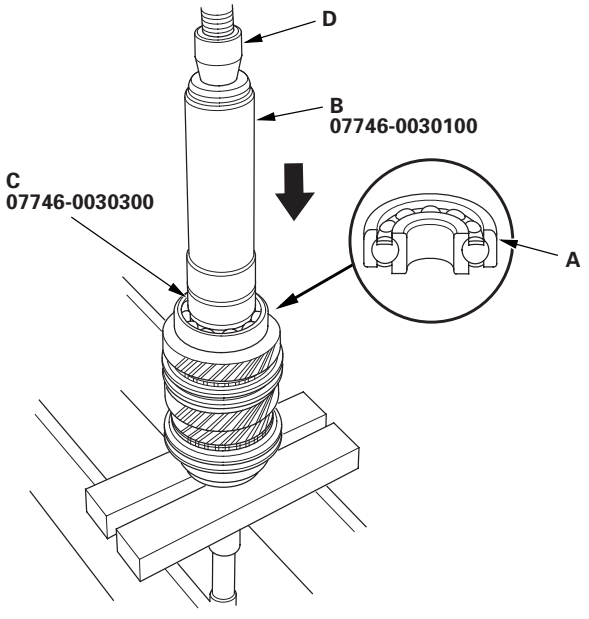
48. Test-drive the vehicle.

14. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 5th/6th synchro hub.



15. Install the 6th gear distance collar (E) with the needle bearing (F), then install 6th gear (G).

16. Press on new angular ball bearing (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press (D).

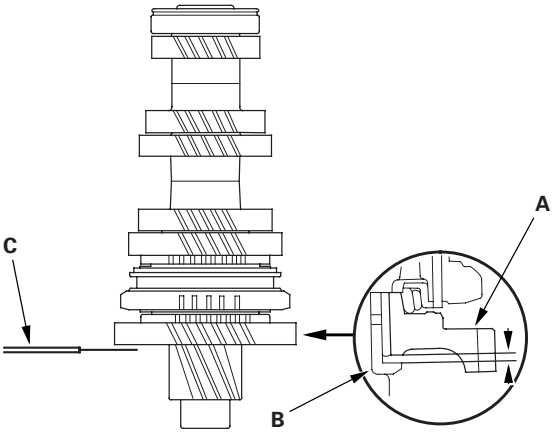


Countershaft Assembly Clearance Inspection

1. Measure the clearance between 1st gear (A) and the 1st gear distance collar (B) with a feeler gauge (C).

   - If the clearance exceeds the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

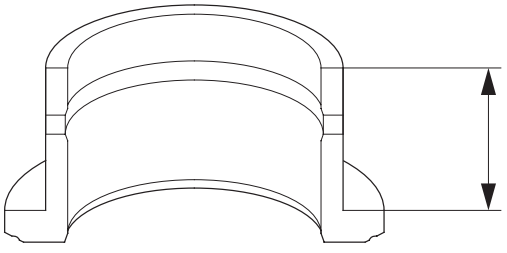
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



2. Measure the length of the 1st gear distance collar as shown.

   - If the length is not within the standard, replace the 1st gear distance collar.
   - If the length is within the standard, go to step 3.

   Standard: 23.03—23.08 mm (0.907—0.909 in.)



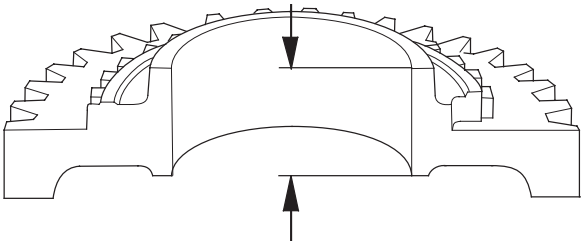
(cont'd)

Countershaft Assembly Clearance Inspection (cont'd)

3. Measure the thickness of 1st gear.

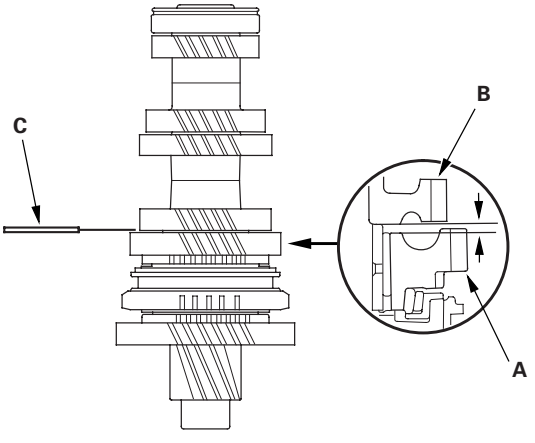
   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

   Standard: 22.92—22.97 mm (0.902—0.904 in.)
   Service Limit: 22.87 mm (0.900 in.)



4. Measure the clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 5.

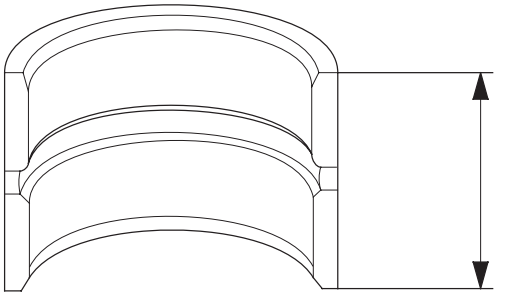
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



5. Measure the length of the 2nd gear distance collar.

   - If the length is not within the standard, replace the 2nd gear distance collar.
   - If the length is within the standard, go to step 6.

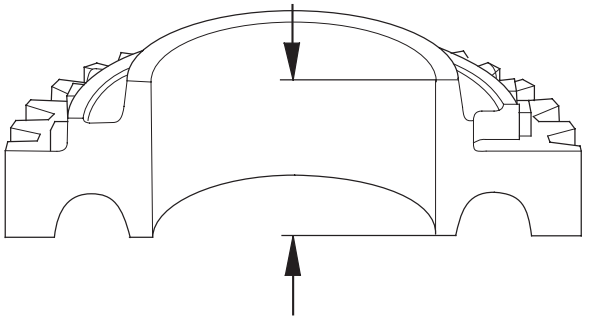
   Standard: 28.03—28.08 mm (1.104—1.106 in.)



6. Measure the thickness of 2nd gear.

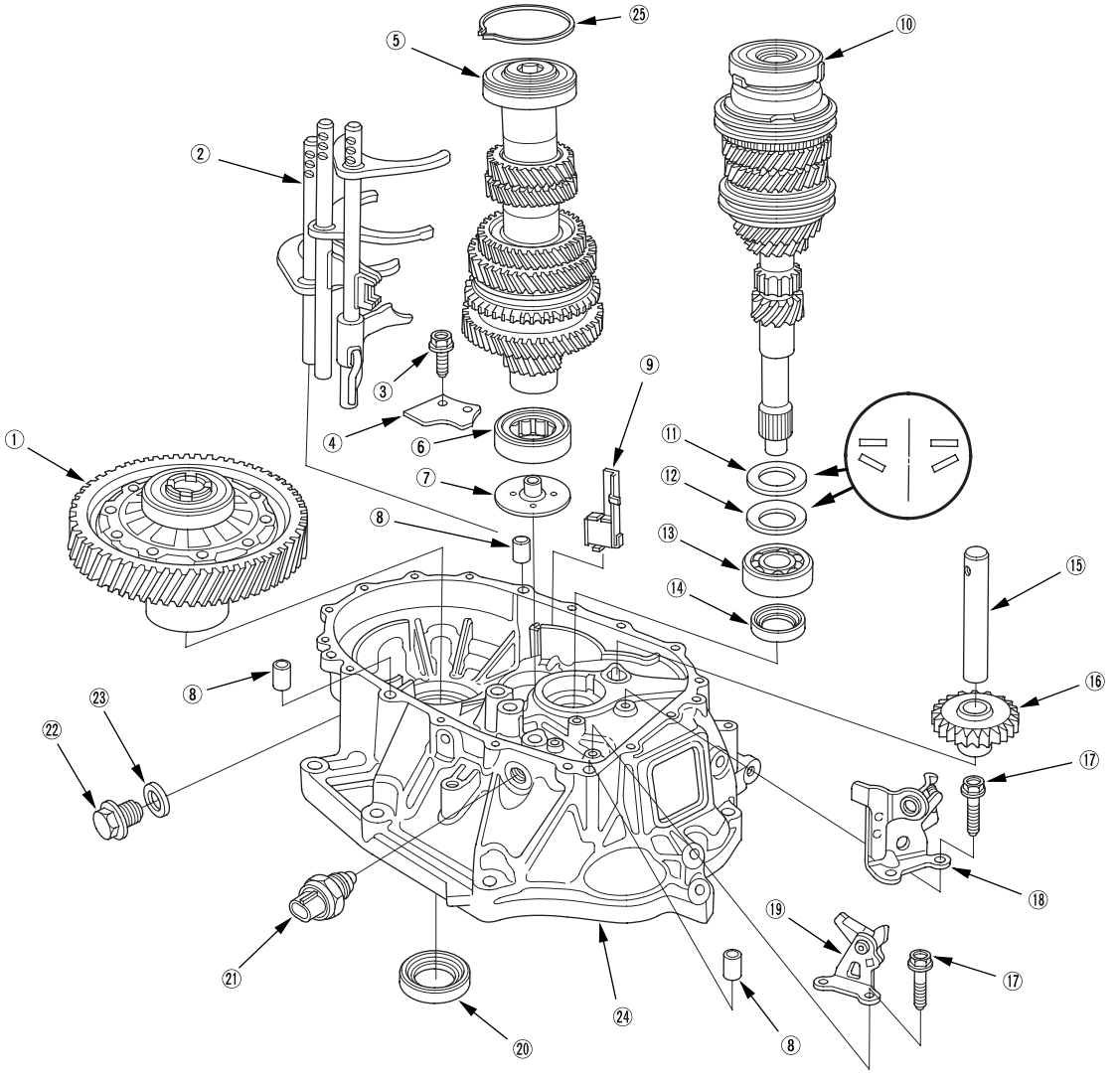
   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

   Standard: 27.92—27.97 mm (1.099—1.101 in.)
   Service Limit: 27.87 mm (1.097 in.)



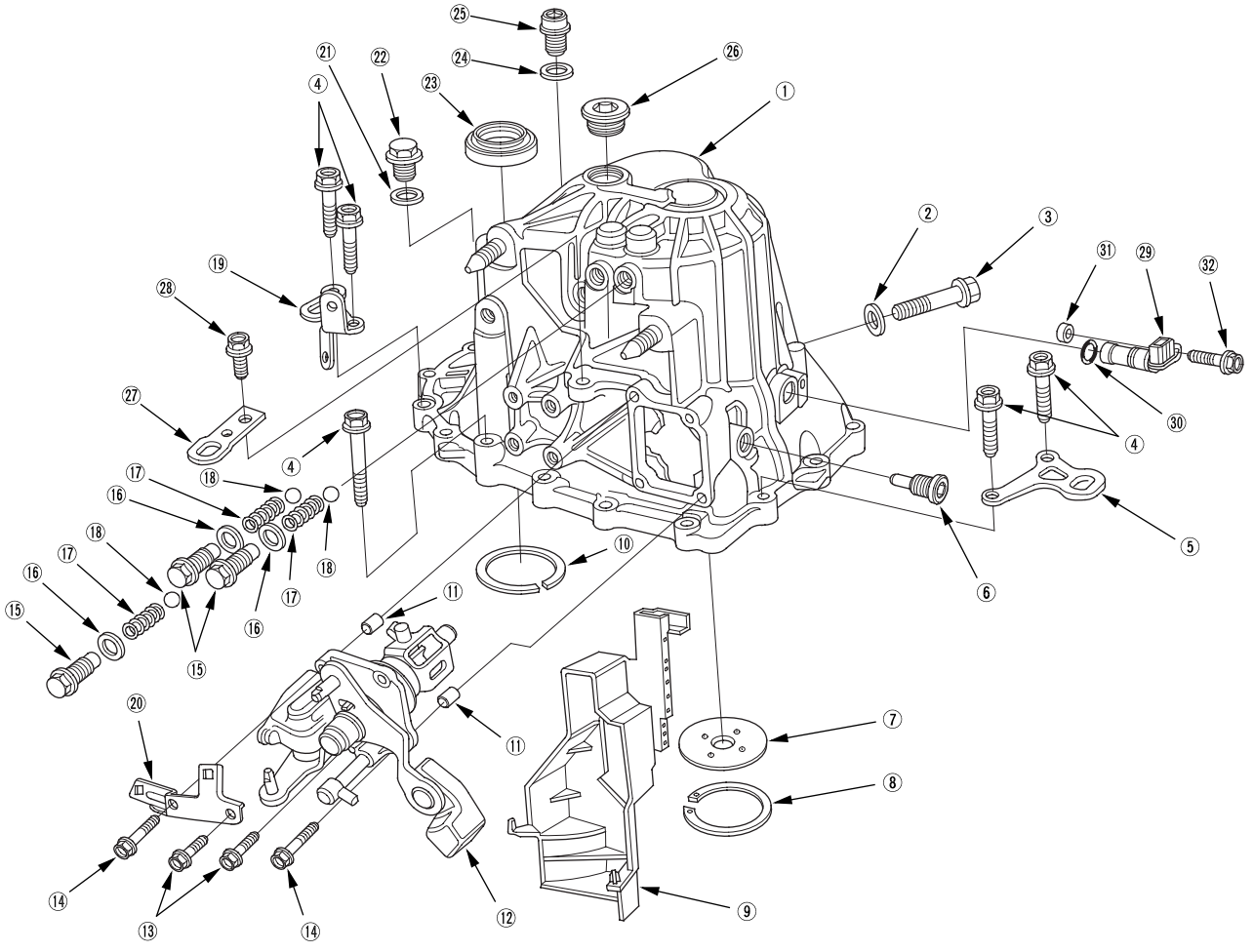
Transmission Disassembly

Exploded View - Clutch Housing



① DIFFERENTIAL ASSEMBLY
② SHIFT FORK ASSEMBLY
③ 6 mm FLANGE BOLT
13 N·m (1.3 kgf·m, 9 lbf·ft)
④ BEARING SET PLATE
⑤ COUNTERSHAFT ASSEMBLY
⑥ NEEDLE BEARING
⑦ OIL GUIDE PLATE C
⑧ 14 x 20 mm DOWEL PIN
⑨ MAGNET
⑩ MAINSHAFT ASSEMBLY
⑪ 28 mm WASHER
⑫ 28 mm SPRING WASHER
⑬ BALL BEARING
⑭ 28 x 43 x 7 mm OIL SEAL
Replace.
⑮ REVERSE IDLER GEAR SHAFT
⑯ REVERSE IDLER GEAR
⑰ 6 mm SPECIAL BOLT
15 N·m (1.5 kgf·m, 11 lbf·ft)
⑱ REVERSE SHIFT FORK
⑲ REVERSE LOCK CAM
⑳ 35 x 58 x 8 mm OIL SEAL
Replace.
㉑ BACK-UP LIGHT SWITCH
29 N·m (3.0 kgf·m, 22 lbf·ft)
㉒ 20 mm BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 20 mm WASHER
Replace.
㉔ CLUTCH HOUSING
㉕ 72 mm SNAP RING

Exploded View - Transmission Housing



① TRANSMISSION HOUSING
② 10 mm SEALING WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 x 30 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑭ 6 x 20 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑮ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑯ 12 mm SEALING WASHER
Replace.
⑰ SPRING
⑱ STEEL BALL
⑲ TRANSMISSION HANGER B
⑳ HARNESS BRACKET A
㉑ 20 mm SEALING WASHER
Replace.
㉒ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 40 x 56 x 8 mm OIL SEAL
Replace.
㉔ 14 mm SEALING WASHER
Replace.
㉕ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉖ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)
㉗ TRANSMISSION HANGER
㉘ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉙ OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR
㉚ O-RING
Replace.
㉛ PLAIN WASHER
㉜ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)

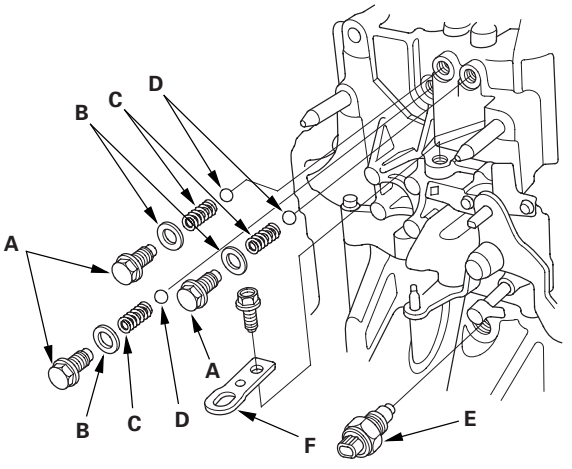
(cont'd)

Transmission Disassembly (cont'd)

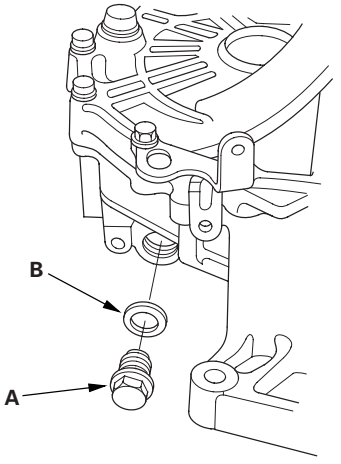
NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the release fork and the replace bearing (see page 12-24).

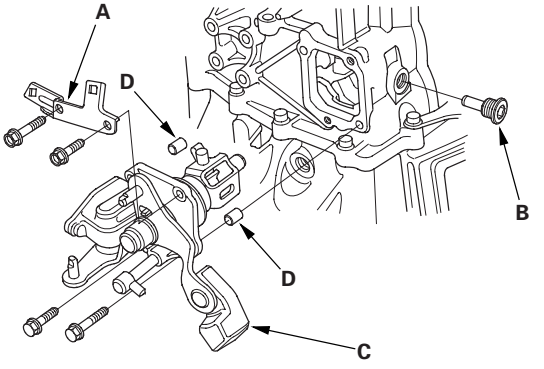
2. Remove the detent bolts (A), the 12 mm sealing washers (B), the springs (C), the steel balls (D), and the back-up light switch (E). Then remove the transmission hanger (F).



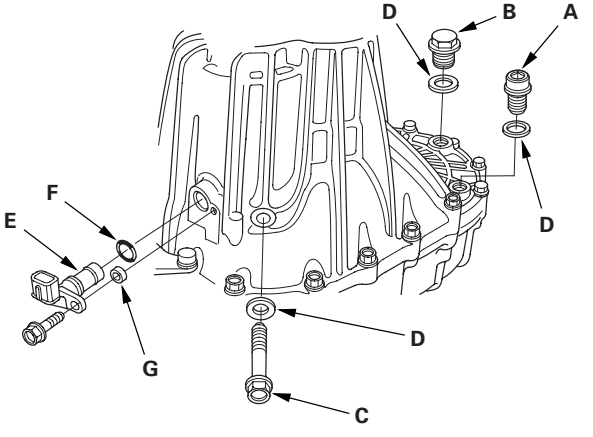
3. Remove the 20 mm bolt (A) and the 20 mm sealing washer (B).



4. Remove the interlock bolt (B), the change lever assembly (C), the 8 x 14 mm dowel pins (D), and harness bracket A.

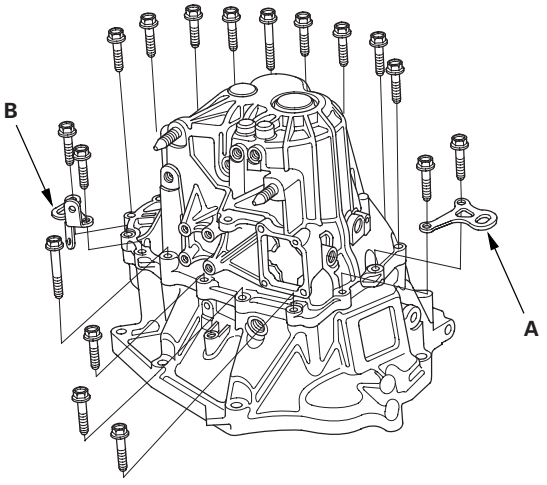


5. Remove the drain plug (A), the filler plug (B), the 10 mm flange bolt (C), and the sealing washers (D).

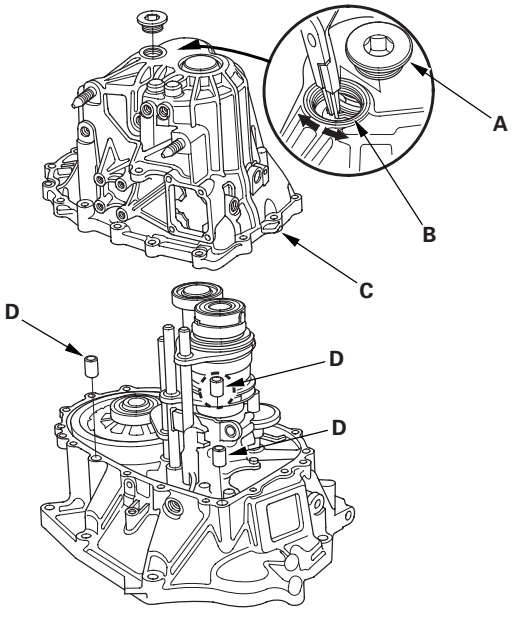


6. Remove the output shaft (countershaft) speed sensor (E) with the O-ring (F) and the plain washer (G).

7. Loosen the 8 mm flange bolts in a crisscross pattern in several steps, then remove them with transmission hanger A and transmission hanger B.

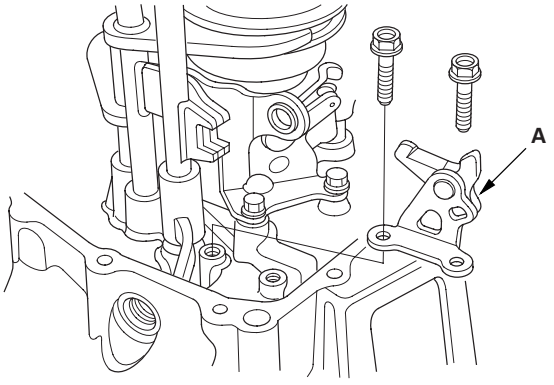


8. Remove the 32 mm sealing cap (A).

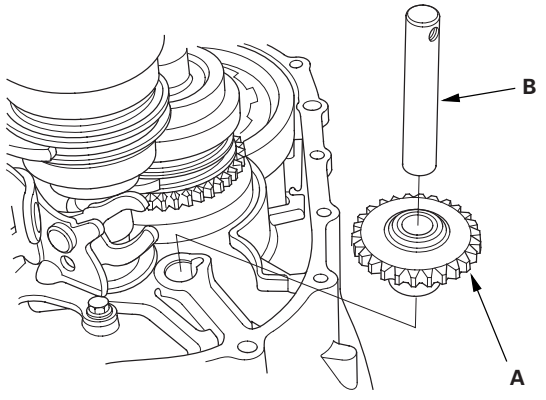


9. While expanding the 72 mm snap ring (B) on the countershaft ball bearing with snap ring pliers, lift the transmission housing (C). Release the snap ring pliers, and remove the transmission housing and the three 14 x 20 mm dowel pins (D).

10. Remove the reverse lock cam (A).



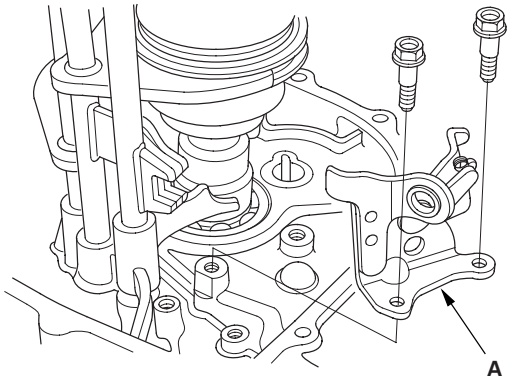
11. Remove the reverse idler gear (A) and the reverse idler gear shaft (B).



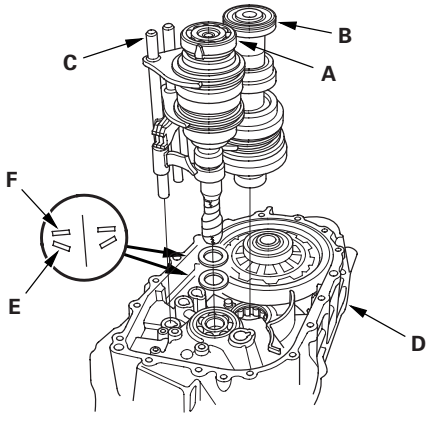
(cont'd)

Transmission Disassembly (cont'd)

12. Remove the reverse shift fork (A).

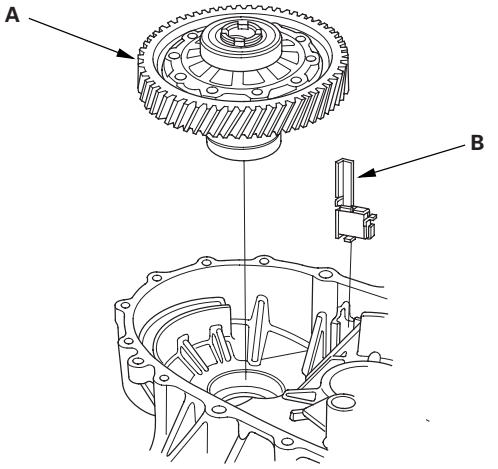


13. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and the countershaft assembly (B) with the shift fork assembly (C) from the clutch housing (D).

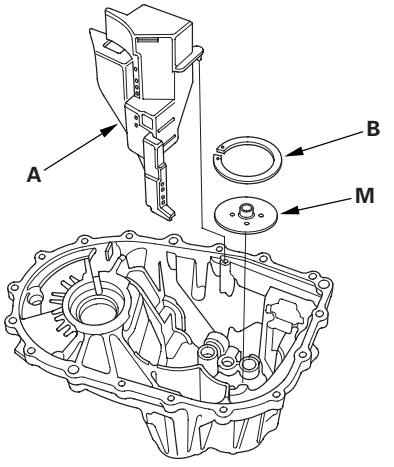


14. Remove the 28 mm spring washer (E) and the 28 mm washer (F).

15. Remove the differential assembly (A) and the magnet (B).



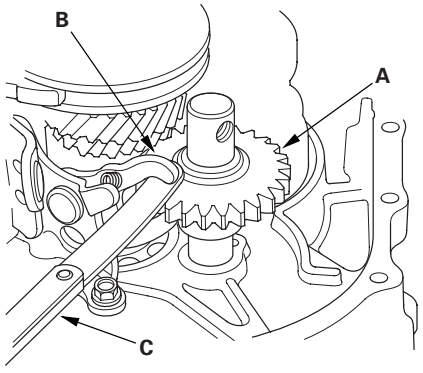
16. Remove the oil gutter plate (A), the 72 mm shim (B), and oil guide plate M.



Reverse Shift Fork Clearance Inspection

1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

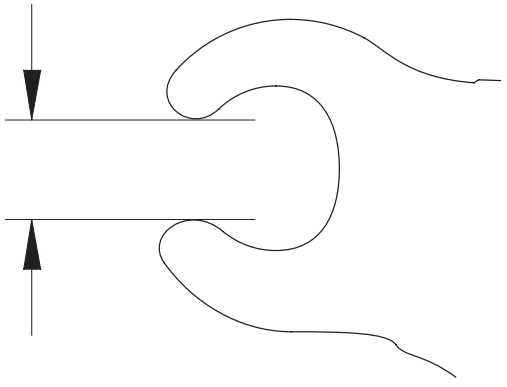
Standard: 0.20—0.59 mm (0.008—0.023 in.)
Service Limit: 1.3 mm (0.051 in.)



2. Measure the width of the reverse shift fork.

- If the width is not within the standard, replace the reverse shift fork.
- If the width is within the standard, replace the reverse idler gear.

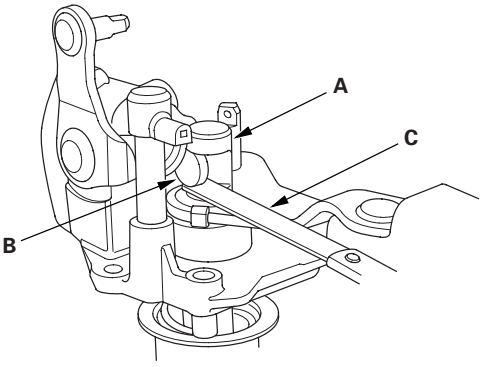
Standard: 13.4—13.7 mm (0.528—0.539 in.)



Change Lever Clearance Inspection

1. Measure the clearance between the change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

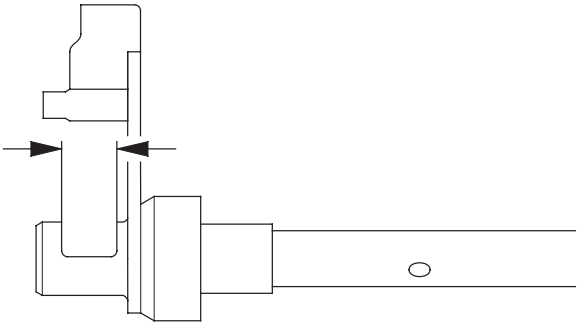
Standard: 0.05—0.25 mm (0.002—0.010 in.)
Service Limit: 0.50 mm (0.020 in.)



2. Measure the groove width of the change lever.

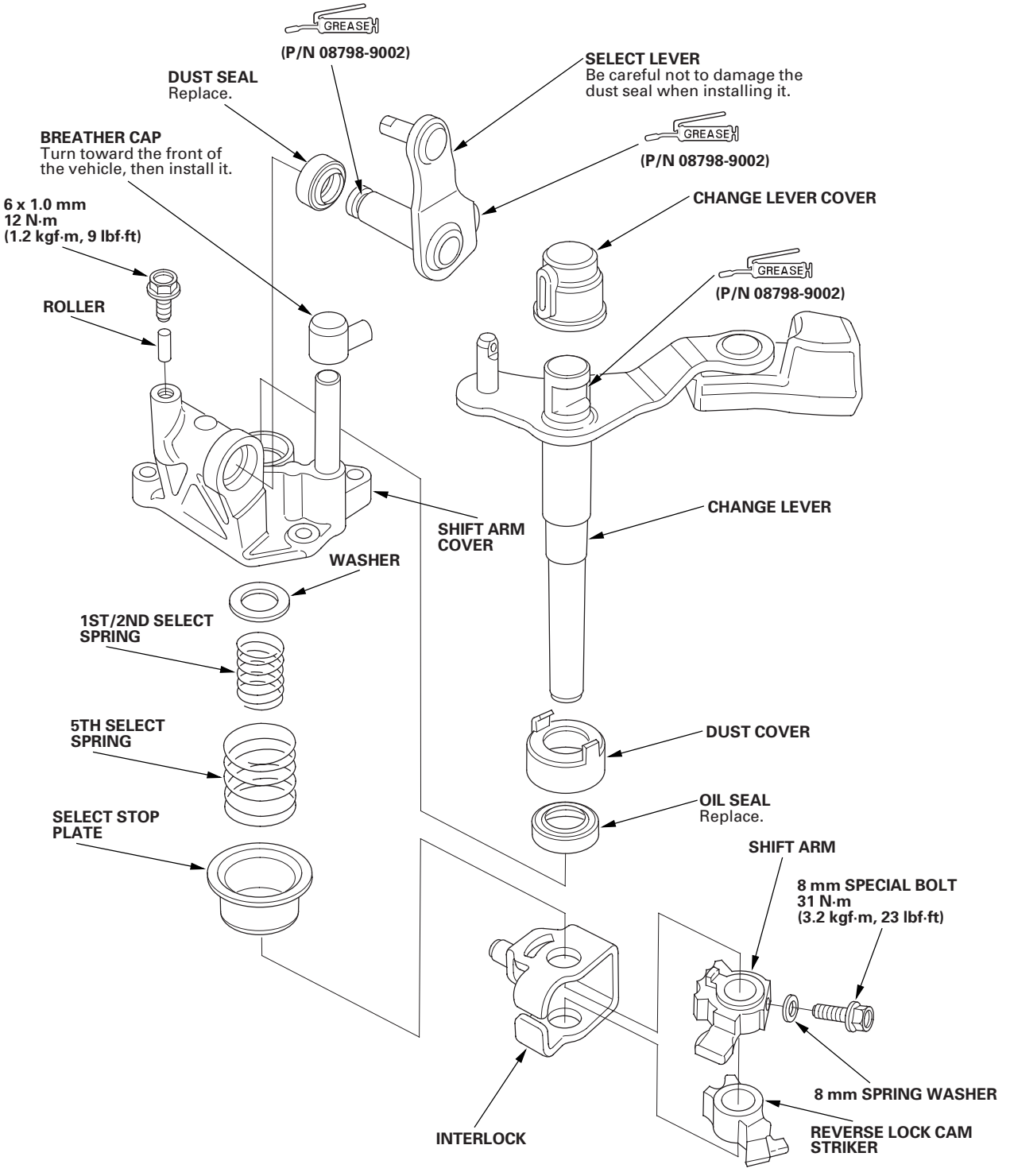
- If the groove width is not within the standard, replace the change lever.
- If the groove width is within the standard, replace the select lever.

Standard: 15.00—15.10 mm (0.591—0.594 in.)



Change Lever Assembly Disassembly/Reassembly

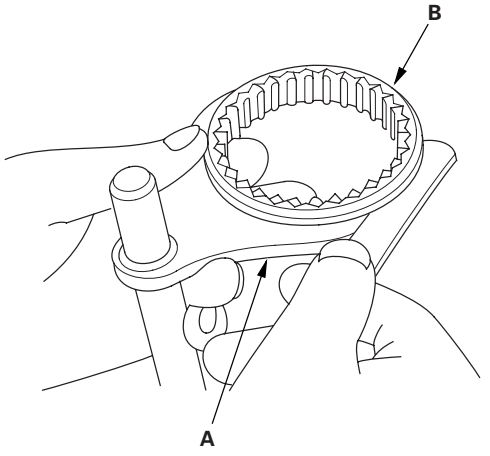
NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply grease to the contact surfaces as shown.



Shift Fork Clearance Inspection

1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

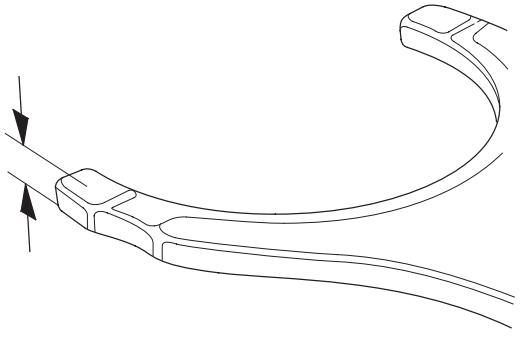
   Standard: 0.35—0.65 mm (0.014—0.026 in.)
   Service Limit: 1.0 mm (0.039 in.)



2. Measure the thickness of the shift fork fingers.

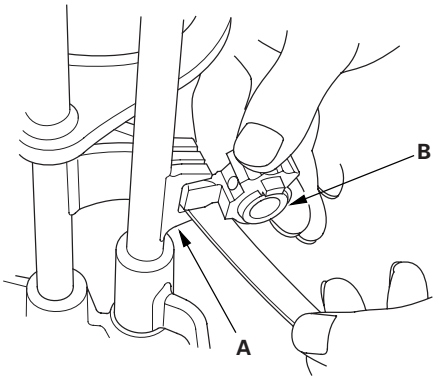
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and the synchro hub as a set.
   - If one arm of the shift fork shows more wear than others, the fork may be bent and needs to be replaced.

   Standard: 7.4—7.6 mm (0.29—0.30 in.)



3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

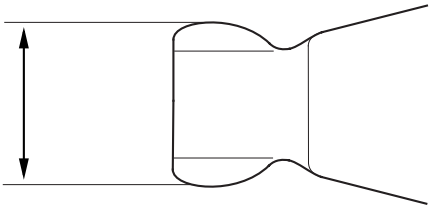
   Standard: 0.2—0.5 mm (0.008—0.020 in.)
   Service Limit: 0.62 mm (0.024 in.)



4. Measure the width of the shift arm.

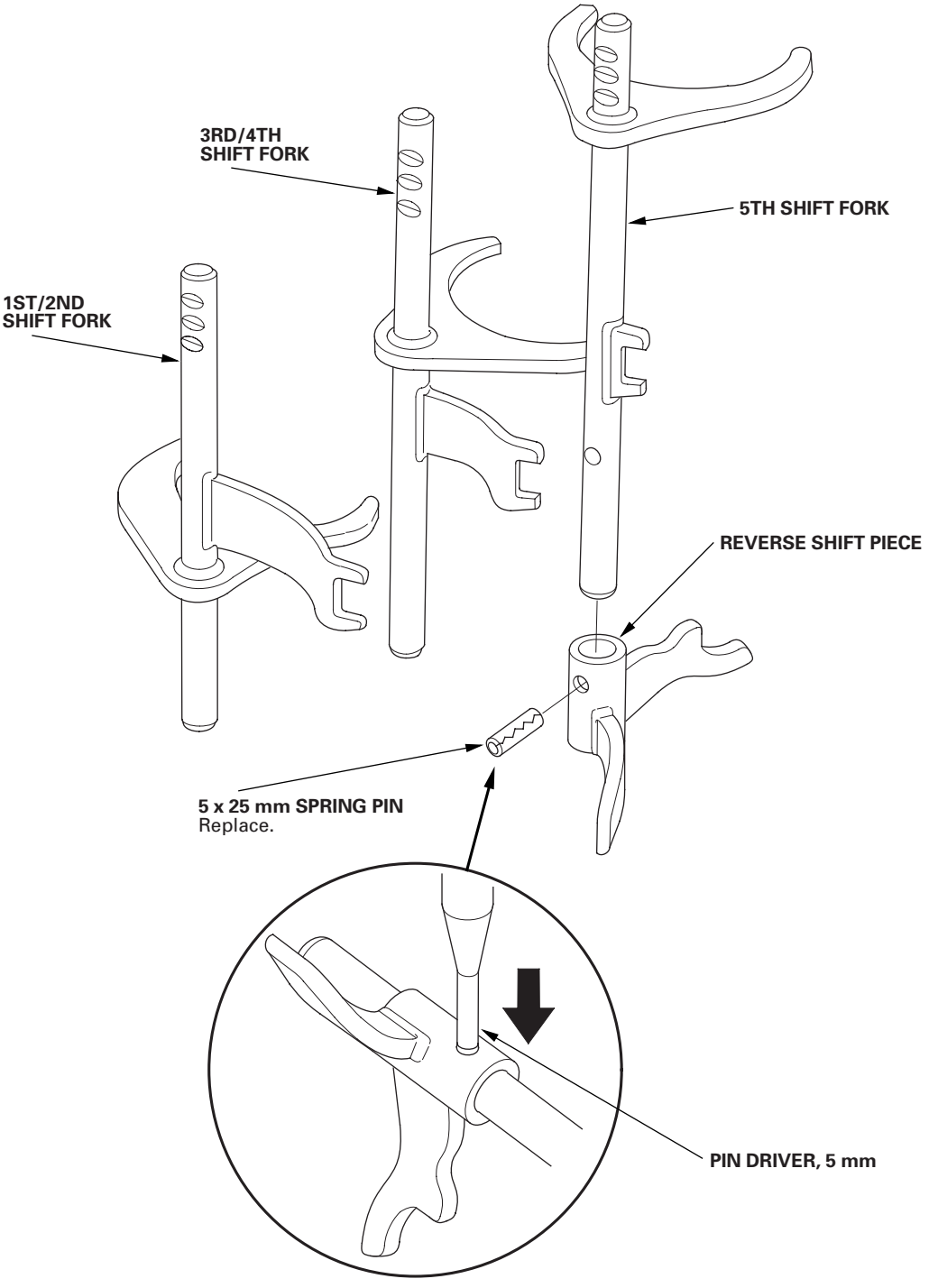
   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork and the reverse shift piece.

   Standard: 16.9—17.0 mm (0.665—0.669 in.)



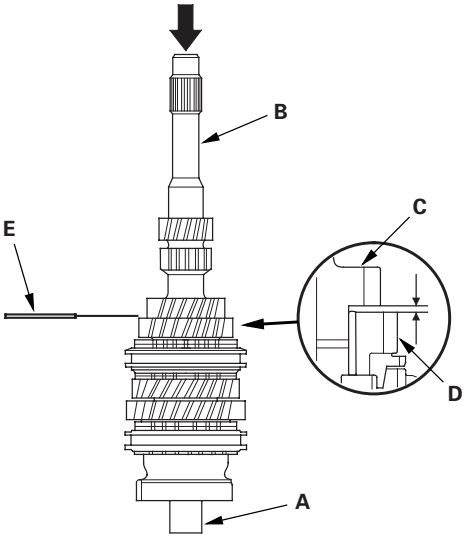
Shift Fork Disassembly/Reassembly

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to all contact surfaces.



Mainshaft Assembly Clearance Inspection

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).



2. Measure the clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).

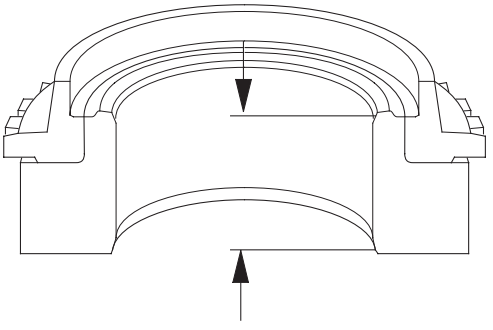
   - If the clearance exceeds the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

Standard: **0.06—0.16 mm (0.002—0.006 in.)**
Service Limit: **0.25 mm (0.010 in.)**

3. Measure the thickness of 3rd gear.

   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

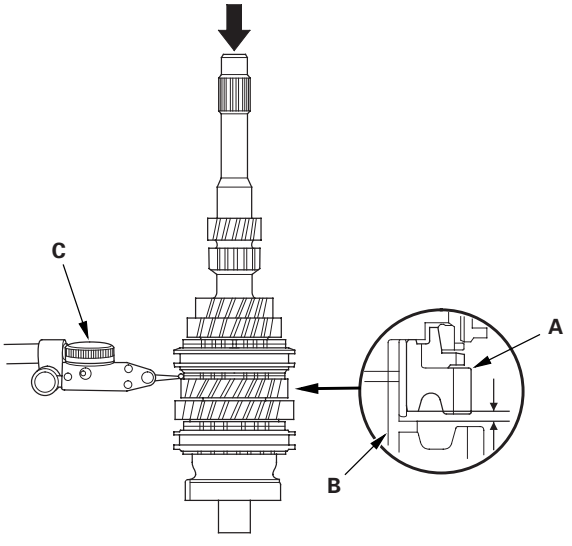
Standard: **23.92—23.97 mm (0.942—0.944 in.)**
Service Limit: **23.80 mm (0.937 in.)**



4. Measure the clearance between 4th gear (A) and the 4th/5th gear distance collar (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

Standard: **0.06—0.16 mm (0.002—0.006 in.)**
Service Limit: **0.25 mm (0.010 in.)**



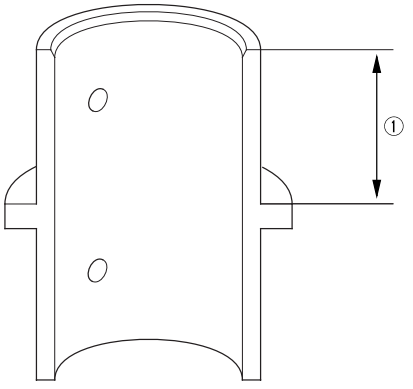
(cont'd)

Mainshaft Assembly Clearance Inspection (cont'd)

5. Measure the length ① of the 4th/5th gear distance collar as shown.

   - If the length ① is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ① is within the standard, go to step 6.

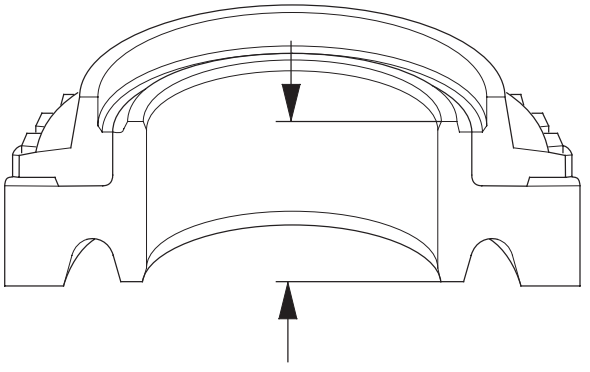
   Standard: 24.03—24.08 mm (0.946—0.948 in.)



6. Measure the thickness of 4th gear.

   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

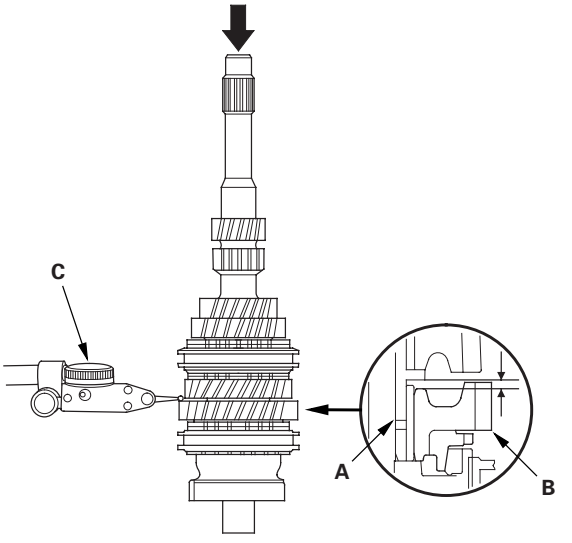
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



7. Measure the clearance between the 4th/5th gear distance collar (A) and 5th gear (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 8.
   - If the clearance is within the service limit, go to step 10.

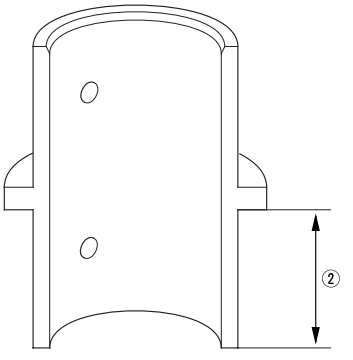
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



8. Measure the length ② of the 4th/5th gear distance collar as shown.

   - If the length ② is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ② is within the standard, go to step 9.

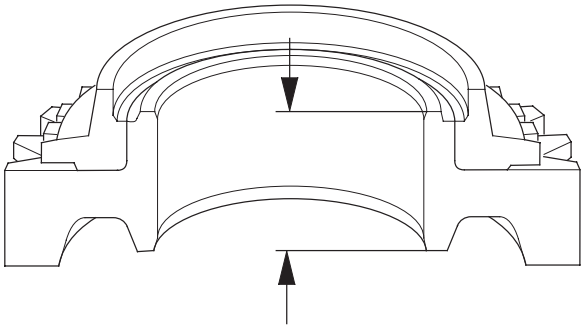
   Standard: 24.03—24.08 mm (0.946—0.948 in.)



9. Measure the thickness of 5th gear.

   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th synchro hub and the 5th/6th synchro sleeve as a set.

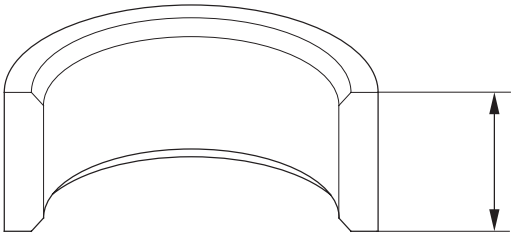
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



10. Measure the length of the MBS distance collar.

    If the length is not within standard, replace the MBS distance collar.

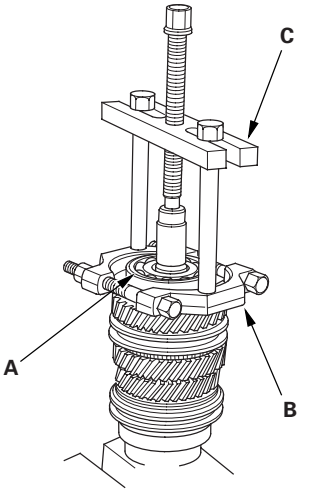
    Standard: 23.95—24.05 mm (0.943—0.947 in.)



Mainshaft Disassembly

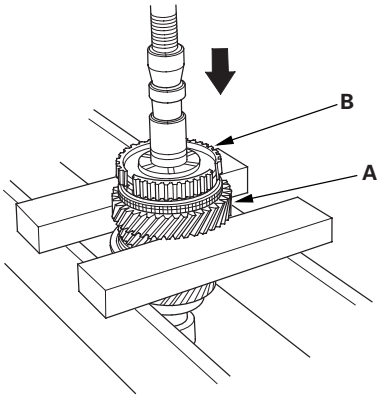
NOTE: Refer to the Exploded View in the Mainshaft Reassembly, as needed, when removing components pressed on to the mainshaft (see page 13-36).

1. Remove the angular ball bearing (A) and the tapered cone ring using a commercially available bearing separator (B) and a commercially available bearing puller (C). Make sure the bearing separator is under the tapered cone ring.



2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th synchro hub (B) and 5th gear.

   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

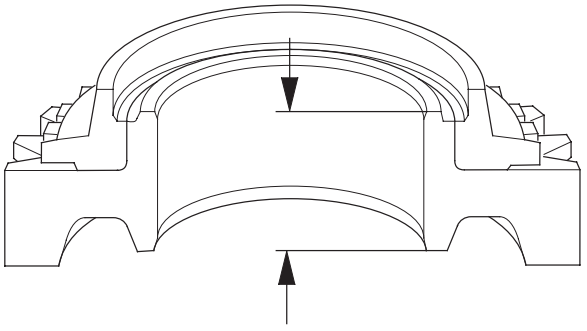


(cont'd)

9. Measure the thickness of 5th gear.

   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th synchro hub and the 5th/6th synchro sleeve as a set.

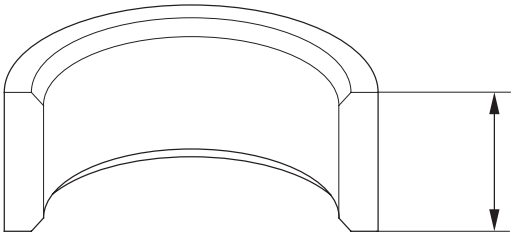
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



10. Measure the length of the MBS distance collar.

    If the length is not within standard, replace the MBS distance collar.

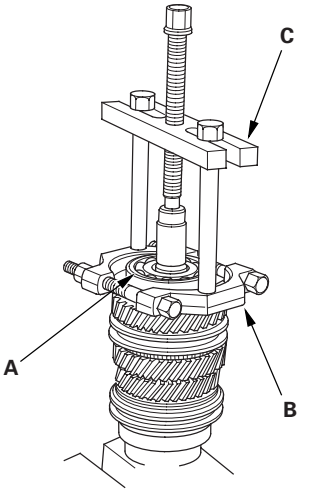
    Standard: 23.95—24.05 mm (0.943—0.947 in.)



Mainshaft Disassembly

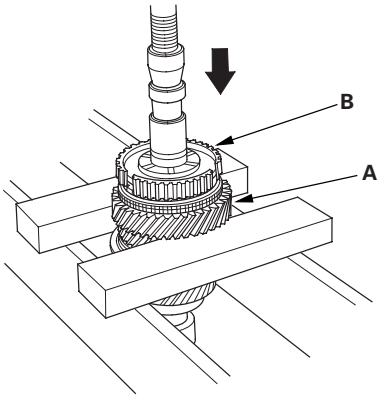
NOTE: Refer to the Exploded View in the Mainshaft Reassembly, as needed, when removing components pressed on to the mainshaft (see page 13-36).

1. Remove the angular ball bearing (A) and the tapered cone ring using a commercially available bearing separator (B) and a commercially available bearing puller (C). Make sure the bearing separator is under the tapered cone ring.



2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th synchro hub (B) and 5th gear.

   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.

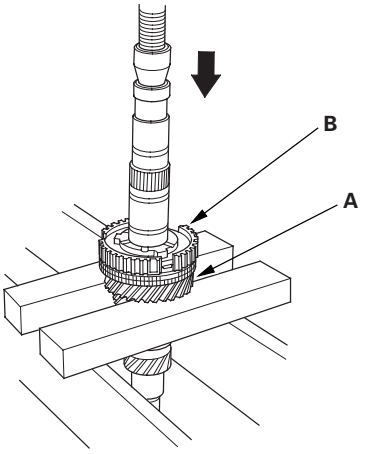


(cont'd)

Mainshaft Disassembly (cont'd)

3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B) and 3rd gear.

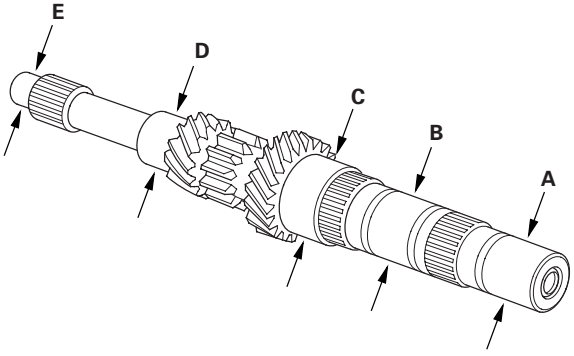
   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



Mainshaft Inspection

1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

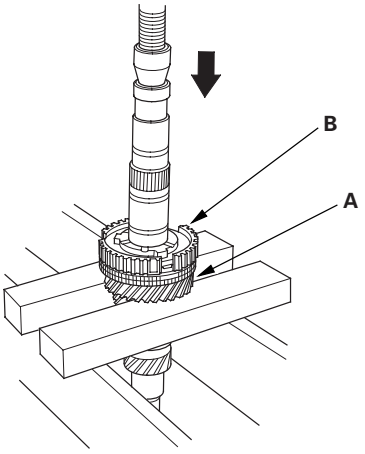
   Standard:
   A Ball Bearing Contact Area (transmission housing side):
   27.987—28.000 mm (1.1018—1.1024 in.)
   B 4th/5th Gear Distance Collar Contact Area:
   31.984—32.000 mm (1.2592—1.2598 in.)
   C Needle Bearing Contact Area:
   38.984—39.000 mm (1.5348—1.5354 in.)
   D Ball Bearing Contact Area (clutch housing side):
   27.977—27.990 mm (1.1015—1.1020 in.)
   E Bushing Contact Area:
   20.80—20.85 mm (0.819—0.821 in.)
   Service Limit:
   A: 27.93 mm (1.100 in.)
   B: 31.93 mm (1.257 in.)
   C: 38.93 mm (1.533 in.)
   D: 27.92 mm (1.099 in.)
   E: 20.75 mm (0.817 in.)



Mainshaft Disassembly (cont'd)

3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B) and 3rd gear.

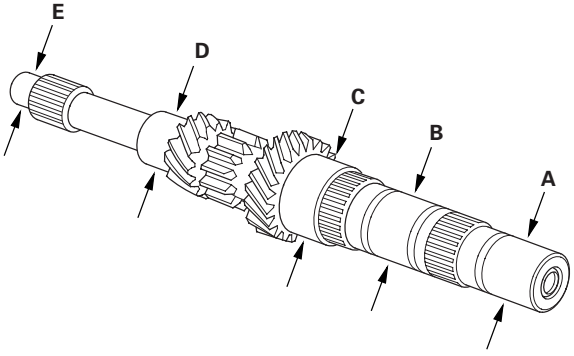
   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



Mainshaft Inspection

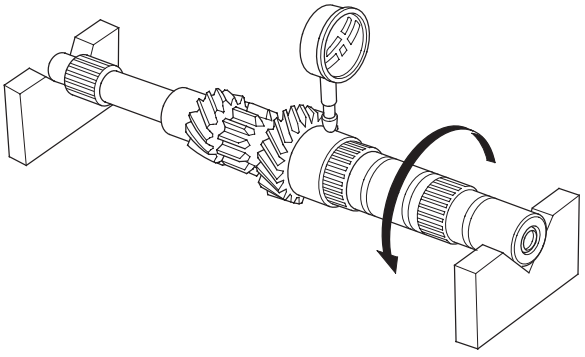
1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

   Standard:
   A Ball Bearing Contact Area (transmission housing side):
   27.987—28.000 mm (1.1018—1.1024 in.)
   B 4th/5th Gear Distance Collar Contact Area:
   31.984—32.000 mm (1.2592—1.2598 in.)
   C Needle Bearing Contact Area:
   38.984—39.000 mm (1.5348—1.5354 in.)
   D Ball Bearing Contact Area (clutch housing side):
   27.977—27.990 mm (1.1015—1.1020 in.)
   E Bushing Contact Area:
   20.80—20.85 mm (0.819—0.821 in.)
   Service Limit:
   A: 27.93 mm (1.100 in.)
   B: 31.93 mm (1.257 in.)
   C: 38.93 mm (1.533 in.)
   D: 27.92 mm (1.099 in.)
   E: 20.75 mm (0.817 in.)



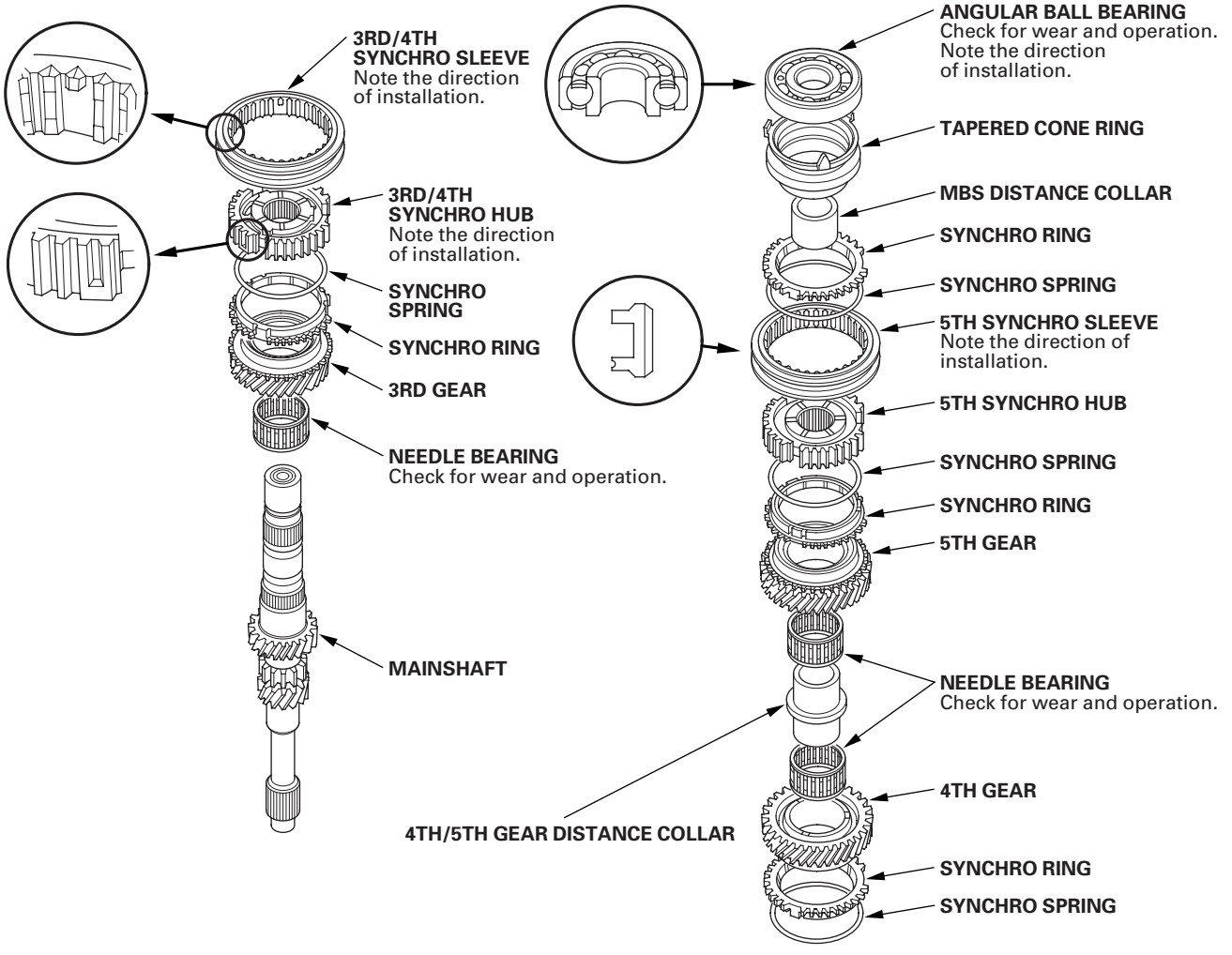
2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the mainshaft.

Standard: **0.02 mm (0.001 in.) max.**
Service Limit: **0.05 mm (0.002 in.)**



Mainshaft Reassembly

Exploded View

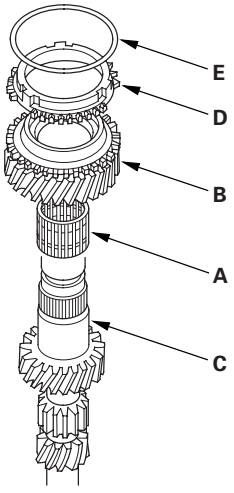


Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

NOTE: Refer to the Exploded View, as needed, during this procedure.

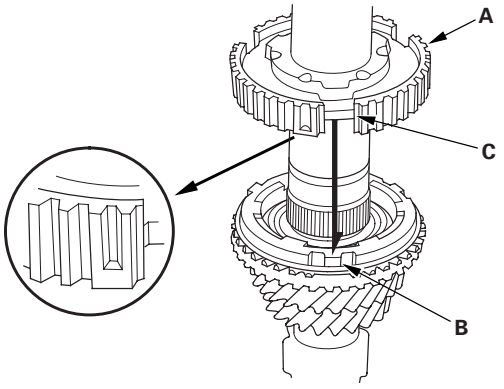
1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

2. Install the needle bearing (A) and 3rd gear (B) on the mainshaft (C).

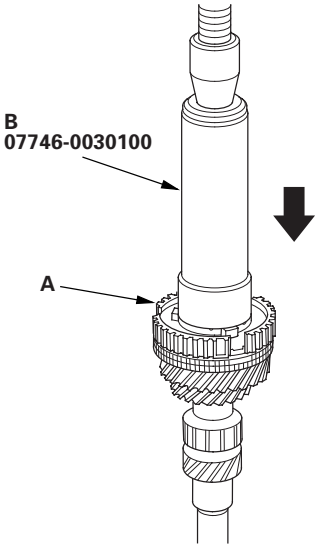


3. Install the synchro ring (D) and the synchro spring (E).

4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 3rd/4th synchro hub.



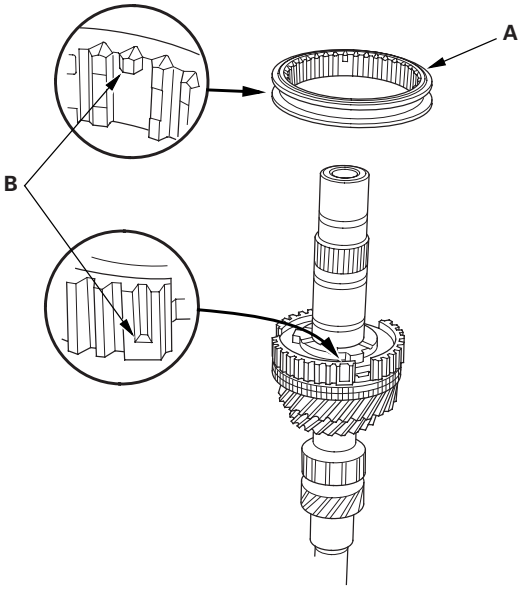
5. Press on the 3rd/4th synchro hub (A) using the 40 mm inner driver handle (B) and a press.



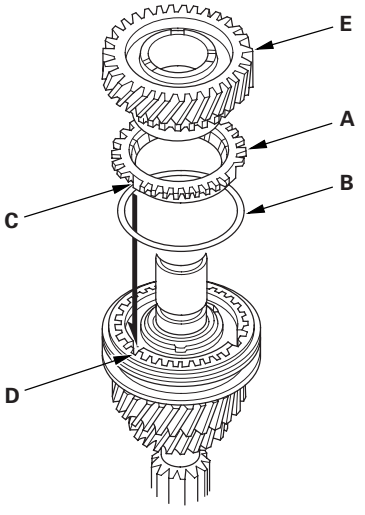
(cont'd)

Mainshaft Reassembly (cont'd)

6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and the 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.

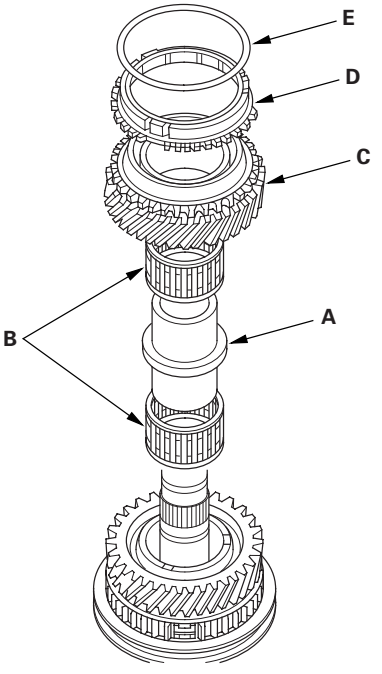


7. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 3rd/4th synchro hub.



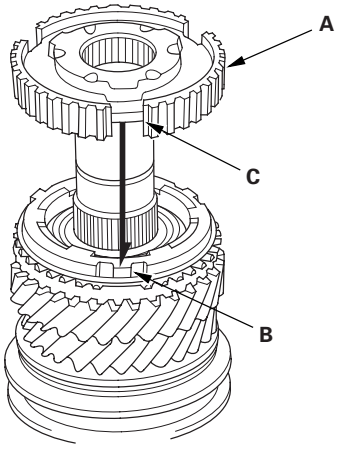
8. Install 4th gear (E) on to the synchro ring.

9. Install the 4th/5th gear distance collar (A) with the needle bearings (B), then install 5th gear (C).

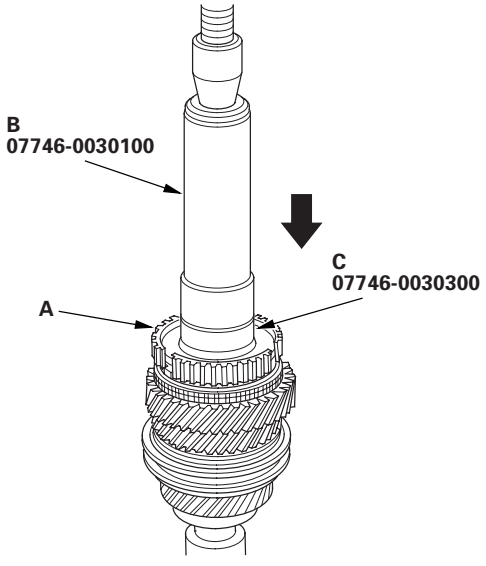


10. Install the synchro ring (D) with the synchro spring (E) onto 5th gear.

11. Install the 5th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 5th synchro hub.

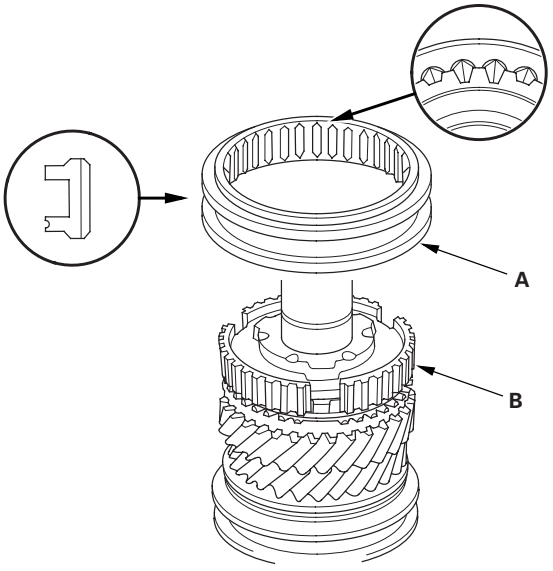


12. Press on the 5th synchro hub (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press.



13. Install the 5th synchro sleeve (A) by aligning the slots of the 5th synchro sleeve and the 5th synchro hub (B). After installing, check the operation of the 5th synchro hub set.

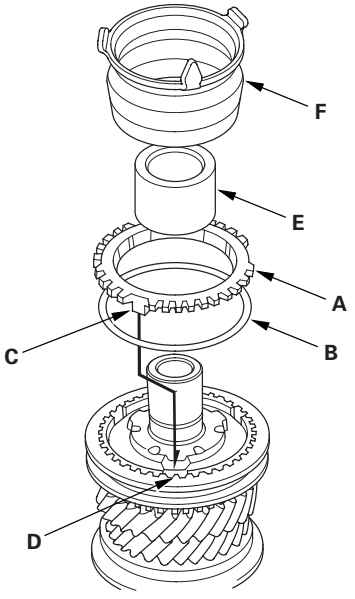
NOTE: Make sure to align the slots in the 5th synchro hub as shown.



(cont'd)

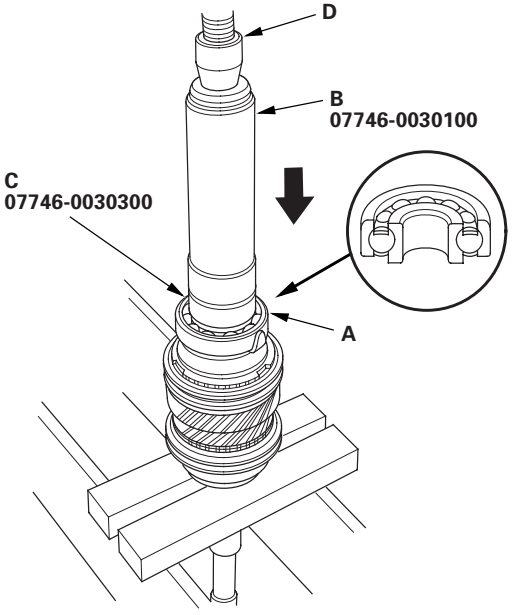
Mainshaft Reassembly (cont'd)

14. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 5th synchro hub.



15. Install the MBS distance collar (E) and the tapered cone ring (F).

16. Press on new angular ball bearing (A) using the 40 mm inner driver handle (B), 30 mm inner bearing driver attachment (C), and a press (D).

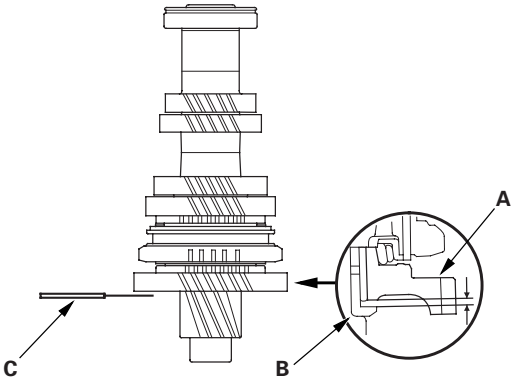


Countershaft Assembly Clearance Inspection

1. Measure the clearance between 1st gear (A) and the 1st gear distance collar (B) with a feeler gauge (C).

   - If the clearance exceeds the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

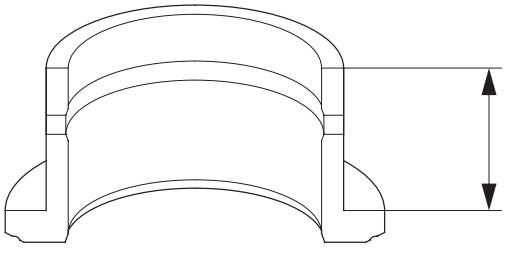
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



2. Measure the length of the 1st gear distance collar as shown.

   - If the length is not within the standard, replace the 1st gear distance collar.
   - If the length is within the standard, go to step 3.

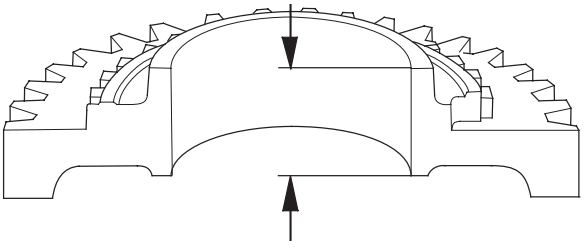
   Standard: 23.03—23.08 mm (0.907—0.909 in.)



3. Measure the thickness of 1st gear.

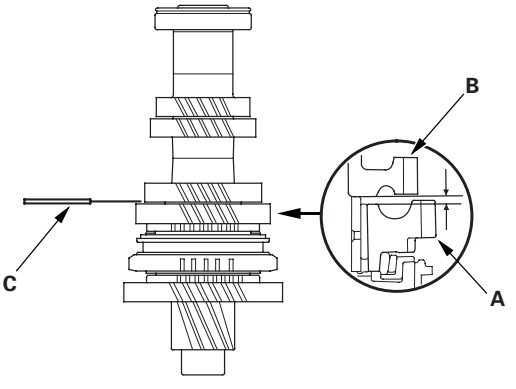
   - If the thickness is less than the service limit, replace 1st gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

   Standard: 22.92—22.97 mm (0.902—0.904 in.)
   Service Limit: 22.87 mm (0.900 in.)



4. Measure the clearance between 2nd gear (A) and 3rd gear (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 5.

   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



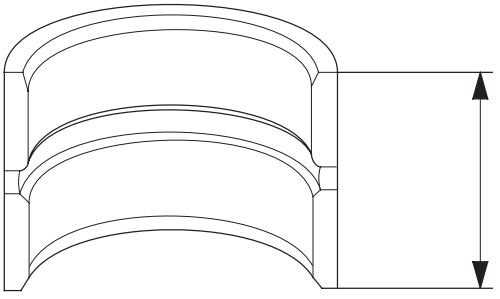
(cont'd)

Countershaft Assembly Clearance Inspection (cont'd)

5. Measure the length of the 2nd gear distance collar.

   - If the length is not within the standard, replace the 2nd gear distance collar.
   - If the length is within the standard, go to step 6.

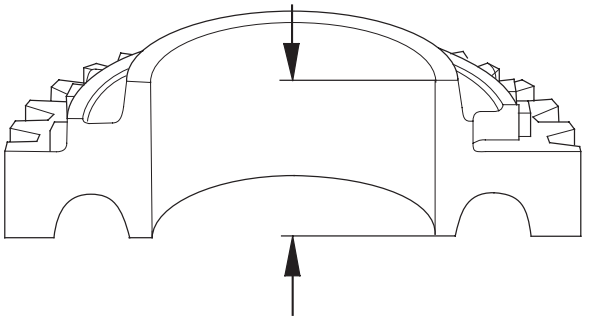
   Standard: 28.03—28.08 mm (1.104—1.106 in.)



6. Measure the thickness of 2nd gear.

   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

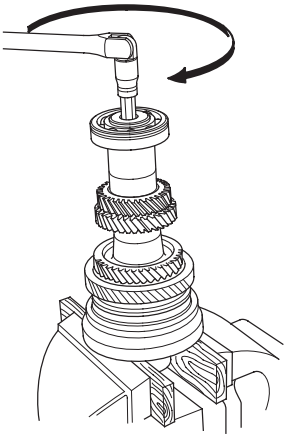
   Standard: 27.92—27.97 mm (1.099—1.101 in.)
   Service Limit: 27.87 mm (1.097 in.)



Countershaft Disassembly

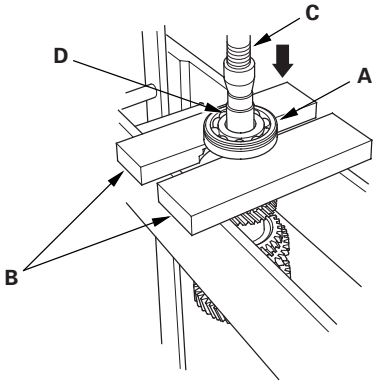
NOTE: Refer to the Exploded View in the Countershaft Reassembly, as needed, when removing components pressed on to the countershaft (see page 13-44).

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



2. Remove the special bolt (left-hand threads).

3. Support the ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.



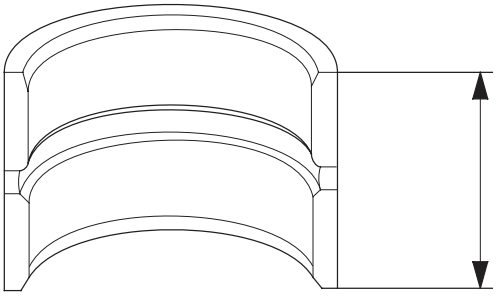
4. Remove the 35 mm shim and the distance collar.

Countershaft Assembly Clearance Inspection (cont'd)

5. Measure the length of the 2nd gear distance collar.

   - If the length is not within the standard, replace the 2nd gear distance collar.
   - If the length is within the standard, go to step 6.

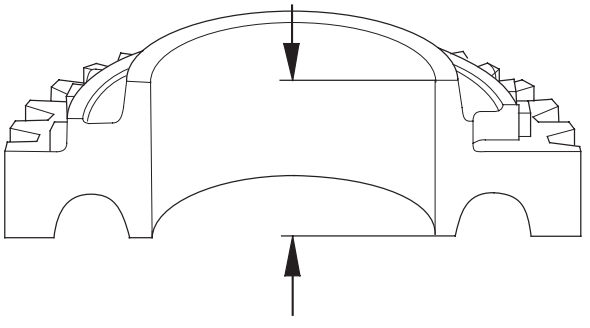
   Standard: 28.03—28.08 mm (1.104—1.106 in.)



6. Measure the thickness of 2nd gear.

   - If the thickness is less than the service limit, replace 2nd gear.
   - If the thickness is within the service limit, replace the 1st/2nd synchro hub and the reverse gear as a set.

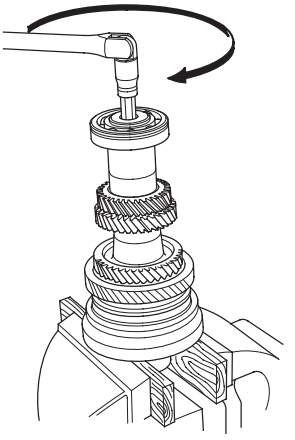
   Standard: 27.92—27.97 mm (1.099—1.101 in.)
   Service Limit: 27.87 mm (1.097 in.)



Countershaft Disassembly

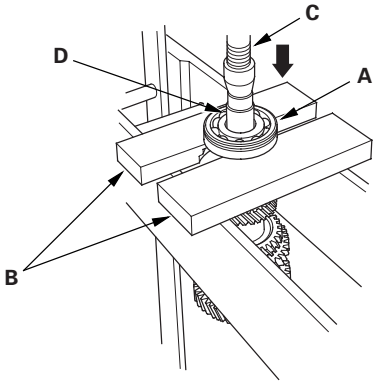
NOTE: Refer to the Exploded View in the Countershaft Reassembly, as needed, when removing components pressed on to the countershaft (see page 13-44).

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



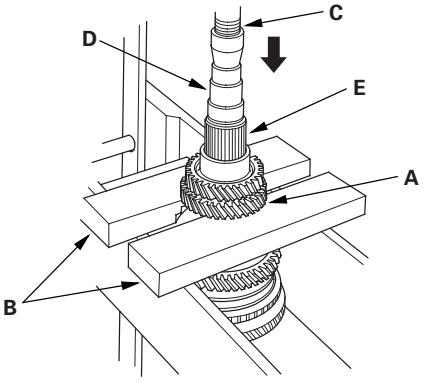
2. Remove the special bolt (left-hand threads).

3. Support the ball bearing (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing.

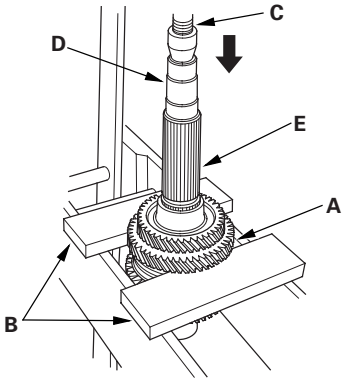


4. Remove the 35 mm shim and the distance collar.

5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 4th gear and 5th gear.



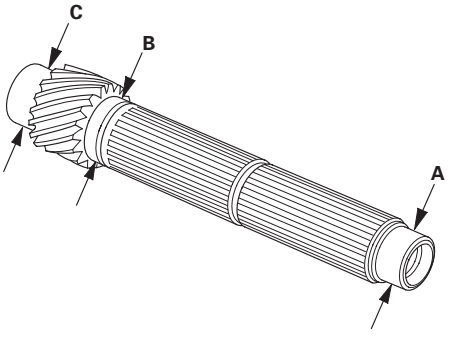
6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 2nd gear and 3rd gear.



Countershaft Inspection

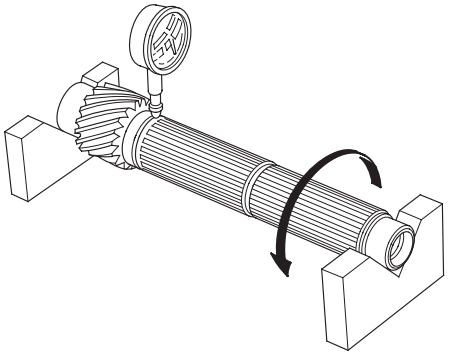
1. Inspect the gear and bearing contact areas for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

Standard:
A Ball Bearing Contact Area (transmission housing side):
30.020—30.033 mm (1.1819—1.1824 in.)
B 1st Gear Distance Collar Contact Area:
39.937—39.950 mm (1.5723—1.5728 in.)
C Needle Bearing Contact Area (clutch housing side):
40.000—40.015 mm (1.5748—1.5754 in.)
Service Limit:
A: 29.97 mm (1.180 in.)
B: 39.88 mm (1.570 in.)
C: 39.95 mm (1.573 in.)



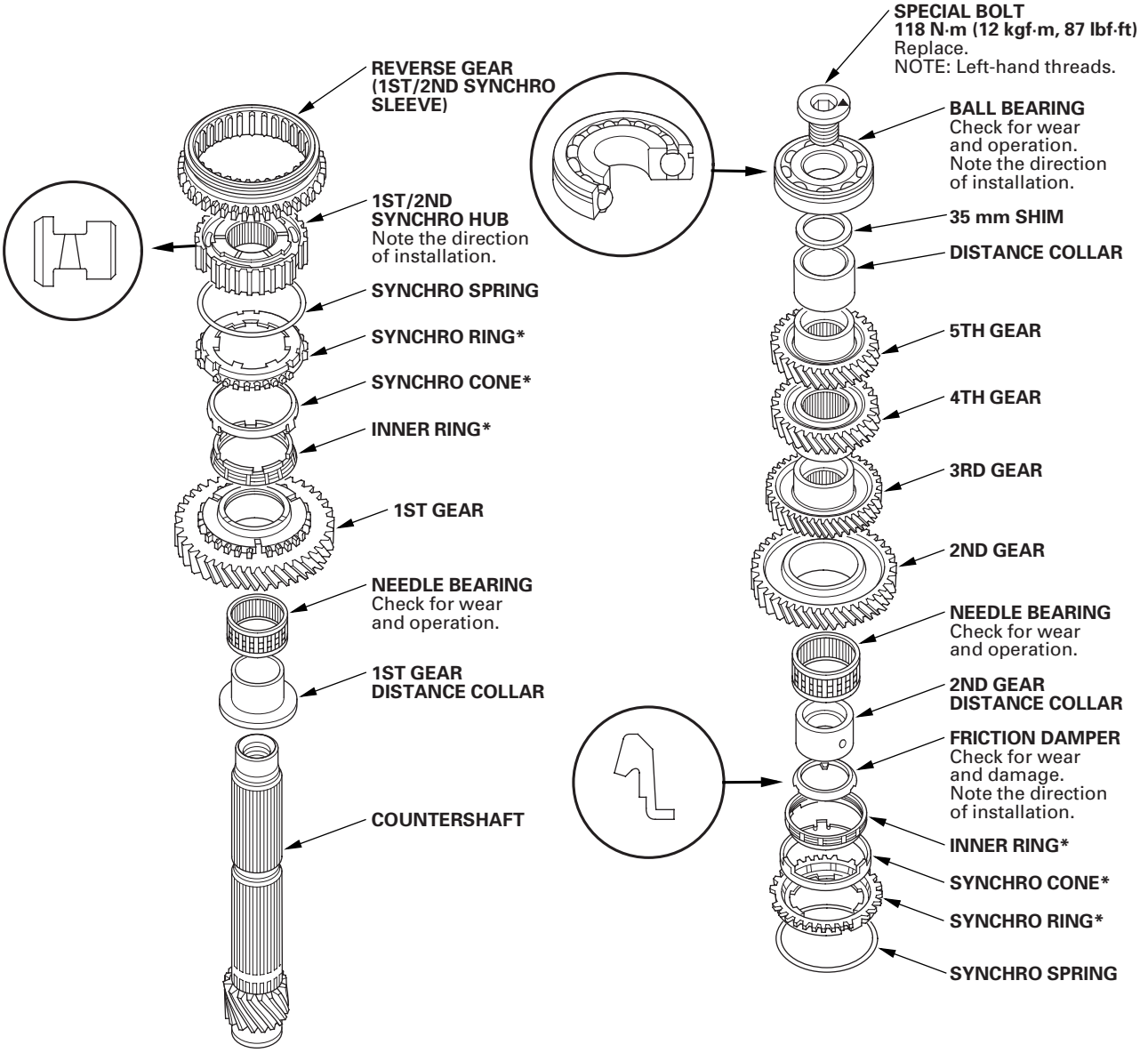
2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the countershaft.

Standard: 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)



Countershaft Reassembly

Exploded View



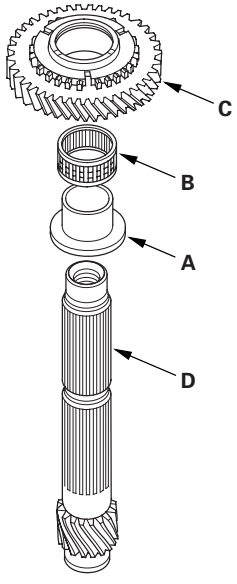
*: The components of the triple cone synchro assembly.

Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

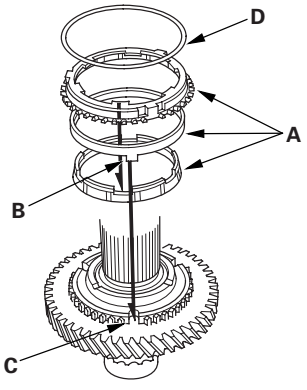
NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

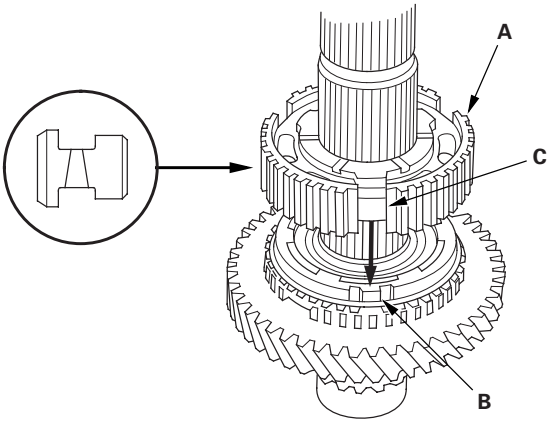
2. Install the 1st gear distance collar (A), the needle bearing (B), and 1st gear (C) onto the countershaft (D).



3. Install the triple cone synchro assembly (A) by aligning the synchro cone fingers (B) with the grooves (C) in 1st gear, then install the synchro spring (D).

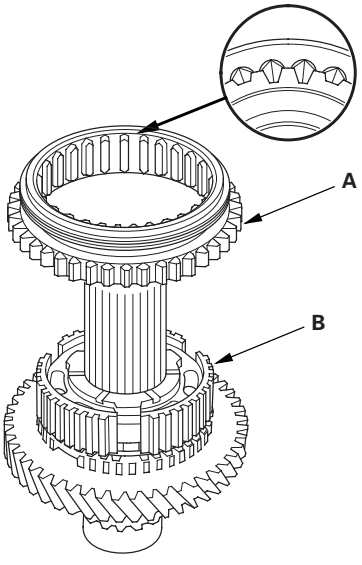


4. Install the 1st/2nd synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 1st/2nd synchro hub.



5. Install the reverse gear (A) by aligning the slots of reverse gear and the 1st/2nd synchro hub (B). After installing, check the operation of the 1st/2nd synchro hub set.

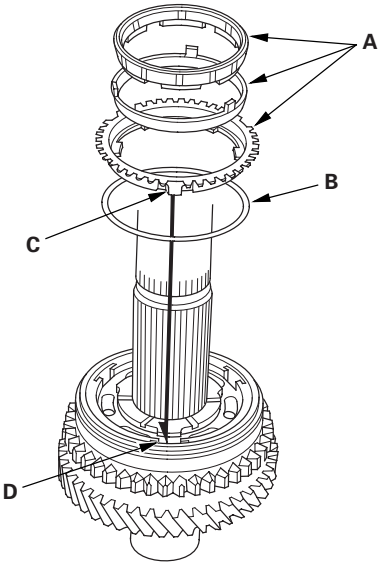
   NOTE: Make sure to align the slots in the 1st/2nd synchro hub as shown.



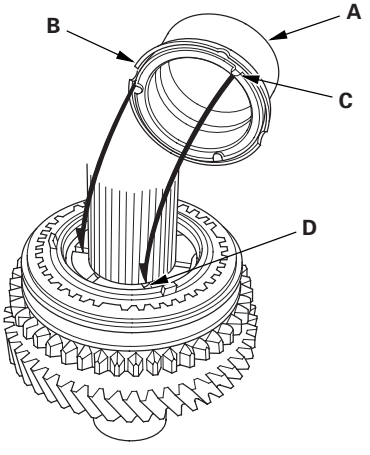
(cont'd)

Countershaft Reassembly (cont'd)

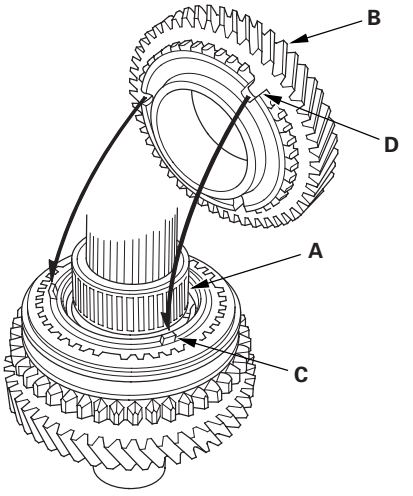
6. Install the triple cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



7. Install the distance collar (A) and the friction damper (B) by aligning the friction damper fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



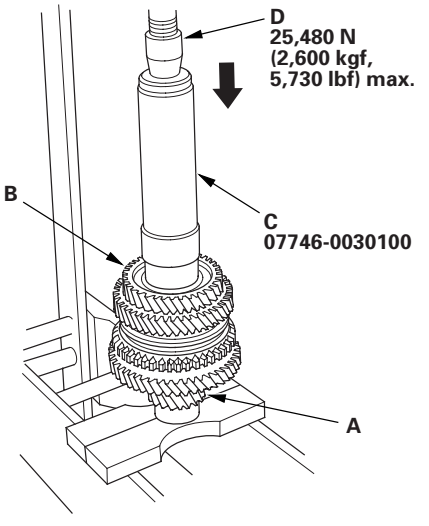
8. Install the needle bearing (A).



9. Install 2nd gear (B) by aligning the synchro cone fingers (C) with the grooves (D) in 2nd gear.

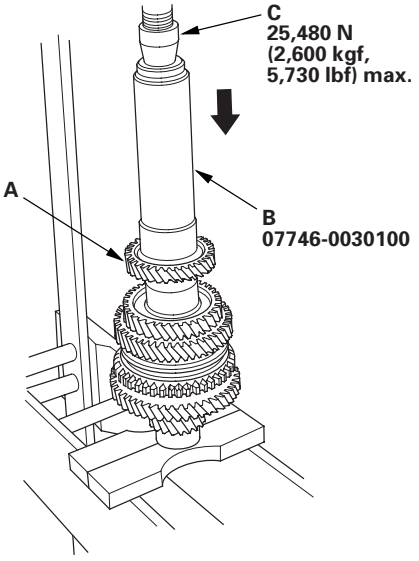
10. Support the countershaft (A) on steel blocks, then press on 3rd gear (B) using the 40 mm inner driver handle (C) and a press (D).

    NOTE: Do not exceed the maximum pressure.



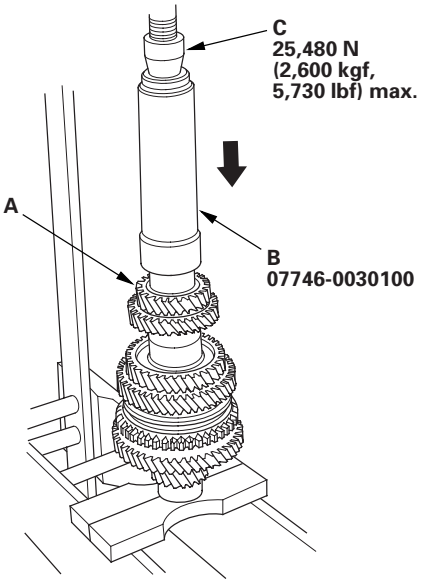
11. Press on 4th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



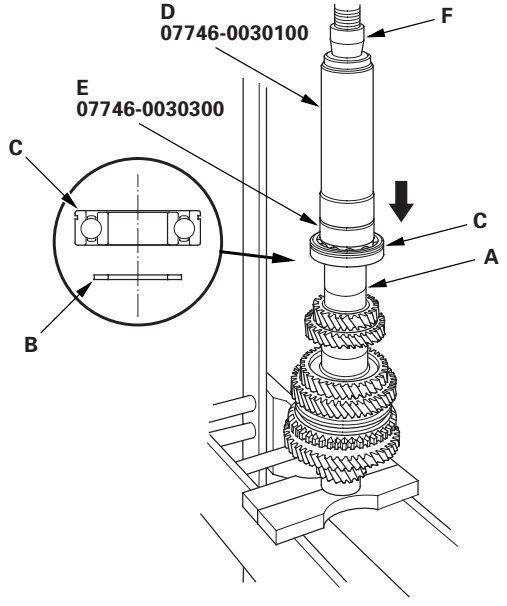
12. Press on 5th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



13. Install the distance collar (A) and the 35 mm shim (B), and temporarily press on the used old ball bearing (C) using the 40 mm inner driver handle (D), the 30 mm inner bearing driver attachment (E), and a press (F).

    NOTE:
    - Use any size of 35 mm shim, and note size you used. Measurements taken in the following steps will determine the correct shim to use for final assembly.
    - Make sure to install the ball bearing as shown.

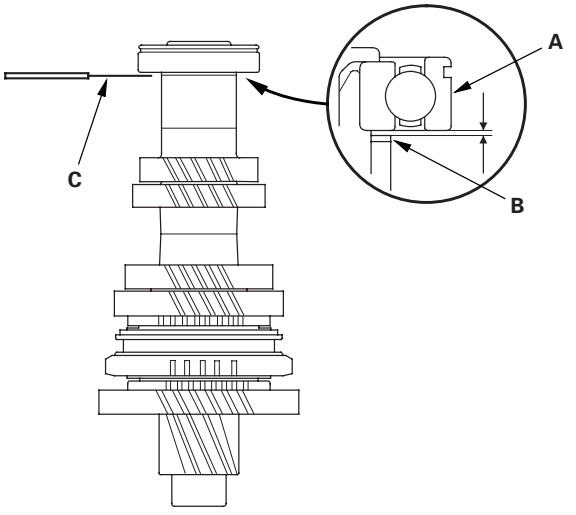


(cont'd)

Countershaft Reassembly (cont'd)

14. Measure the clearance between the bearing (A) and the 35 mm shim (B) with a feeler gauge (C).

Standard: 0.04—0.10 mm (0.0016—0.0039 in.)



15. If the measured clearance in step 14 is not within the standard, select another suitable 35 mm shim from the table, then go to next step to replace the 35 mm shim and the ball bearing with new one. If the measured clearance in step 14 is within the standard, go to next step to replace only the ball bearing with new one.

35 mm Shim

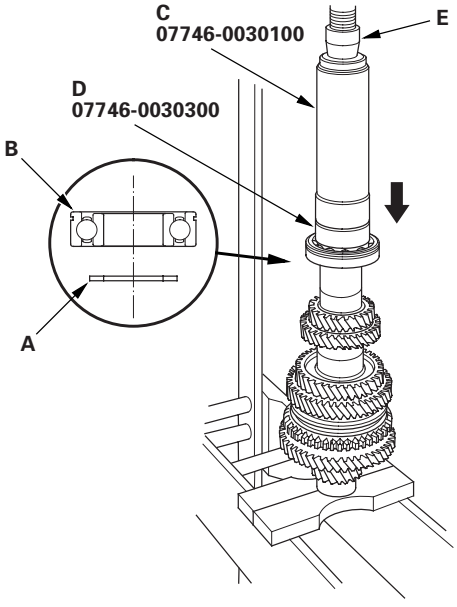
Type	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.034 in.)
AA	23981-PPP-900	0.91 mm (0.036 in.)
B	23982-PPP-000	0.95 mm (0.037 in.)
AB	23982-PPP-900	0.99 mm (0.039 in.)
C	23983-PPP-000	1.03 mm (0.041 in.)
AC	23983-PPP-900	1.07 mm (0.042 in.)
D	23984-PPP-000	1.11 mm (0.044 in.)
AD	23984-PPP-900	1.15 mm (0.045 in.)
E	23985-PPP-000	1.19 mm (0.047 in.)
AE	23985-PPP-900	1.23 mm (0.048 in.)
F	23986-PPP-000	1.27 mm (0.050 in.)
AF	23986-PPP-900	1.31 mm (0.052 in.)
G	23987-PPP-000	1.35 mm (0.053 in.)
AG	23987-PPP-900	1.39 mm (0.055 in.)
H	23988-PPP-000	1.43 mm (0.056 in.)
AH	23988-PPP-900	1.47 mm (0.058 in.)
J	23989-PPP-000	1.51 mm (0.060 in.)
AJ	23989-PPP-900	1.55 mm (0.061 in.)
K	23990-PPP-000	1.59 mm (0.063 in.)
AK	23990-PPP-900	1.63 mm (0.064 in.)
L	23991-PPP-000	1.67 mm (0.066 in.)
AL	23991-PPP-900	1.71 mm (0.067 in.)
M	23992-PPP-000	1.75 mm (0.069 in.)
AM	23992-PPP-900	1.79 mm (0.070 in.)
N	23993-PPP-000	1.83 mm (0.072 in.)
AN	23993-PPP-900	1.87 mm (0.074 in.)
P	23994-PPP-000	1.91 mm (0.075 in.)
AP	23994-PPP-900	1.95 mm (0.077 in.)
Q	23995-PPP-000	1.99 mm (0.078 in.)

16. Remove the ball bearing (see step 3 on page 13-42).

17. Remove the 35 mm shim.

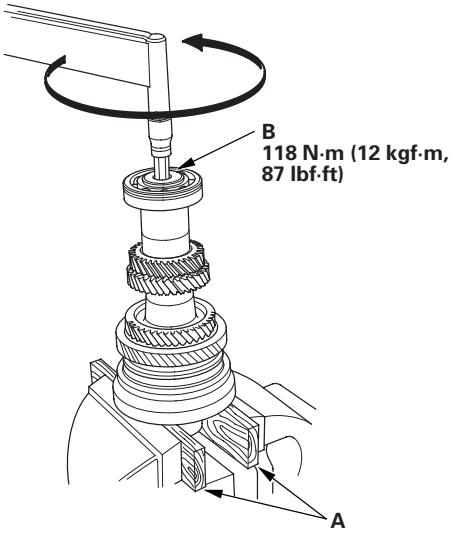
18. Install the correct 35 mm shim (A), then press on new ball bearing (B) using the 40 mm inner driver handle (C), the 30 mm inner bearing driver attachment (D), and a press (E).

    NOTE:
    - If necessary, replace the 35 mm shim with the correct one selected in step 15.
    - Make sure to install the ball bearing as shown.



19. Check the clearance between the bearing and the 35 mm shim with a feeler gauge.

20. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).



21. Tighten new special bolt (B) (left-hand threads).

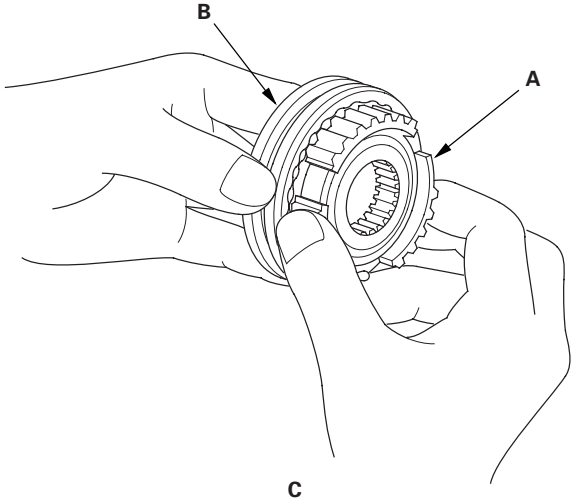
    NOTE: Apply MTF to the bolt threads and flange.

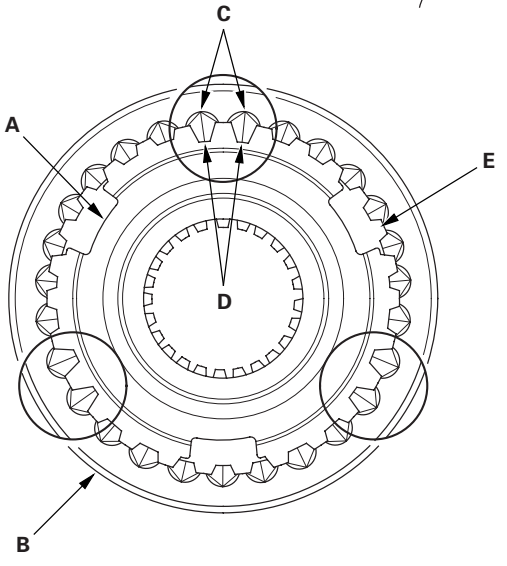
Synchro Sleeve and Hub Inspection and Reassembly

1. Inspect the gear teeth on all synchro hubs and synchro sleeves for wear (rounded off corners).

2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Make sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub.

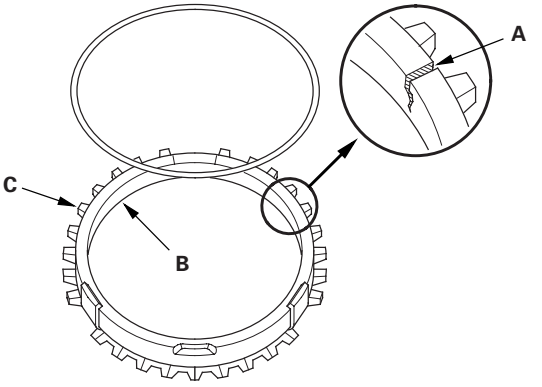
   NOTE:
   - Do not install the synchro sleeve with its longer teeth in the 1st/2nd and 5th synchro hub slots (E) because it will damage the spring ring.
   - If replacement is required, always replace the synchro sleeve and the synchro hub as a set.



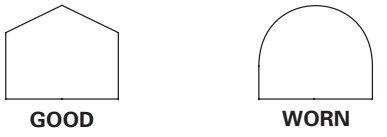


Synchro Ring and Gear Inspection

1. Inspect the synchro rings for scoring, cracks, and damage (A).

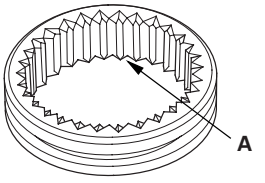


Example of synchro ring teeth

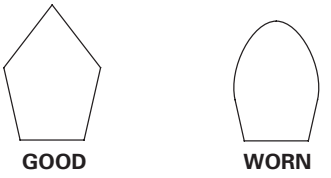


2. Inspect the inside of each synchro ring (B) for wear. Inspect the teeth (C) on each synchro ring for wear (rounded off).

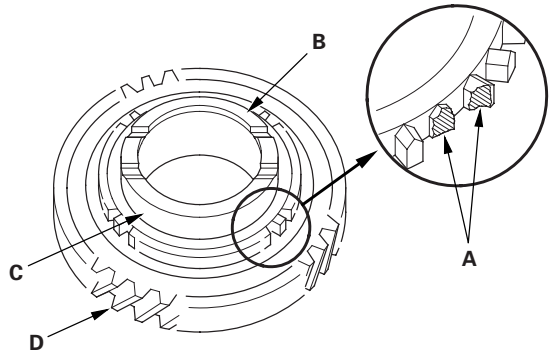
3. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).



Example of synchro sleeve teeth and gear teeth



4. Inspect the synchro teeth on gear for scoring, cracks, and damage (A).



5. Inspect the thrust surface (B) on each gear hub for wear.

6. Inspect the cone surface (C) on each gear hub for wear and roughness.

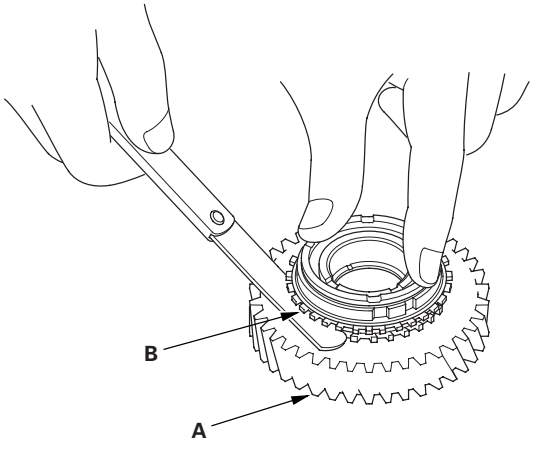
7. Inspect the teeth on all gears (D) for uneven wear, scoring, and cracks.

8. Coat the cone surface of each gear with MTF, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.

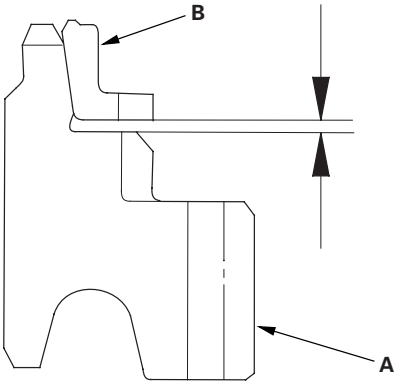
9. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Synchro Ring-to-Gear Clearance
Standard: 0.70—1.49 mm (0.028—0.059 in.)
Service Limit: 0.4 mm (0.016 in.)

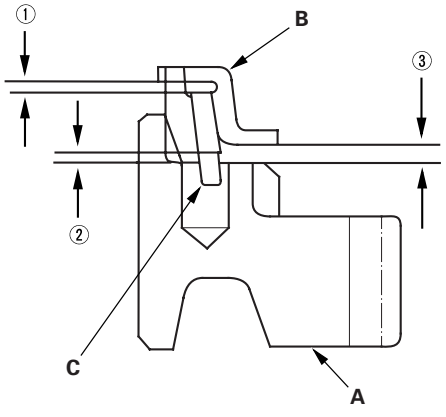
Double Cone Synchro and Triple Cone Synchro-to-Gear Clearance
Standard:
①: Outer Synchro Ring (B) to Synchro Cone (C) 0.70—1.19 mm (0.028—0.047 in.)
②: Synchro Cone (C) to Gear (A) 0.50—1.04 mm (0.020—0.041 in.)
③: Outer Synchro Ring (B) to Gear (A) 0.95—1.68 mm (0.037—0.066 in.)
Service Limit:
①: 0.3 mm (0.012 in.)
②: 0.3 mm (0.012 in.)
③: 0.6 mm (0.024 in.)



Synchro ring-to-gear



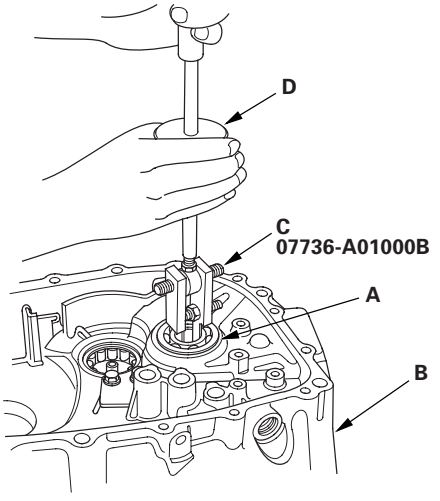
Double cone synchro and triple cone synchro-to-gear



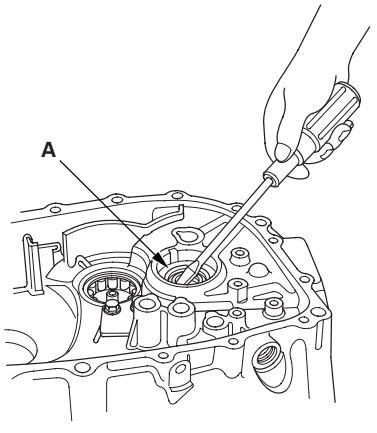
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Bearing driver attachment, 42 x 47 mm 07746-0010300
- Driver handle, 15 x 135L 07749-0010000
- Slide hammer, 3/8''-16 UNF commercially available

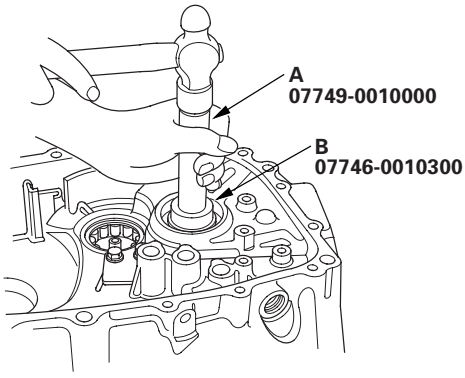
1. Remove the ball bearing (A) from the clutch housing (B) using the 20—40 mm adjustable bearing puller (C) and a commercially available 3/8'' - 16 UNF slide hammer (D).



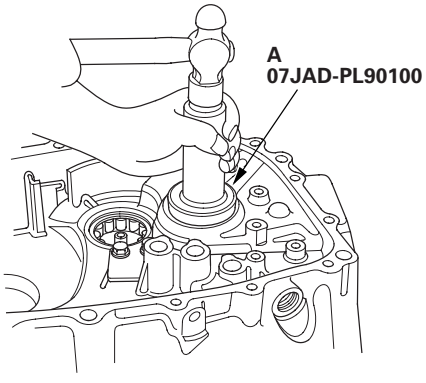
2. Remove the oil seal (A) from the clutch housing. Be careful when removing the oil seal so the clutch housing is not damaged.



3. Drive in new oil seal from the transmission side using the 15 x 135L driver handle (A) and the 42 x 47 mm bearing driver attachment (B).



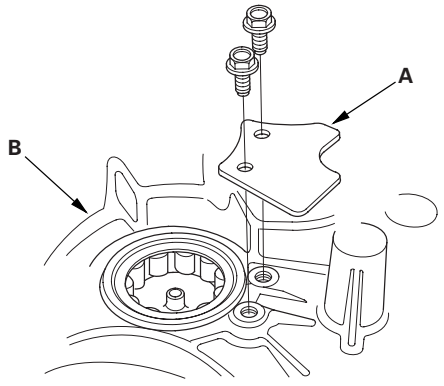
4. Drive in new ball bearing from the transmission side using the 65 mm oil seal driver (A).



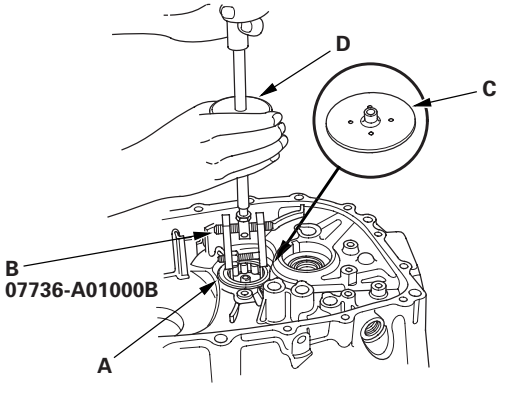
Countershaft Bearing Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Slide hammer, 3/8''-16 UNF commercially available

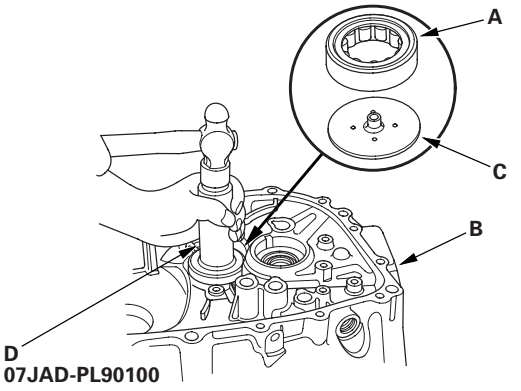
1. Remove the bearing set plate (A) from the clutch housing (B).



2. Remove the needle bearing (A) using the 20—40 mm adjustable bearing puller (B) and a commercially available 3/8''-16 UNF slide hammer (D), then remove oil guide plate C.

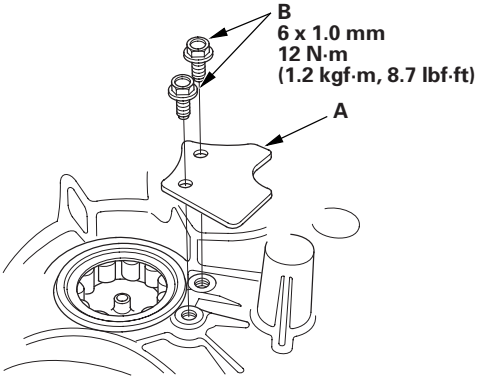


3. Position oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).



4. Install the needle bearing using the 65 mm oil seal driver (D).

5. Install the bearing set plate (A) with the bolts (B).

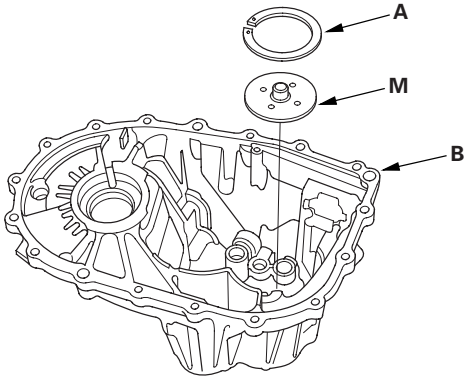


Mainshaft Thrust Clearance Adjustment

Special Tools Required
- Catch adapter 07GAJ-PG20110
- Base adapter 07GAJ-PG20130

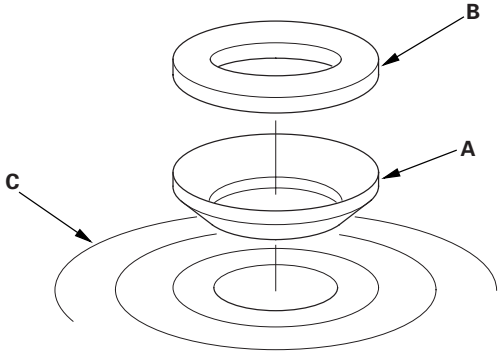
NOTE:
- Take measurement at normal room temperature.
- Clean all the parts thoroughly before installation.

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).



2. Thoroughly clean the 28 mm spring washer (A) and the 28 mm washer (B) before installing them on the clutch housings side ball bearing (C).

   NOTE: Install the spring washer in the direction shown.



3. Assemble all of the mainshaft components.

   NOTE: Refer to the Exploded View, as needed, during the assembly (see page 13-36).

4. Install the mainshaft assembly into the clutch housing.

5. Place the transmission housing over the mainshaft and onto the clutch housing.

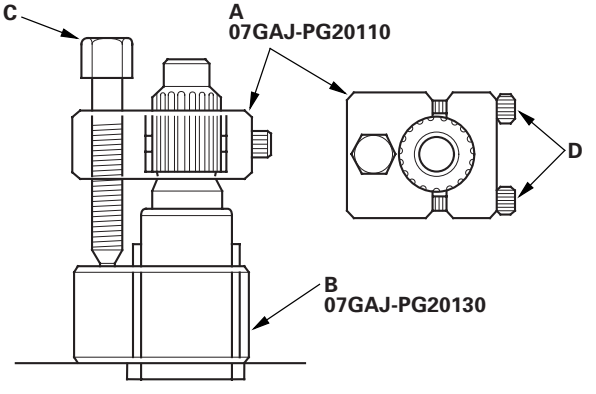
6. Tighten the clutch and transmission housings with several 8 mm bolts.

   NOTE: It is not necessary to use sealing agent between the housing for this procedure.

7. Lightly tap on the mainshaft with a plastic hammer.

8. Attach the catch adapter (A) and the base adapter (B) to the mainshaft as follows:

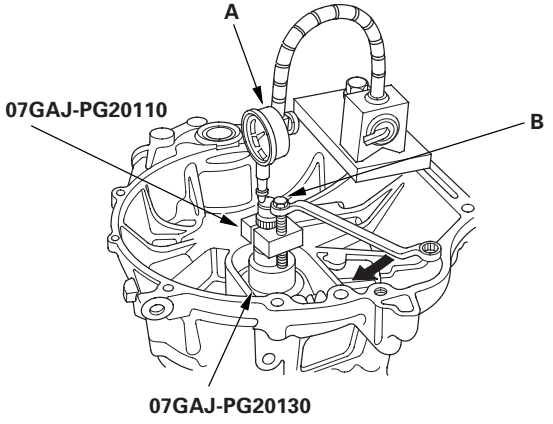
   - Back out the catch adapter bolt (C), and loosen the two hex bolts (D).
   - Fit the catch adapter over the mainshaft so its lip is towards the transmission.
   - Align the catch adapter lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



9. Fully seat the mainshaft by tapping its end with a plastic hammer.

10. Thread the catch adapter bolt in until it just contacts the wide surface of the base adapter.

11. Zero a dial gauge (A) on the end of the mainshaft.



12. Turn the catch adapter bolt (B) clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft thrust clearance.

    NOTE: Do not turn the catch adapter bolt exceeds 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the catch adapter bolt could damage the transmission.

13. If the reading is within the standard, the clearance is correct. If the reading is not within the standards, select the appropriate shim needed from the table, and recheck the thrust clearance.

    Standard: 0.11—0.17 mm (0.004—0.007 in.)

    (Example)
    Measure reading: 1.93 mm (0.076 in.)

    Subtract the total clearance measurement from the middle of the clearance standard 0.14 mm (0.0056 in.)

    1.93 — 0.14 mm = 1.79 mm (0.070 in.)

    Select the shim closet to the amount calculated, for example the 1.80 mm (0.071 in.) shim.

14. With guide plate M and the appropriate size shim installed in the transmission housing, check the thrust clearance again to verify the clearance is within the standard.

72 mm Shim

Type	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.024 in.)
B	23932-P21-000	0.63 mm (0.025 in.)
C	23933-P21-000	0.66 mm (0.026 in.)
D	23934-P21-000	0.69 mm (0.027 in.)
E	23935-P21-000	0.72 mm (0.028 in.)
F	23936-P21-000	0.75 mm (0.030 in.)
G	23937-P21-000	0.78 mm (0.031 in.)
H	23938-P21-000	0.81 mm (0.032 in.)
I	23939-P21-000	0.84 mm (0.033 in.)
J	23940-P21-000	0.87 mm (0.034 in.)
K	23941-P21-000	0.90 mm (0.035 in.)
L	23942-P21-000	0.93 mm (0.037 in.)
M	23943-P21-000	0.96 mm (0.038 in.)
N	23944-P21-000	0.99 mm (0.039 in.)
O	23945-P21-000	1.02 mm (0.040 in.)
P	23946-P21-000	1.05 mm (0.041 in.)
Q	23947-P21-000	1.08 mm (0.043 in.)
R	23948-P21-000	1.11 mm (0.044 in.)
S	23949-P21-000	1.14 mm (0.045 in.)
T	23950-P21-000	1.17 mm (0.046 in.)
U	23951-P21-000	1.20 mm (0.047 in.)
V	23952-P21-000	1.23 mm (0.048 in.)
W	23953-P21-000	1.26 mm (0.050 in.)
X	23954-P21-000	1.29 mm (0.051 in.)
Y	23955-P21-000	1.32 mm (0.052 in.)
Z	23956-P21-000	1.35 mm (0.053 in.)
AA	23957-P21-000	1.38 mm (0.054 in.)
AB	23958-P21-000	1.41 mm (0.056 in.)
AC	23959-P21-000	1.44 mm (0.057 in.)
AD	23960-P21-000	1.47 mm (0.058 in.)
AE	23961-P21-000	1.50 mm (0.059 in.)
AF	23962-P21-000	1.53 mm (0.060 in.)
AG	23963-P21-000	1.56 mm (0.061 in.)
AH	23964-P21-000	1.59 mm (0.063 in.)
AI	23965-P21-000	1.62 mm (0.064 in.)
AJ	23966-P21-000	1.65 mm (0.065 in.)
AK	23967-P21-000	1.68 mm (0.066 in.)
AL	23968-P21-000	1.71 mm (0.067 in.)
AM	23969-P21-000	1.74 mm (0.069 in.)
AN	23970-P21-000	1.77 mm (0.070 in.)
AO	23971-P21-000	1.80 mm (0.071 in.)

(cont'd)

(cont'd)

Mainshaft Thrust Clearance Adjustment (cont'd)

72 mm Shim (cont'd)

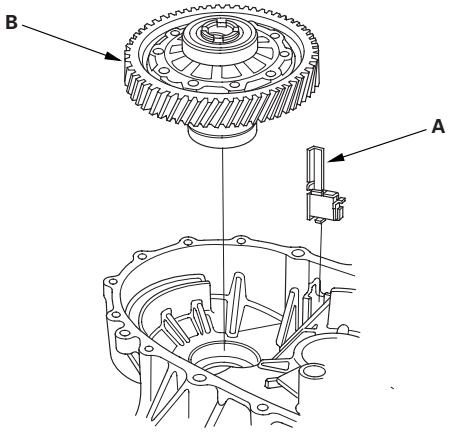
Type	Part Number	Thickness
AP	23972-PPP-J00	1.83 mm (0.072 in.)
AQ	23973-PPP-J00	1.86 mm (0.073 in.)
AR	23974-PPP-J00	1.89 mm (0.074 in.)
AS	23975-PPP-J00	1.92 mm (0.076 in.)
AT	23976-PPP-J00	1.95 mm (0.077 in.)
AV	23977-PPP-J00	1.98 mm (0.078 in.)
AW	23978-PPP-J00	2.01 mm (0.079 in.)
AX	23979-PPP-J00	2.04 mm (0.080 in.)
AY	23980-PPP-J00	2.07 mm (0.081 in.)
AZ	23981-PPP-J00	2.10 mm (0.083 in.)
BA	23982-PPP-J00	2.13 mm (0.084 in.)
BB	23983-PPP-J00	2.16 mm (0.085 in.)
BC	23984-PPP-J00	2.19 mm (0.086 in.)
BD	23985-PPP-J00	2.22 mm (0.087 in.)
BE	23986-PPP-J00	2.25 mm (0.089 in.)

Transmission Reassembly

NOTE:
- Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.
- Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the work bench.

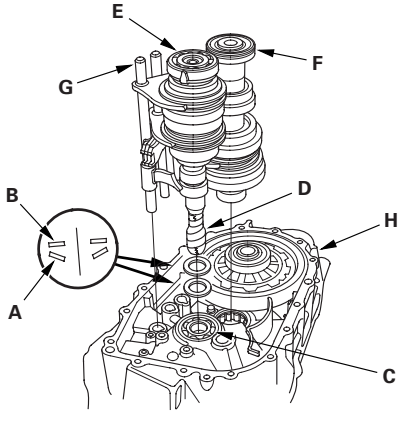
1. Install the magnet (A) and the differential assembly (B).

   NOTE: Clean the magnet anytime the transmission is disassembled.



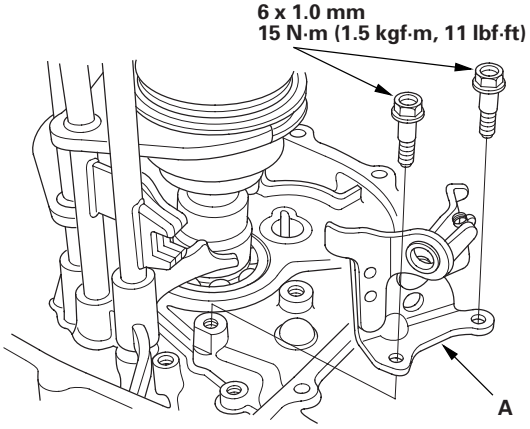
2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

   NOTE: Install the spring washer in the direction shown.

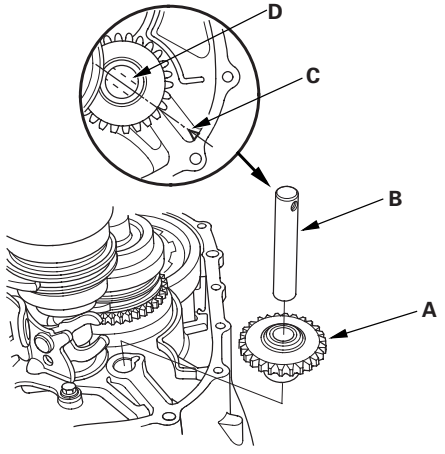


3. Apply tape to the mainshaft splines (D) to protect the seal. Install the mainshaft assembly (E), the countershaft assembly (F), and the shift fork assembly (G) into the clutch housing (H), as an assembly.

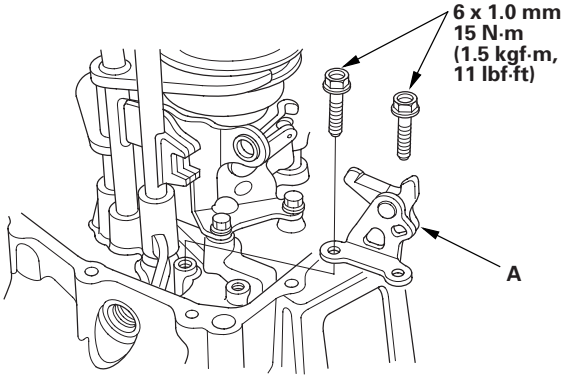
4. Install the reverse shift fork (A).



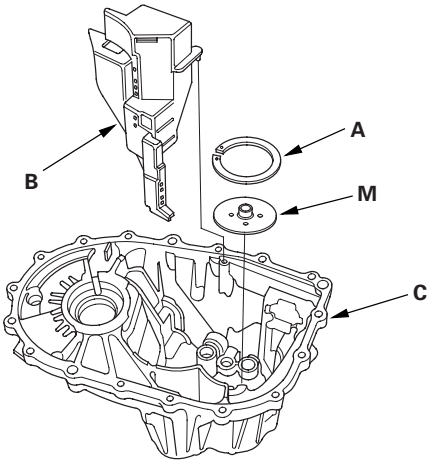
5. Install the reverse idler gear (A) and the reverse idler gear shaft (B) by aligning the mark (C) on the clutch housing with the reverse idler gear shaft hole (D).



6. Install the reverse lock cam (A).

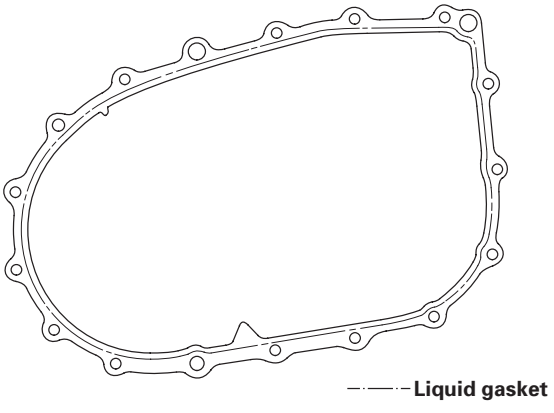


7. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-54). Install the oil gutter plate (B), oil guide plate M, and the 72 mm shim into the transmission housing (C).



8. Clean any dirt or oil from the mating surface of the transmission housing and the clutch housing. Apply liquid gasket, P/N 08718-0001 evenly to the mating surface of the transmission housing and the clutch housing. Install the component within 5 minutes of applying the liquid gasket.

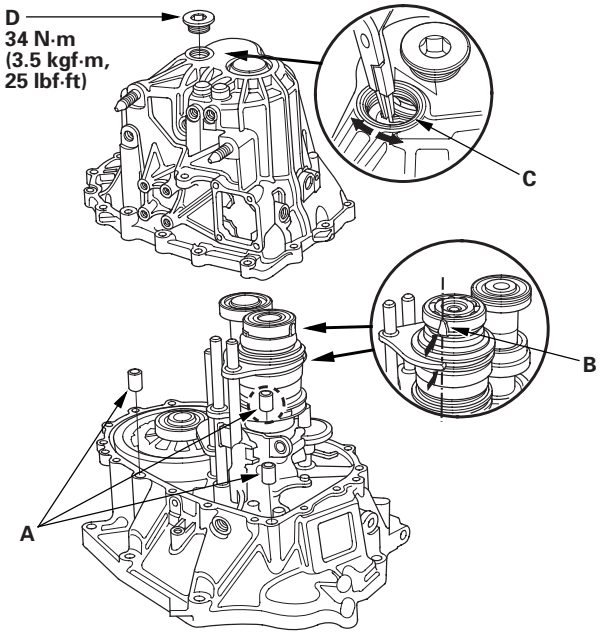
NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



(cont'd)

Transmission Reassembly (cont'd)

9. Install the three 14 x 20 mm dowel pins (A).



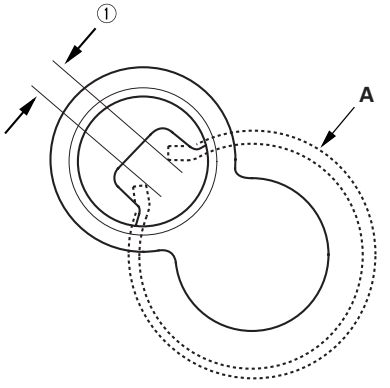
10. Set the tapered cone ring (B) as shown. Place the transmission housing on the clutch housing, making sure to line up the shafts.

11. While expanding the 72 mm snap ring (C) on the countershaft ball bearing using snap ring pliers, push the transmission housing down to start the countershaft ball bearing through the snap ring. Release the pliers, and push down the housing until it bottoms and the snap ring snaps in place in the countershaft ball bearing snap ring groove.

    NOTE: Install the 32 mm sealing cap (D) after setting in the 72 mm snap ring.

12. Make sure the 72 mm snap ring (A) is securely seated in the groove of the countershaft bearing.

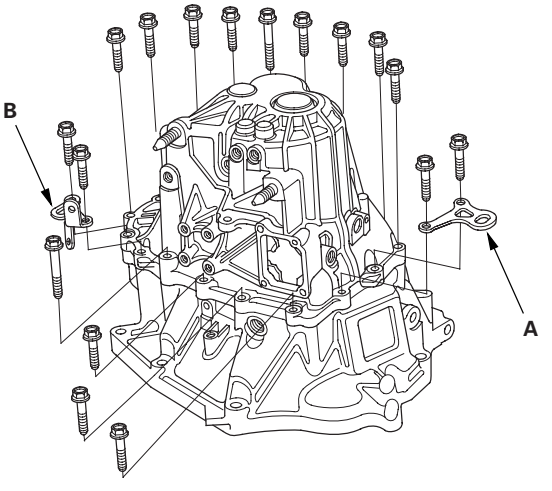
    Dimension ① as installed: 3.3—6.0 mm (0.13—0.24 in.)



13. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the 32 mm searing cap, and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

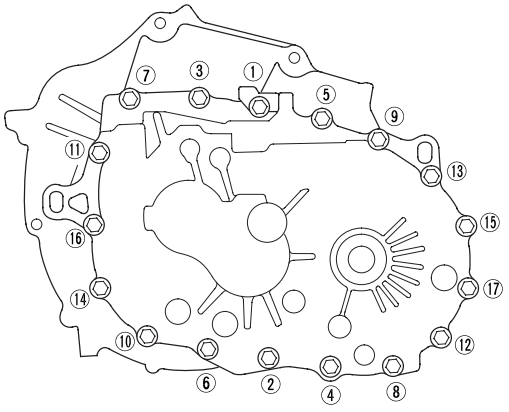
    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

14. Install the 8 mm flange bolts finger-tight with transmission hangers A, and transmission hanger B.



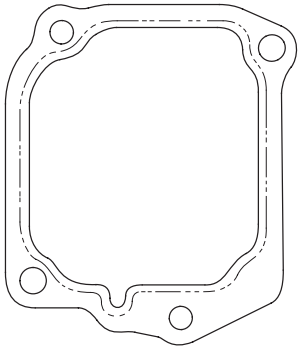
15. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

Specified Torque:
8 x 1.25 mm
27 N·m (2.8 kgf·m, 20 lbf·ft)



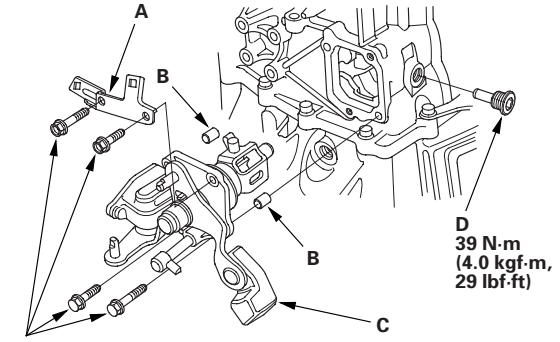
16. Clean any dirt or oil from the mating surface of the change lever assembly and the transmission housing. Apply liquid gasket, P/N 08718-0001 evenly to the mating surface of the change lever assembly and the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



Liquid gasket

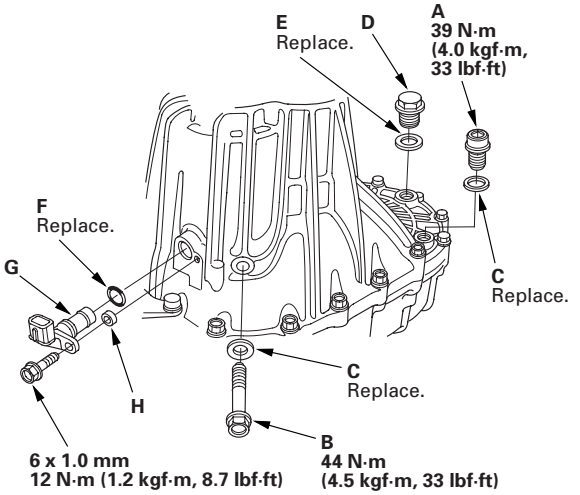
17. Install the 8 x 14 mm dowel pins (B) and the change lever assembly (C) with harness bracket A.



18. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the inter lock bolt (D). Install the component within 5 minutes of applying the liquid gasket.

NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

19. Install the drain plug (A) and the 10 mm flange bolt (B) with new washers (C). Install the filler plug (D) finger-tight with new sealing washer (E).

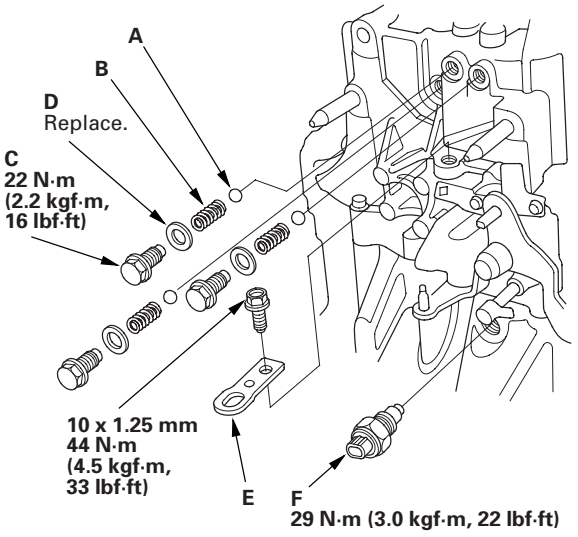


20. Apply MTF to a new O-ring (F). Then install the output shaft (countershaft) speed sensor (G) with the O-ring and the plain washer (H).

(cont'd)

Transmission Reassembly (cont'd)

21. Install the steel balls (A), the springs (B), and the detent bolts (C) with new sealing washers (D).

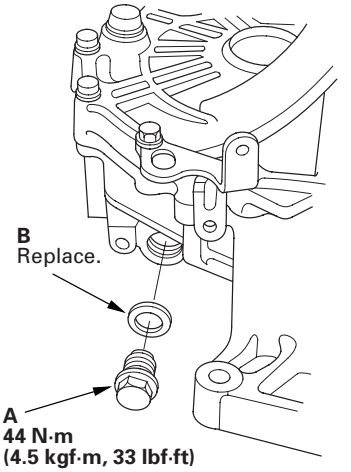


22. Install the transmission hanger (E).

23. Apply liquid gasket, P/N 08718-0001 evenly to the threads of the back-up light switch (F), and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

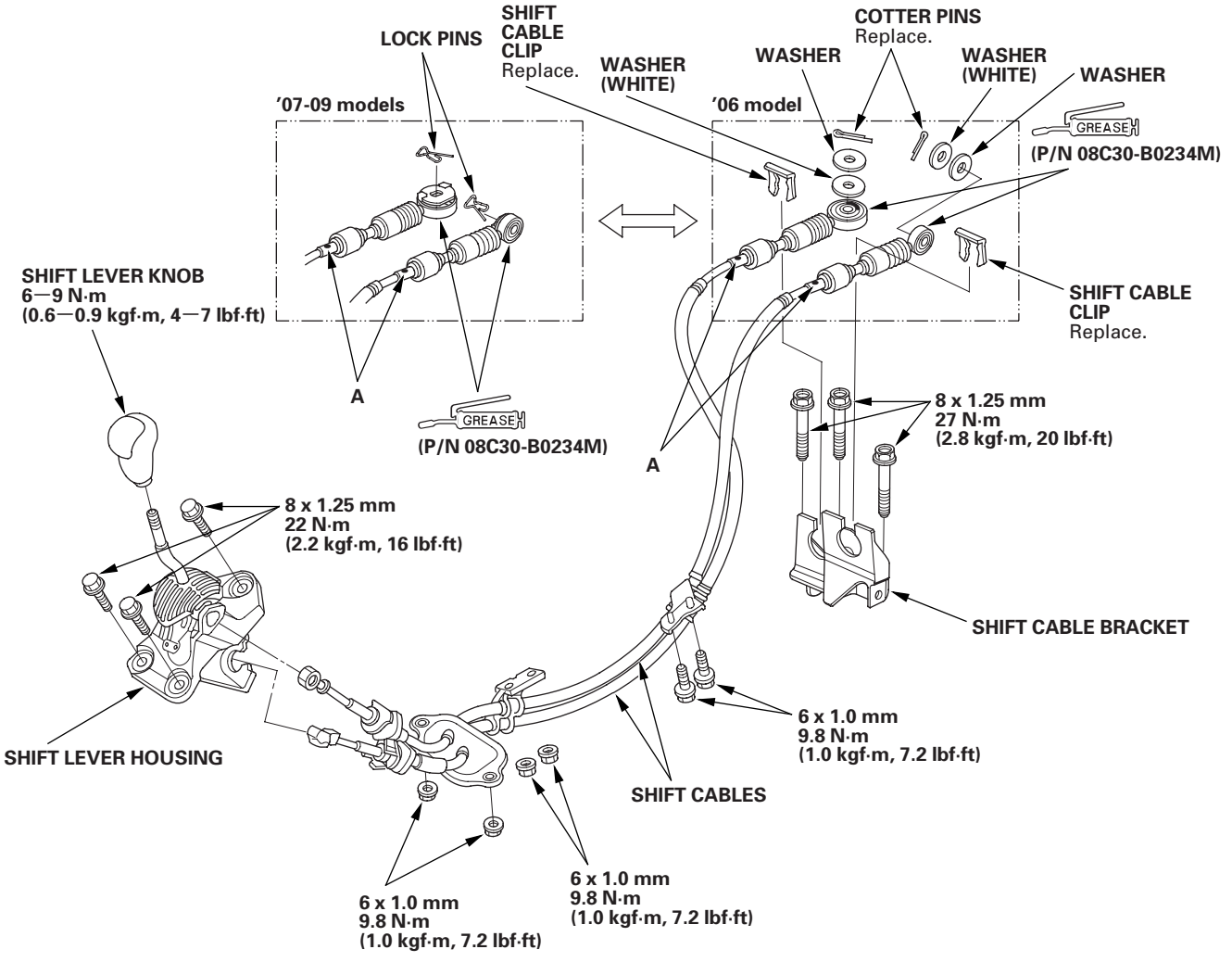
    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

24. Install the 20 mm bolt (A) with new 20 mm sealing washer (B).



Gearshift Mechanism Replacement

NOTE:
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.
- When installing the shift cables (transmission side), position the paint mark (A) facing the upward.



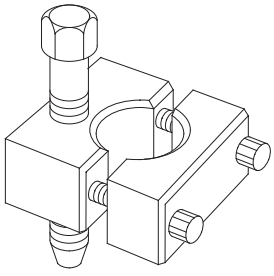
6-Speed Manual Transmission

Special Tools

Ref. No.	Tool Number	Description	Qty
*①	07GAJ-PG20110	Catch Adapter	1
*②	07GAJ-PG20130	Base Adapter	1
③	07JAD-PL90100	Oil Seal Driver, 65 mm	1
④	07NAD-P20A100	Oil Seal Driver Attachment	1
**⑤	07736-A01000B	Adjustable Bearing Puller, 20—40 mm	1
⑥	07746-0010300	Bearing Driver Attachment, 42 x 47 mm	1
⑦	07746-0030100	Inner Driver Handle, 40 mm	1
⑧	07746-0030300	Inner Bearing Driver Attachment, 30 mm	1
⑨	07749-0010000	Driver Handle, 15 x 135L	1

*: Part of Mainshaft Inspection Tool Set, 07GAJ-PG20102.

**: Must be used with commercially available 3/8''-16 UNF Slide Hammer.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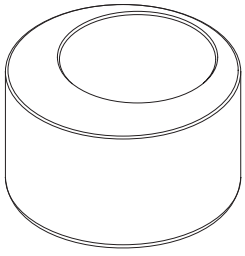
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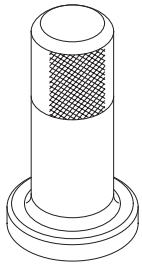
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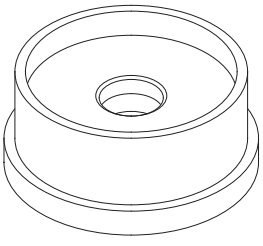
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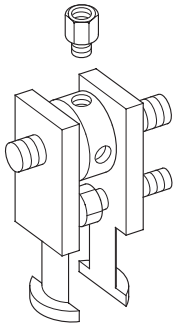
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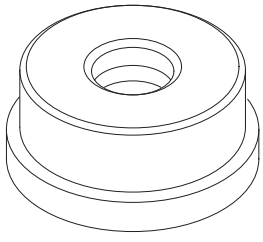
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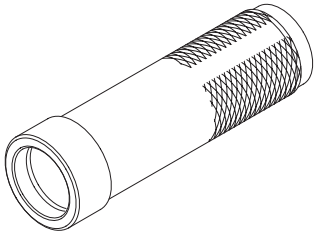
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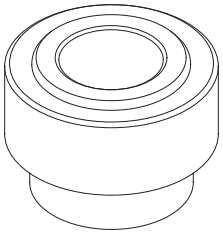
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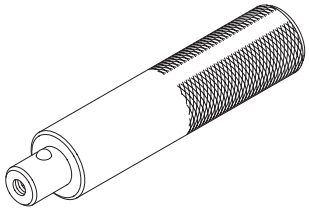
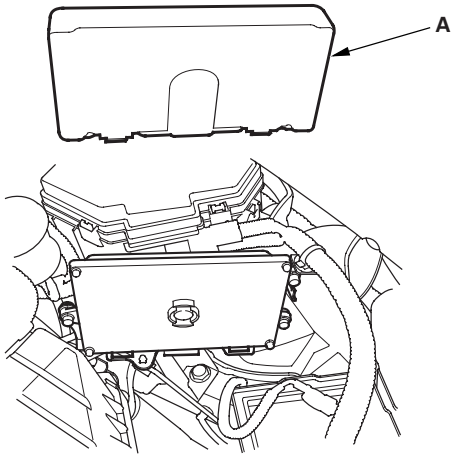

⑨

General Troubleshooting Information

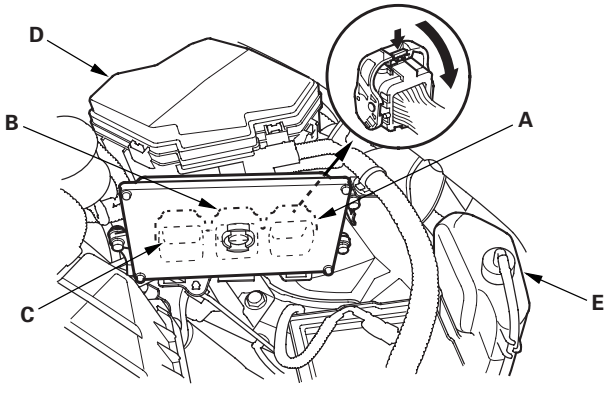
How to Troubleshoot Circuits at the ECM Connectors

NOTE: The ECM overwrites data and monitors the EVAP system for up to 30 minutes after the ignition switch is turned to LOCK (0). Jumping the SCS line after turning the ignition switch to LOCK (0) cancels this function. Disconnecting the ECM during this function, without jumping the SCS line first, can damage the ECM.

1. Jump the SCS line with the HDS.
2. Remove the cover (A).



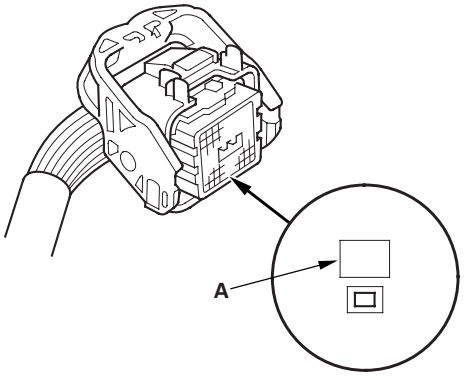
3. Lift up the under-hood fuse/relay box (D).



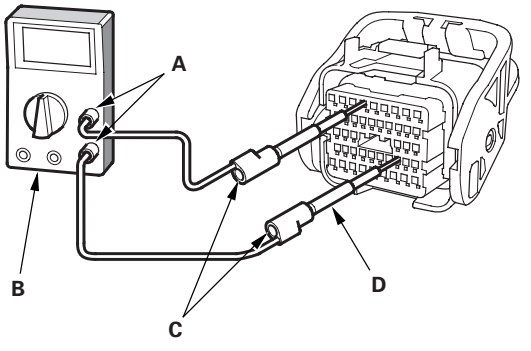
4. Remove the coolant reservoir (E). Disconnect ECM connectors A, B, and C.

   NOTE: ECM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

5. When troubleshooting is done at the ECM connector, use the terminal test port (A) above the terminal you need to check.



6. Connect one side of the patch cord's terminals (A) to a commercially available digital multimeter (B), and connect the other side cord's terminals (C) to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (D).

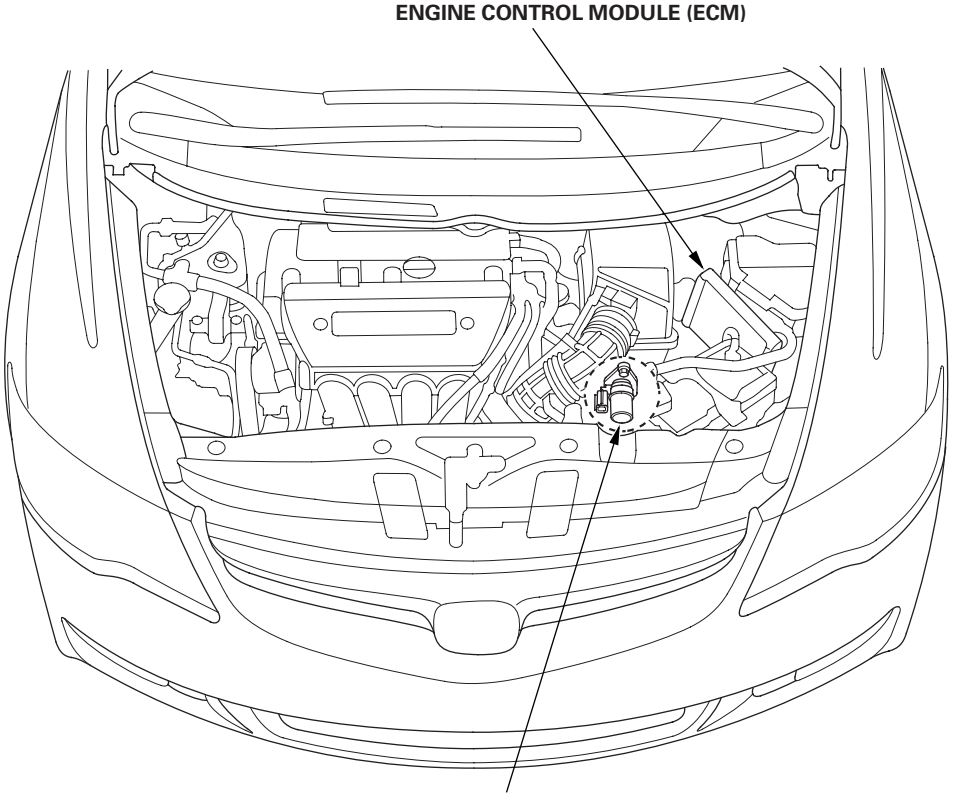


7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

Component Location Index

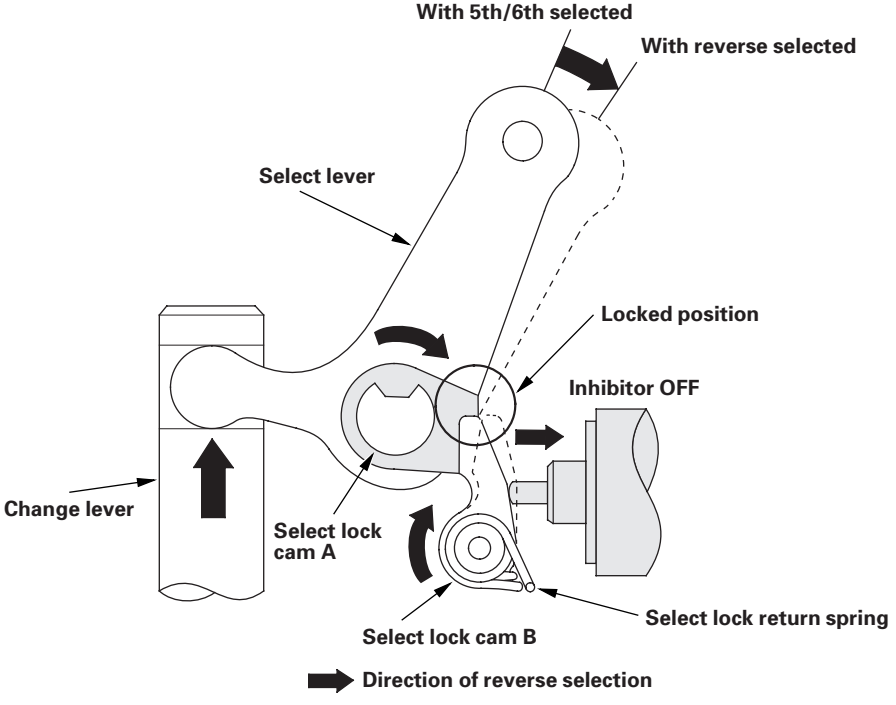


REVERSE LOCKOUT SOLENOID
Test, page 13-77
Disassembly/Reassembly, page 13-77

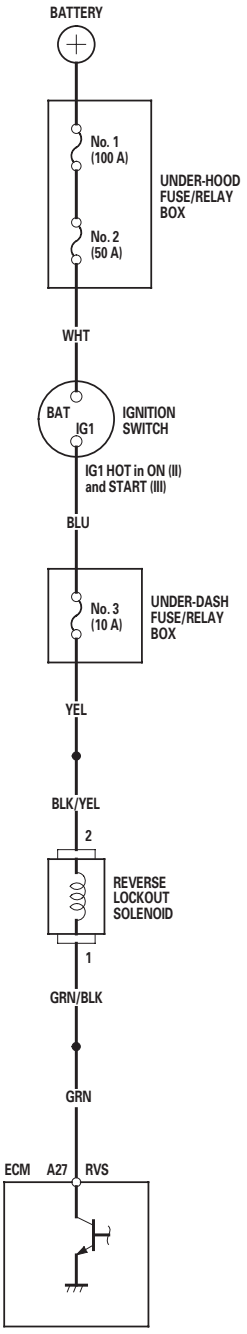
System Description

At vehicle speeds of 20 km/h (12 mph) or more, the ECM, which monitors the signals from the output shaft (countershaft) speed sensor, activates the reverse lockout solenoid, which pushes select lock cam B into the locked position. As a result, the select lever cannot rotate to the reverse select position, making it impossible to engage reverse gear. As the vehicle speed drops to 15 km/h (9 mph) or less, the ECM turns off the reverse lockout solenoid. The select lock return spring pulls back select lock cam B, enabling the select lever to move freely so reverse gear can be selected.

Vehicle speed	Inhibitor	Reverse selection
Above 20 km/h (12 mph)	ON	Not allowed
Below 15 km/h (9 mph)	OFF	Allowed
Ignition switch LOCK (0)	OFF	Allowed



Circuit Diagram



Symptom Troubleshooting

Driver can select reverse gear when vehicle speed is 20 km/h (12 mph) or more

NOTE:
- When checking if the transmission will shift to reverse while the wheels are being driven forward, raise the vehicle on a lift, make sure it is securely supported, and allow the front wheels to rotate freely.
- Do not release the clutch pedal if you can select reverse gear while the wheels are driven forward.
- When the vehicle is on a lift, and you make the wheels rotate, turn off the VSA system by the VSA OFF switch.

1. Turn the ignition switch to LOCK (0).
2. Check the No. 3 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Reinstall the fuse, then go to step 3.

   NO—Install a new No. 3 (10 A) fuse, and recheck. If the fuse continues to blow, check for short to body ground in the wire between the No. 3 (10 A) fuse in the under-dash fuse/relay box and the reverse lockout solenoid. ■
3. Test-drive the vehicle.
4. Check for fuel and emissions system's DTC with the HDS.

   Are there any DTCs stored in the fuel and emissions?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 5.

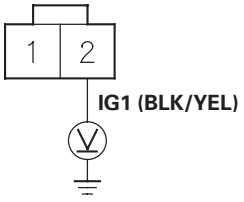
5. Turn the ignition switch to LOCK (0).

6. Disconnect the reverse lockout solenoid 2P connector.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between reverse lockout solenoid 2P connector terminal No. 2 and body ground.

REVERSE LOCKOUT SOLENOID 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between No. 3 (10 A) fuse in the under-dash fuse/relay box and the reverse lockout solenoid. ■

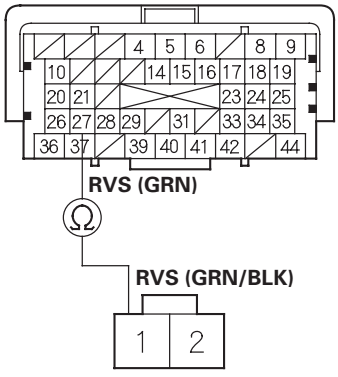
9. Turn the ignition switch to LOCK (0).

10. Jump the SCS line with the HDS.

11. Disconnect ECM connector A (44P).

12. Check for continuity between reverse lockout solenoid 2P connector terminal No. 1 and ECM connector A (44P) terminal No. 27.

ECM CONNECTOR A (44P)
Terminal side of female terminals



REVERSE LOCKOUT SOLENOID 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the reverse lockout solenoid and the ECM. ■

13. Do the reverse lockout solenoid test (see page 13-77).

Is the reverse lockout solenoid OK?

YES—Check for loose terminals or poor connections at the ECM. If necessary, update the ECM if it does not have the latest software (see page 11-227), or substitute a known-good ECM (see page 11-7), then recheck. If the symptom goes away with a known-good ECM, replace the original ECM (see page 11-228). ■

NO—Repair or replace the reverse lockout solenoid (see page 13-77). ■

Symptom Troubleshooting (cont'd)

Driver cannot select reverse gear when vehicle speed is 15 km/h (9 mph) or less

NOTE:
- When checking if the transmission will shift to reverse while the wheels are being driven forward, raise the vehicle on a lift, make sure it is securely supported, and allow the front wheels to rotate freely.
- Do not release the clutch pedal if you can select reverse gear while the wheels are driven forward.
- When the vehicle is on a lift, and you make the wheels rotate, turn off the VSA system by the VSA OFF switch.

1. Turn the ignition switch to LOCK (0).
2. Try to shift the transmission into reverse.

   Can you shift the transmission into the reverse?

   YES—Go to step 4.

   NO—Go to step 3.
3. Do the reverse lockout solenoid test (see page 13-77).

   Is the reverse lockout solenoid OK?

   YES—Check the change lever assembly (see page 13-105), if necessary inspect the internal transmission. ■

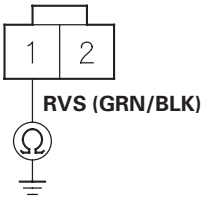
   NO—Repair or replace the reverse lockout solenoid (see page 13-77). ■
4. Start the engine, and try to shift the transmission into reverse.

   Can you shift the transmission into the reverse?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Disconnect ECM connector A (44P).
8. Disconnect the reverse lockout solenoid 2P connector.
9. Check for continuity between the reverse lockout solenoid 2P connector terminal No. 1 and body ground.

REVERSE LOCKOUT SOLENOID 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the reverse lockout solenoid and the ECM. ■

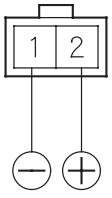
NO—Check for loose terminals or poor connections at the ECM. If necessary, update the ECM if it does not have the latest software (see page 11-227), or substitute a known-good ECM (see page 11-7), then recheck. If the symptom goes away with a known-good ECM, replace the original ECM (see page 11-228). ■

Reverse Lockout Solenoid Test

1. Remove the reverse lockout solenoid (see page 13-77).

2. Connect battery positive terminal to the reverse lockout solenoid 2P connector No. 2 terminal, and connect the battery negative terminal to the No. 1 terminal.

REVERSE LOCKOUT SOLENOID 2P CONNECTOR



Terminal side of male terminals

3. Make sure the reverse lockout solenoid works. If the reverse lockout solenoid does not work, replace it.

Reverse Lockout Solenoid Disassembly/Reassembly

1. Do the battery removal procedure (see page 22-69).

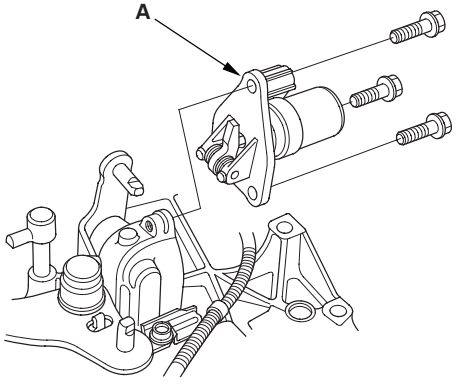
2. Remove the air cleaner assembly (see page 11-345).

3. Remove the battery base (see step 4 on page 13-84).

4. Disconnect the output shaft (countershaft) speed sensor connector, the back-up light switch connector, and the reverse lockout solenoid connector (see step 6 on page 13-84).

5. Carefully remove the shift cables and the cable bracket together to avoid bending the cables (see step 7 on page 13-85).

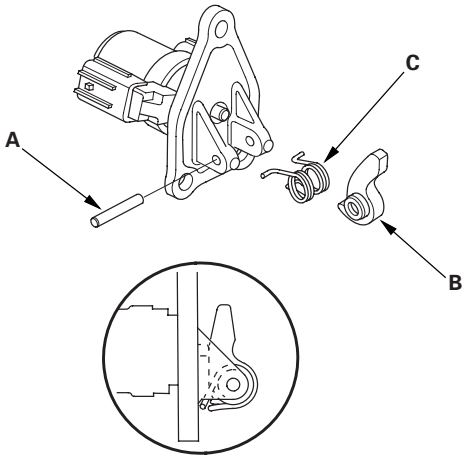
6. Remove the reverse lockout solenoid (A).



(cont'd)

Reverse Lockout Solenoid Disassembly/Reassembly (cont'd)

7. Remove the roller (A), the select lock return spring (C), and select lock cam B.



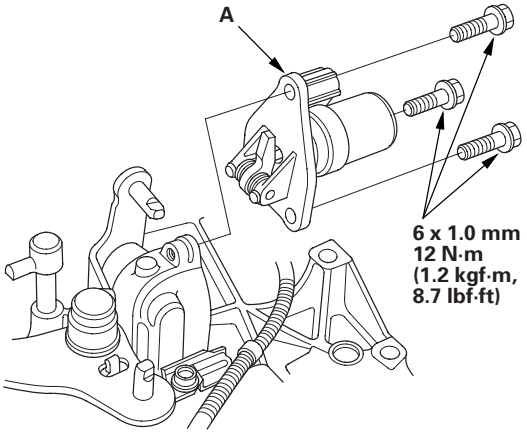
8. Install the components of the reverse lockout solenoid in the reverse order of removal.

9. Clean any dirt and oil from the mating surface of the reverse lockout solenoid and the change lever assembly.

10. Apply liquid gasket, P/N 08718-0001 evenly to the change lever assembly mating surface of the reverse lockout solenoid. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

11. Install the reverse lockout solenoid (A).



12. Install the cable bracket and the shift cables (see step 37 on page 13-97).

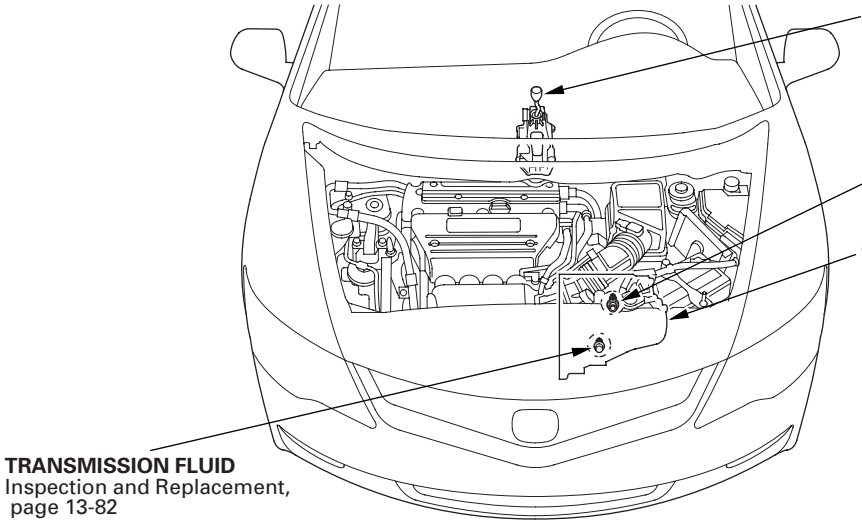
13. Connect the reverse lockout solenoid connector, the back-up light switch connector, and the output shaft (countershaft) speed sensor connector (see step 39 on page 13-97).

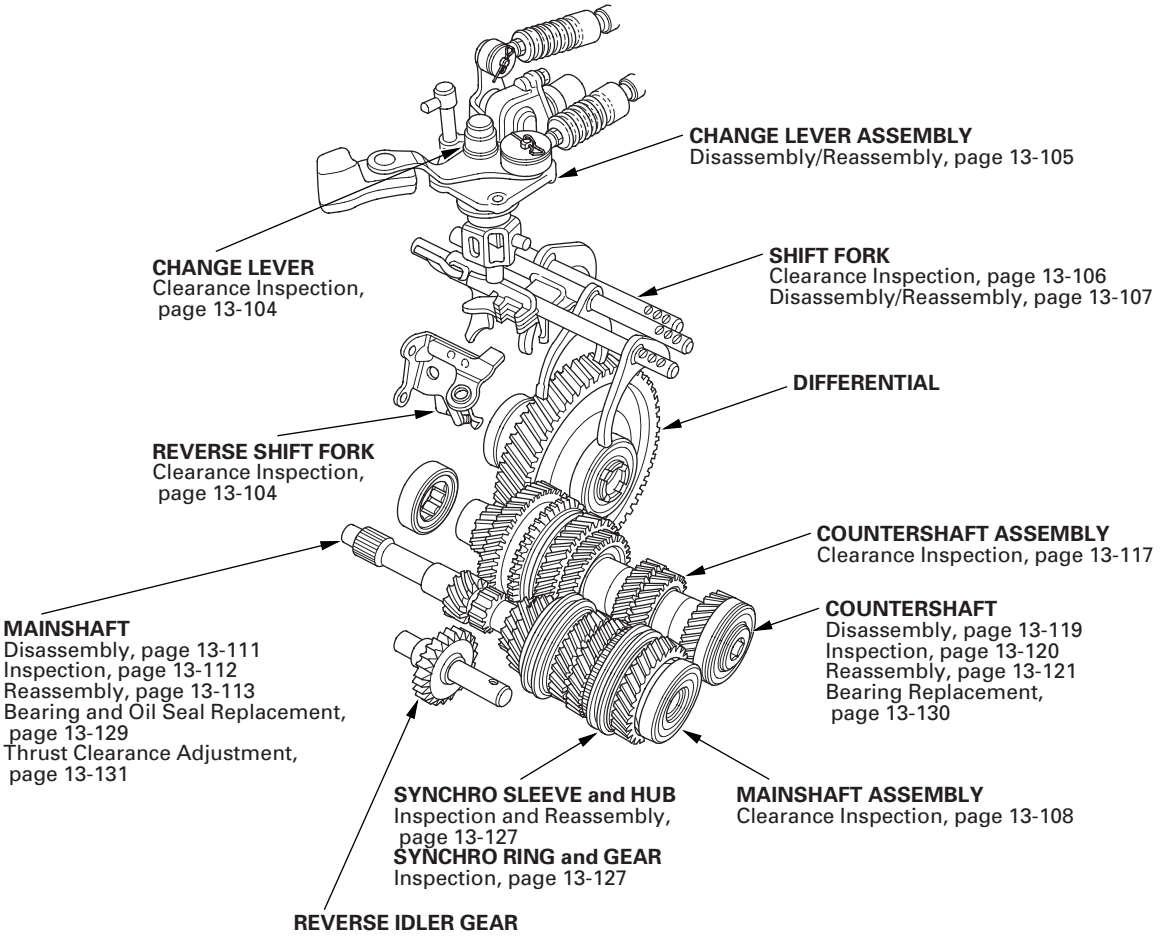
14. Install the battery base (see step 41 on page 13-98).

15. Install the air cleaner assembly (see page 11-345).

16. Do the battery installation procedure (see page 22-69).

Component Location Index





Symptom Troubleshooting Index

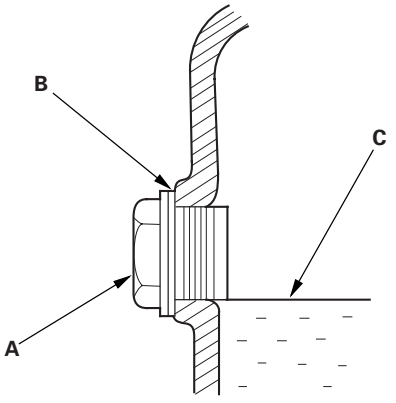
Symptom	Diagnostic procedure
Hard to shift into 1st gear	• Check and/or replace the MTF (see page 13-82). • Check the clutch (see page 12-19). • Check the 1st synchro ring and 1st gear (see page 13-127). • Check the 1st/2nd synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 2nd gear	• Check and/or replace the MTF (see page 13-82). • Check the 2nd synchro ring and 2nd gear (see page 13-127). • Check the 1st/2nd synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 3rd gear	• Check and/or replace the MTF (see page 13-82). • Check the 3rd synchro ring and 3rd gear (see page 13-127). • Check the 3rd/4th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 4th gear	• Check and/or replace the MTF (see page 13-82). • Check the 4th synchro ring and 4th gear (see page 13-127). • Check the 3rd/4th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 5th gear	• Check and/or replace the MTF (see page 13-82). • Check the 5th synchro ring and 5th gear (see page 13-127). • Check the 5th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).
Hard to shift into 6th gear	• Check and/or replace the MTF (see page 13-82). • Check the 6th synchro ring and 6th gear (see page 13-127). • Check the 6th synchro sleeve and hub (see page 13-127). • Check the change lever assembly (see page 13-105).

Symptom	Diagnostic procedure
Hard to shift into reverse	• Check and/or replace the MTF (see page 13-82). • Check the clutch (see page 12-19). • Check the reverse shift fork and the reverse idler gear (see page 13-104). • Check reverse gear. • Check the change lever assembly (see page 13-105).
HDS does not communicate with the ECM or the vehicle	Troubleshoot the DLC circuit (see page 11-204).
Driver can select reverse gear when vehicle speed is 20 km/h (12 mph) or more	Do the symptom troubleshooting (see page 13-74).
Driver cannot select reverse gear when vehicle speed is 15 km/h (9 mph) or less	Do the symptom troubleshooting (see page 13-76).
Noise from the transmission	• Check and/or replace the MTF (see page 13-82). • Check the transmission gears. • Check the transmission bearings. • Check the differential carrier, the final driven gear, and the carrier bearings.
Shift lever does not operate smoothly	• Check and/or replace the MTF (see page 13-82). • Check the shift cable and their joints (see page 13-138). • Check the shift lever housing with the shift lever shaft.
Transmission jumps out of gear	• Check and/or replace the MTF (see page 13-82). • Check the detent ball springs. • Check the teeth of the synchro rings and gears (see page 13-127). • Check for bent, deform, or damage of the shift forks.

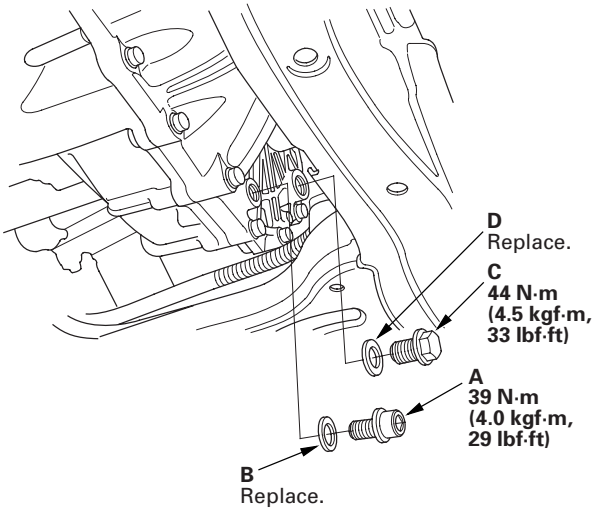
Transmission Fluid Inspection and Replacement

1. Raise the vehicle on a lift, and make sure it is securely supported.

2. Remove the filler plug (A) and the sealing washer (B), check the condition of the MTF, and make sure it is at the proper level (C).



3. If the MTF is dirty, remove the drain plug (A) and the sealing washer (B), and drain it.



4. Install the drain plug with a new sealing washer, and refill the transmission with MTF to the proper level. Always use Acura Manual Transmission Fluid (MTF).

   Fluid Capacity
   1.5 L (1.6 US qt) at fluid change
   1.7 L (1.8 US qt) at overhaul

5. Install the filler plug (C) with a new sealing washer (D).

6. If the maintenance minder required to replace the MTF, reset the maintenance minder (see page 3-4). If it did not reset, go to step 7.

7. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).

8. Turn the ignition switch to ON (II).

9. Make sure the HDS communicates with the vehicle and the engine control module (ECM). If it does not communicate, go to the DLC circuit troubleshooting (see page 11-204).

10. Select BODY ELECTRICAL with the HDS.

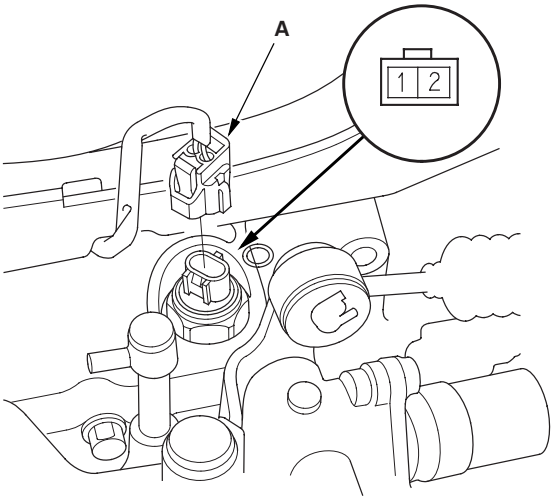
11. Select ADJUSTMENT in the GAUGES MENU with the HDS.

12. Select RESET in the MAINTENANCE MINDER with the HDS.

13. Select MAINTENANCE SUB ITEM 3, and reset the MTF life with the HDS.

Back-up Light Switch Test

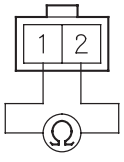
1. Disconnect the back-up light switch 2P connector (A).



2. Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity only when the shift lever is in reverse.

   - If the test result is OK, go to step 5.
   - If the test result is faulty, go to step 3.

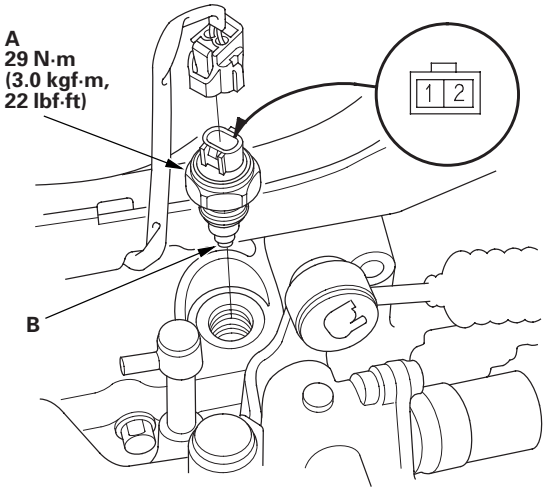
BACK-UP LIGHT SWITCH 2P CONNECTOR



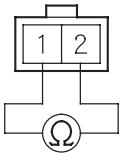
Terminal side of male terminals

3. Remove the back-up light switch (A). Check for continuity between back-up light switch 2P connector terminals No. 1 and No. 2. There should be continuity when the actuator (B) is pressed, and no continuity when the actuator is released.

   - If the test result is OK, check the reverse shift mechanism in the transmission.
   - If the test result is faulty, replace the back-up light switch.



BACK-UP LIGHT SWITCH 2P CONNECTOR



Terminal side of male terminals

4. Apply liquid gasket (08C70-K0230M, 08C70-K0334M, or 08C70-X0331S) to the threads of the back-up light switch, and install it on the transmission housing.

5. Connect the back-up light switch 2P connector.

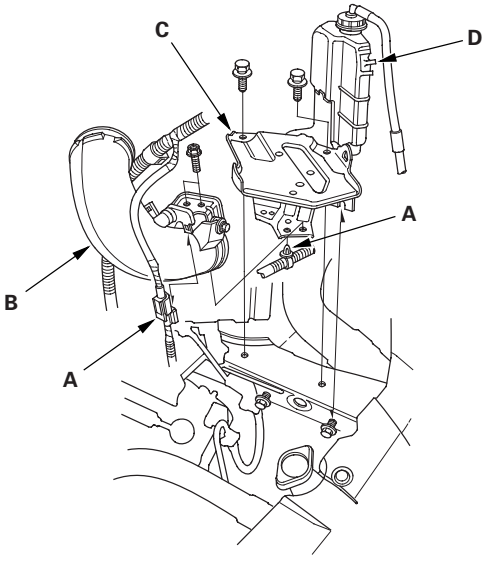
Transmission Removal

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

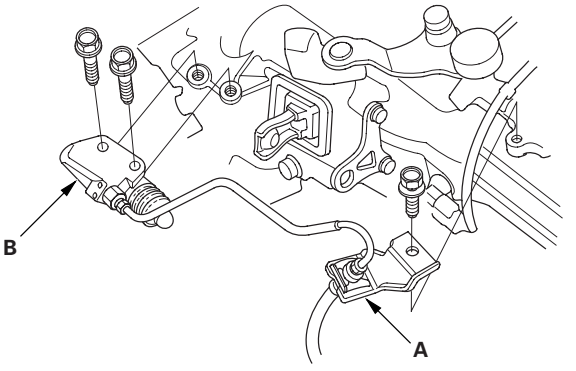
NOTE: Use fender covers to avoid damaging painted surfaces.

1. Do the battery removal procedure (see page 22-69).
2. Remove the cowl cover and the under-cowl panel (see page 20-163).
3. Remove the air cleaner assembly (see page 11-345).
4. Remove the harness clips (A) and the intake air duct (B), then remove the battery base (C) with the coolant reservoir (D).

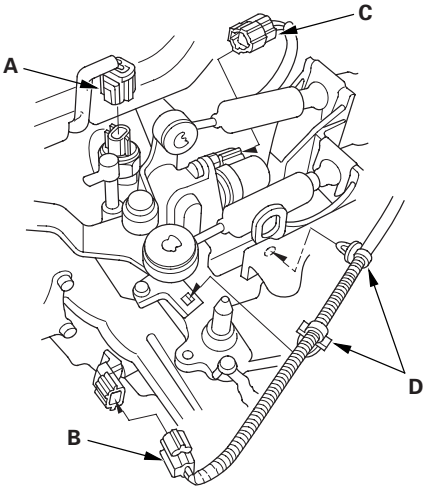


5. Remove the clutch line bracket (A), then carefully move the slave cylinder (B) out of the way to avoid bending the clutch line.

   NOTE: Do not press the clutch pedal after the slave cylinder has been moved.

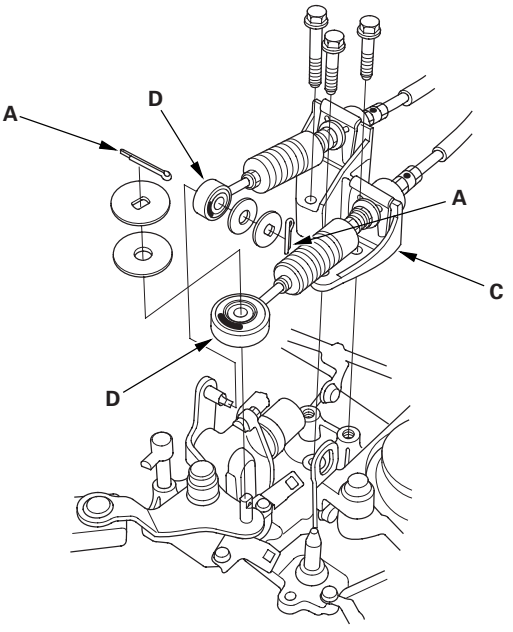


6. Disconnect the back-up light switch connector (A), the output shaft (countershaft) speed sensor connector (B), the reverse lockout solenoid connector (C), and the harness clips (D).

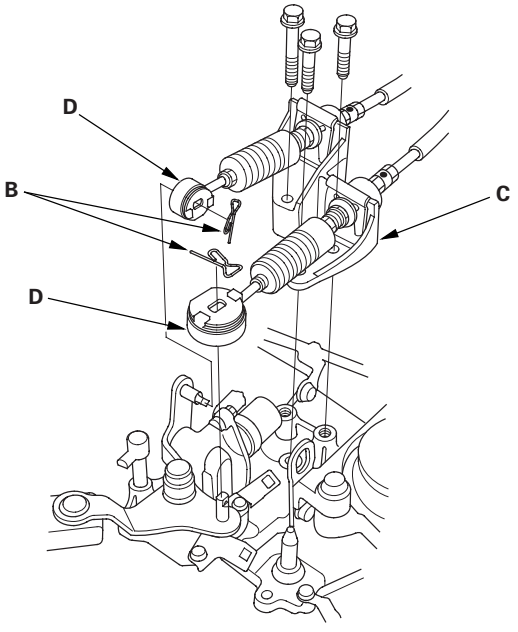


7. Remove the cotter pins (A) or the lock pins (B), and the shift cable bracket (C), then disconnect the shift cables (D) from the top of the change lever assembly. Carefully remove both cables and the bracket together to avoid bending the cables.

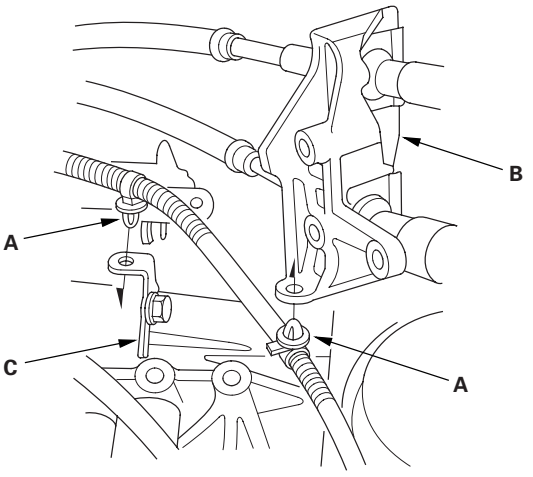
'06 model



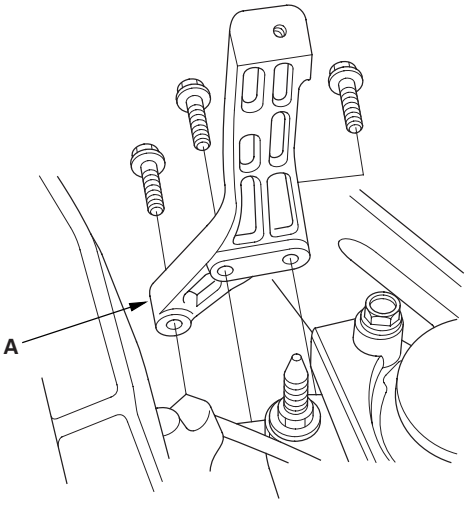
'07-09 models



8. Remove the harness clips (A) from the clutch cable bracket (B) and the harness bracket (C).



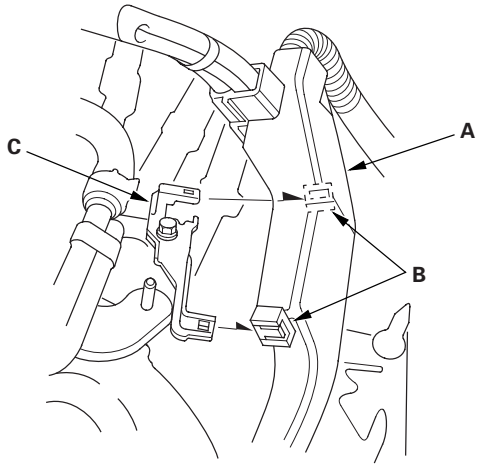
9. Remove the air cleaner housing bracket (A).



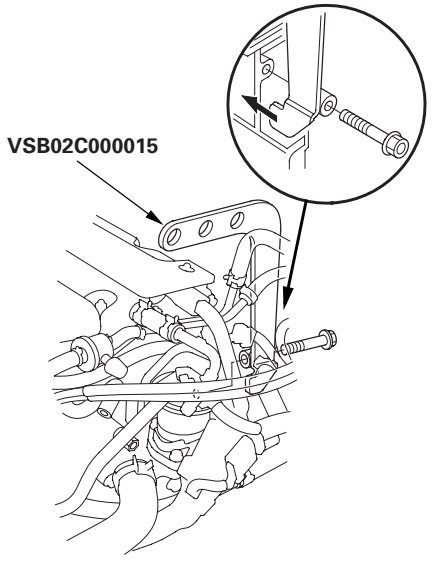
(cont'd)

Transmission Removal (cont'd)

10. Remove the engine wire harness cover (A) by lifting up on the lock tab (B), then slide the harness cover forward off the bracket (C).

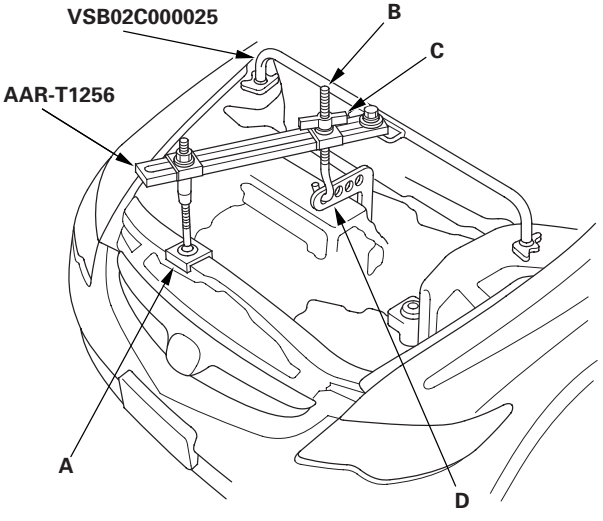


11. Attach the engine hanger adapter (VSB02C000015) to the threaded holes in the cylinder head.

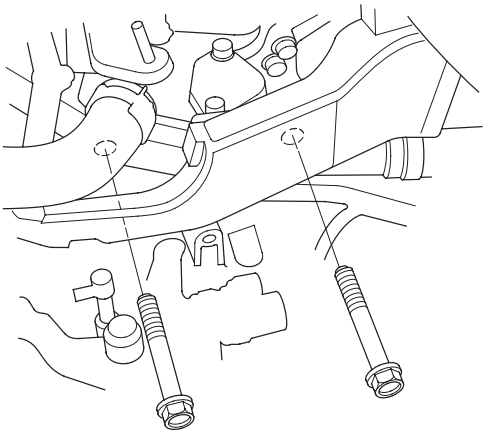


12. Install the front leg assembly (A), the hook (B), and the wingnut (C) from an A and Reds engine support hanger (AAR-T1256) onto the 2006 Civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wingnut by hand to lift and support the engine/transmission assembly.

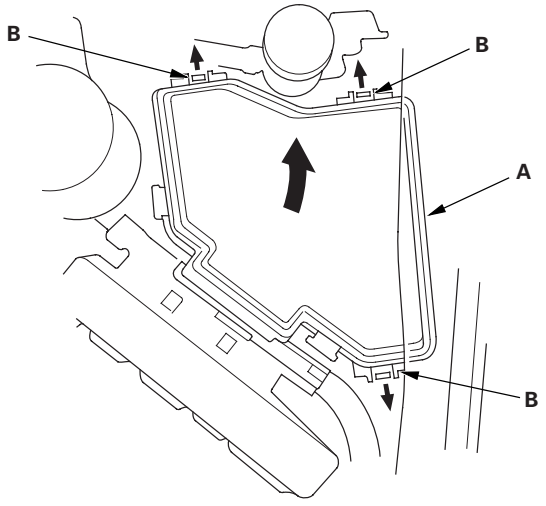
    NOTE: Use care when working around the windshield.



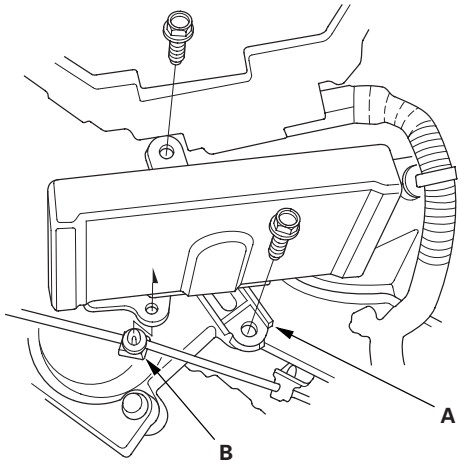
13. Remove the two upper transmission mounting bolts.



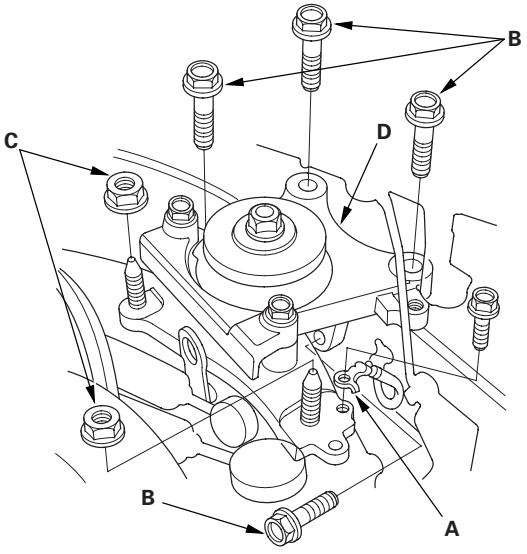
14. Remove the under-hood fuse/relay box (A) by lifting up on the lock tabs (B), then move it aside.



15. Remove the engine control module (ECM) bracket (A), then move it aside. Remove the clutch line clamp (B).

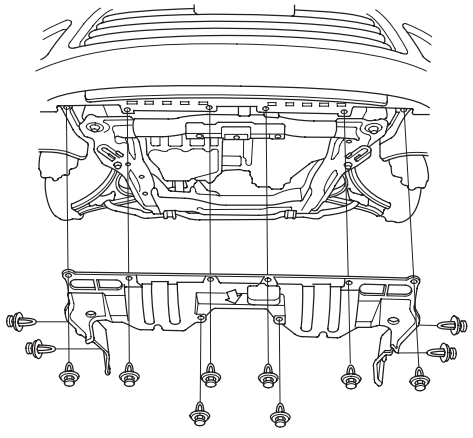


16. Disconnect the ground cable (A), then remove the transmission mount bracket bolts (B) and nuts (C). Remove the transmission mount bracket (D).



17. Raise the vehicle on a lift.

18. Remove the splash shield.



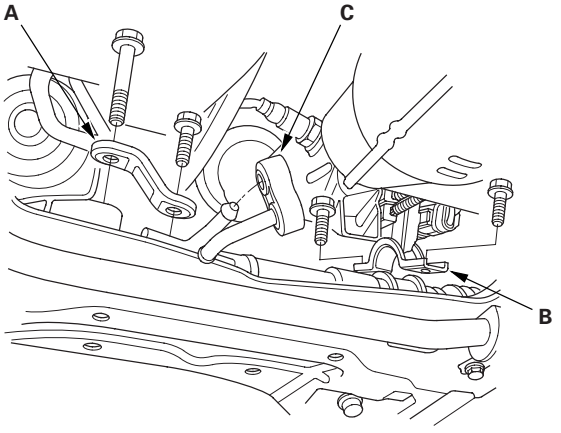
19. Drain the MTF. Reinstall the drain plug with a new sealing washer (see page 13-82).

20. Separate the lower arm (see step 5 on page 16-4).

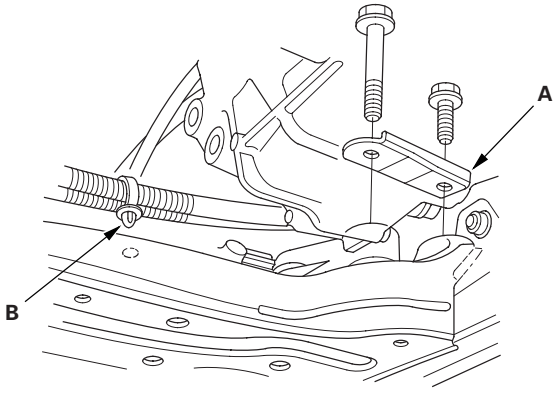
(cont'd)

Transmission Removal (cont'd)

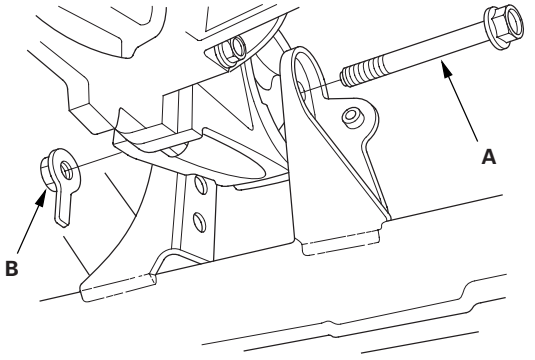
21. Remove the stiffener plate (A) from the left side of the steering gearbox, and the mounting bracket (B) from the right side of the steering gearbox. Disconnect the exhaust mounting rubber (C).



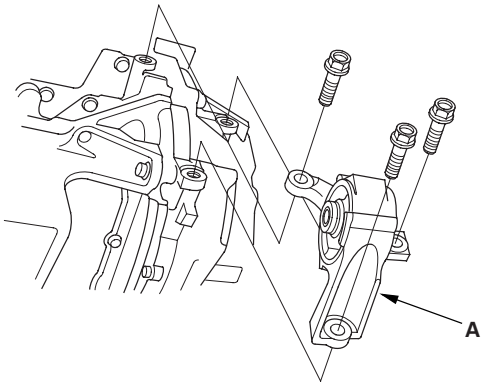
22. Remove the stiffener plate (A) and the harness clip (B).



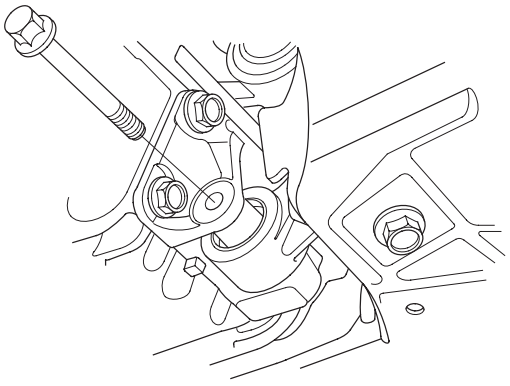
23. Remove the front engine mount mounting bolt (A) and nut (B), then remove the lower radiator hose from the front engine mount bracket.



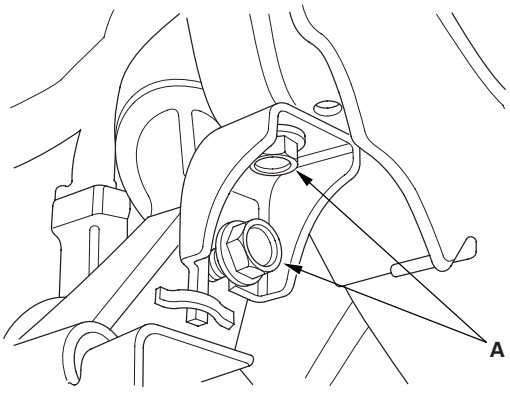
24. Remove the front engine mount (A) from the transmission and the engine.



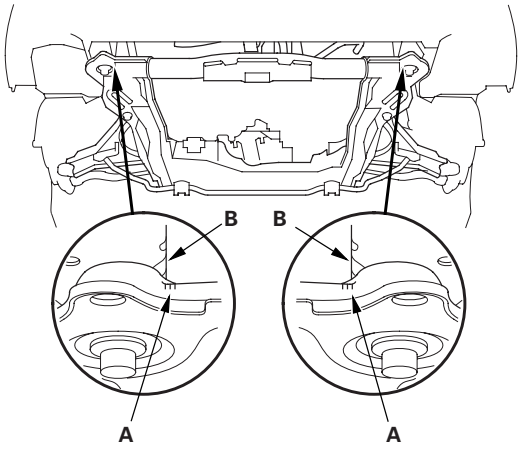
25. Remove the lower torque rod mounting bolt.



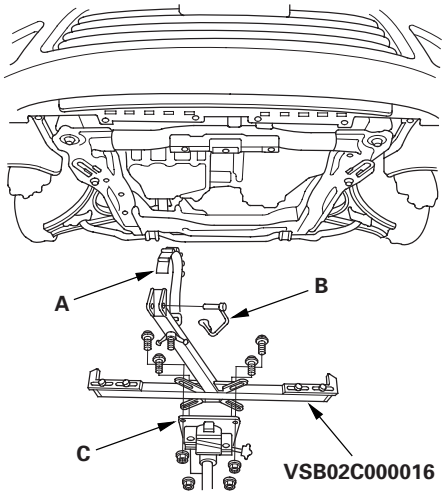
26. Remove the middle subframe mounting bolts (A).



27. Note the reference marks (A) on both sides of the front subframe that lines up with the body (B).



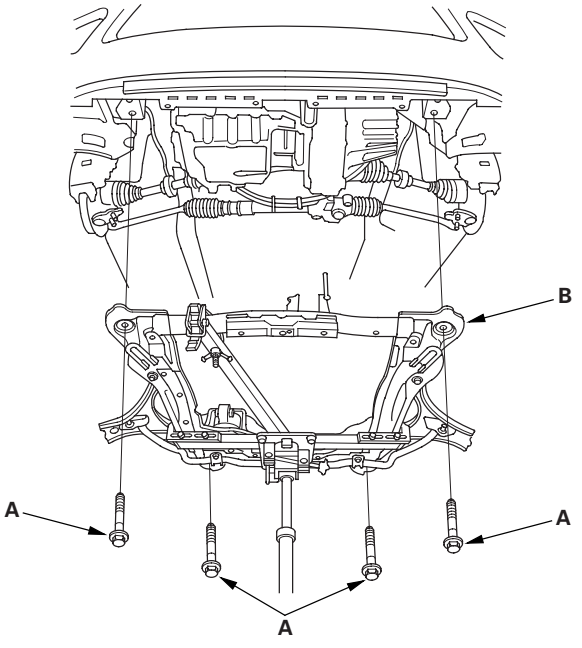
28. Attach the front subframe adapter (VSB02C000016) to the front subframe, and hang the belt (A) of the subframe attachment over the front subframe, then secure the belt with the stop (B).



29. Raise the jack, and line up the slots in the arms with the bolt holes on the corner of the jack base (C), then attach them securely.

30. Remove the front subframe mounting bolts (A) and the front subframe (B).

NOTE: Suspend the steering gearbox with an appropriate size wire.



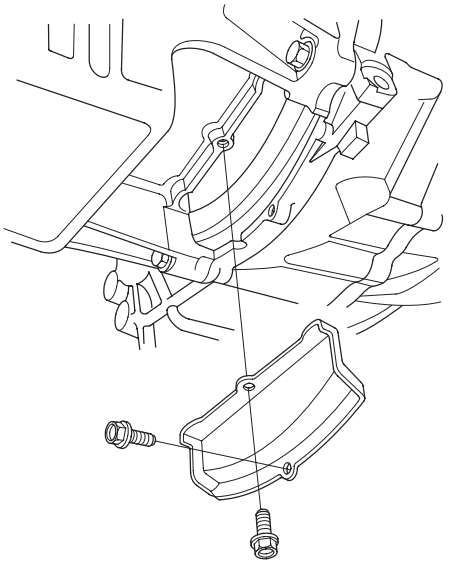
(cont'd)

Transmission Removal (cont'd)

31. Pry out the driveshafts inboard joint (see step 8 on page 16-5).

32. Remove the intermediate shaft (see page 16-23).

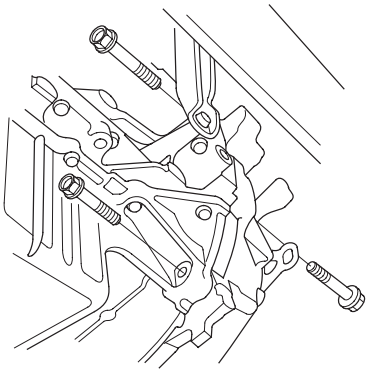
33. Remove the clutch cover.



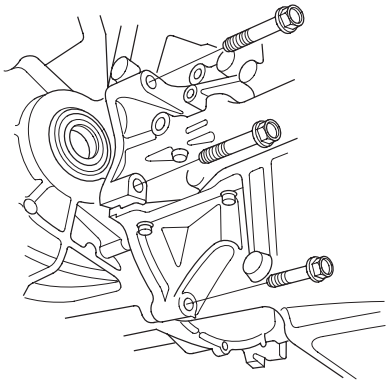
34. Support the transmission with a transmission jack.

35. Remove the transmission mounting bolts.

Front side



Rear side



36. Pull the transmission away from the engine until the transmission mainshaft clears the clutch pressure plate.

37. Slowly lower the transmission about 150 mm (6 in.). Check once again that all hoses and harnesses are disconnected and free from the transmission, then lower it completely.

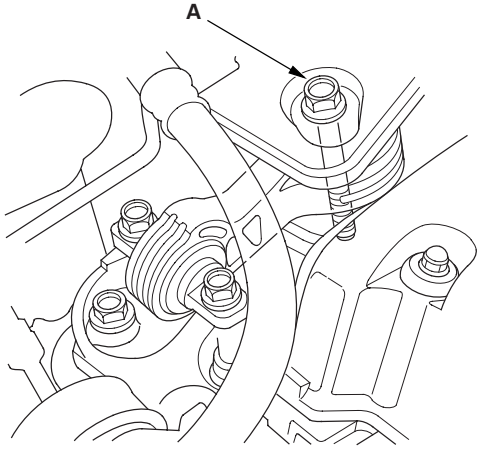
Transmission Installation

Special Tools Required
- Engine hanger adapter VSB02C000015
- 2006 Civic engine hanger VSB02C000025
- Engine support hanger, A and Reds AAR-T1256
- Front subframe adapter VSB02C000016

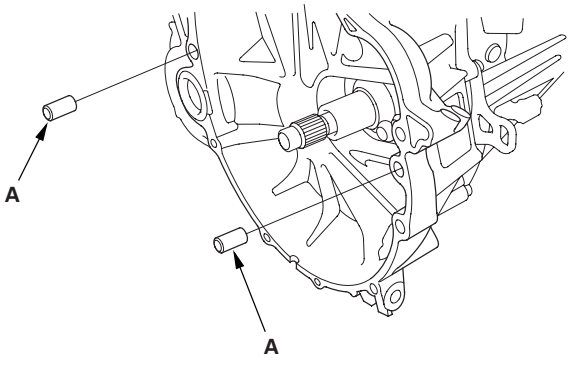
These special tools are available through the Acura Canada Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch.honda.com

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Loosen the upper torque rod mounting bolt (A).



2. Make sure the two dowel pins (A) are installed in the clutch housing.

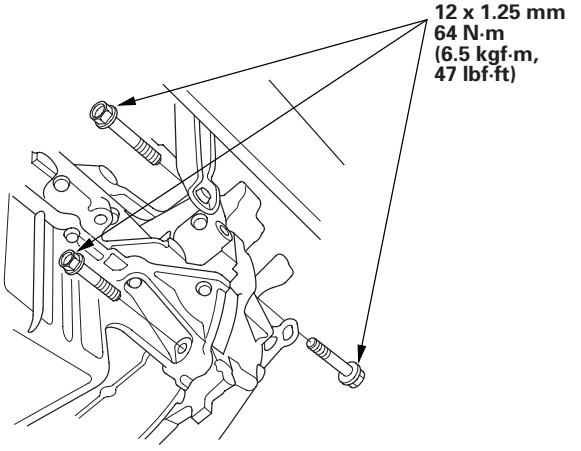


3. Check the release fork and the release bearing, and reinstall them with appropriate grease (see page 12-24).

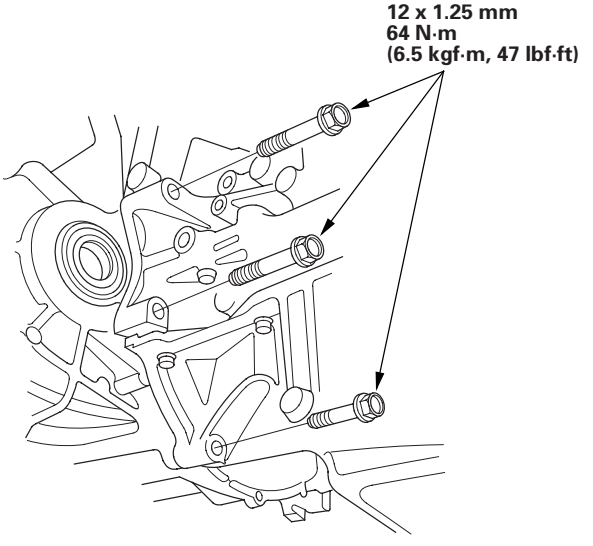
4. Place the transmission on the transmission jack, and raise it to engine level.

5. Install the transmission mounting bolts.

Front side



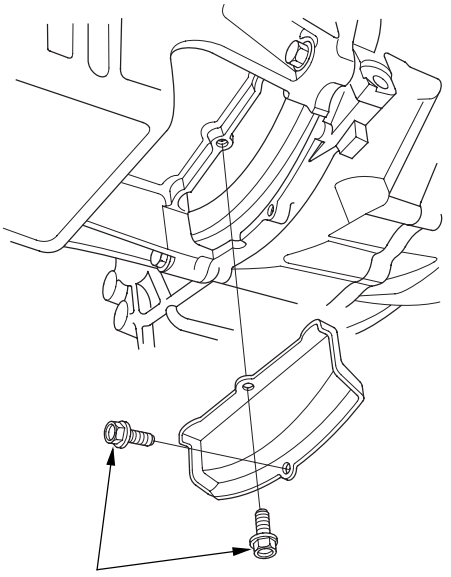
Rear side



(cont'd)

Transmission Installation (cont'd)

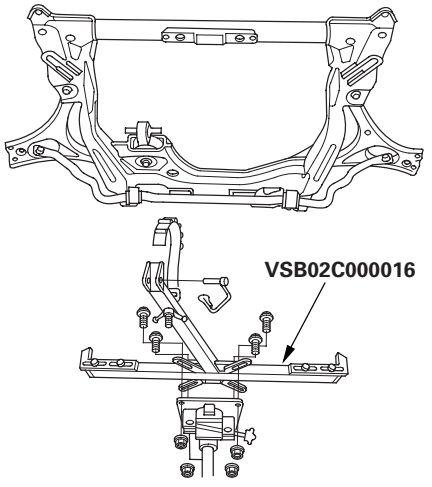
6. Install the clutch cover.



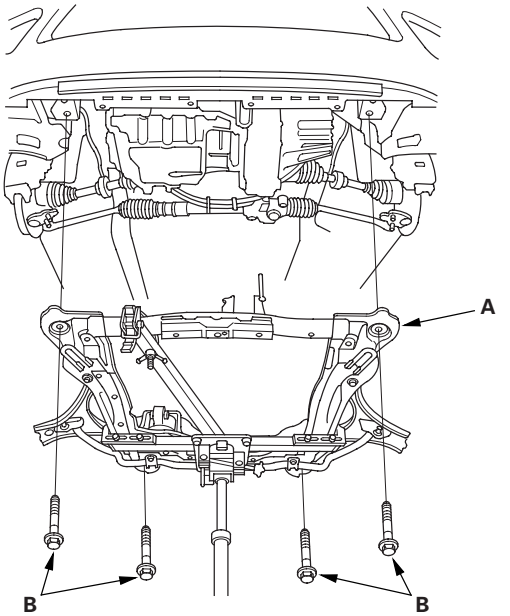
7. Install the intermediate shaft (see page 16-27).

8. Install the driveshafts inboard joint (see step 6 on page 16-21).

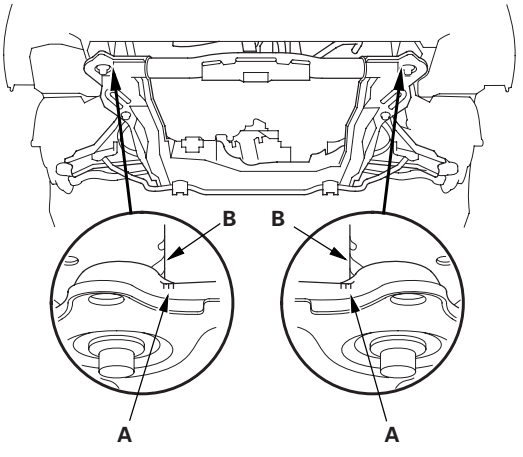
9. Support the front subframe with the subframe adapter (VSB02C000016) and a jack.



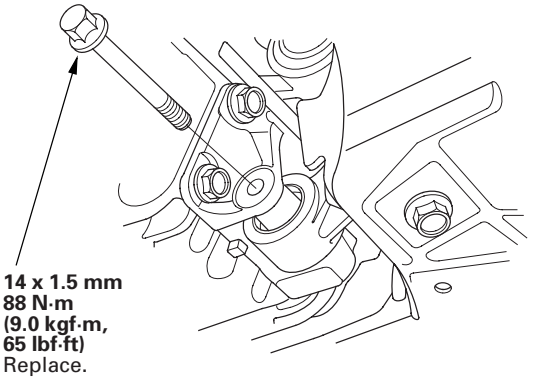
10. Install the front subframe (A). Loosely install new subframe mounting bolts (B).



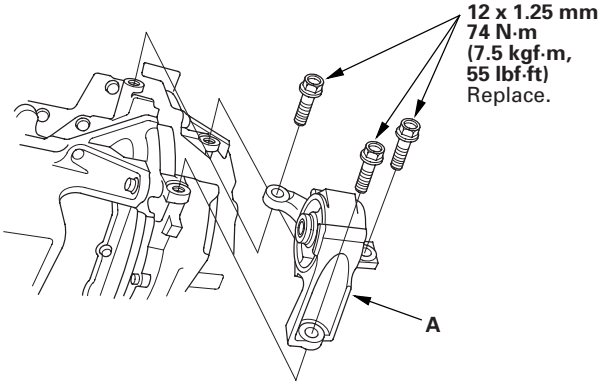
11. Align the front subframe reference marks (A) to the body (B), as noted during removal. Tighten the front subframe mounting bolts to the specified torque.



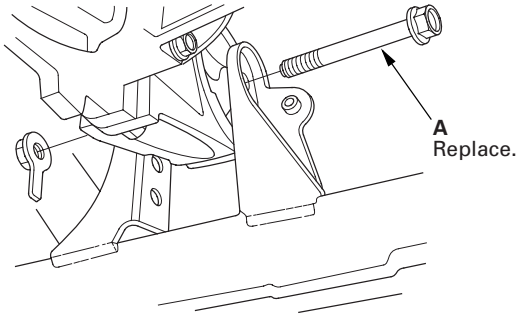
12. Install a new lower torque rod bracket mounting bolt.



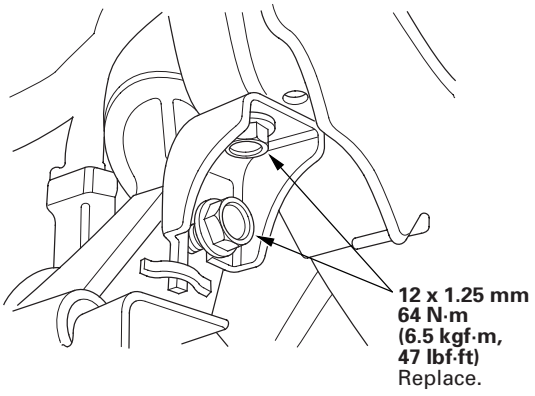
13. Install the front engine mount bracket (A) on the transmission and the engine with new bolts.



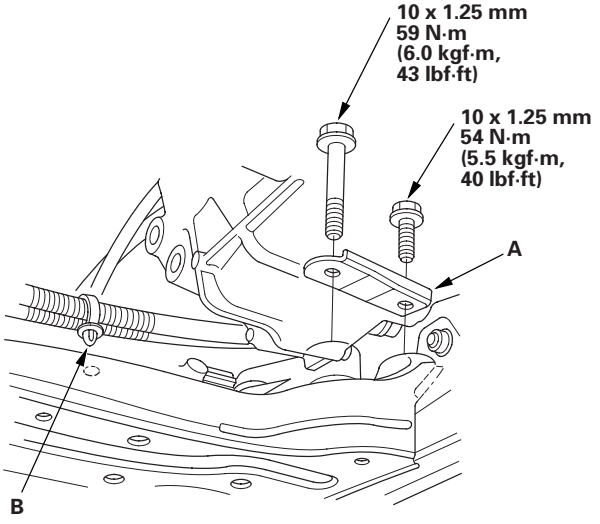
14. Loosely tighten a new front engine mount bracket mounting bolt (A), then attach the lower radiator hose to the front engine mount bracket.



15. Install new middle subframe mounting bolts.



16. Install the steering gearbox stiffener plate (A) and the harness clip (B).



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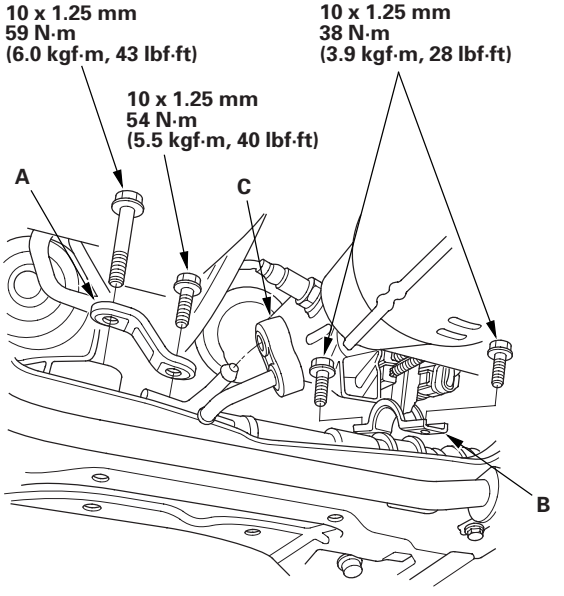
Transmission Installation (cont'd)

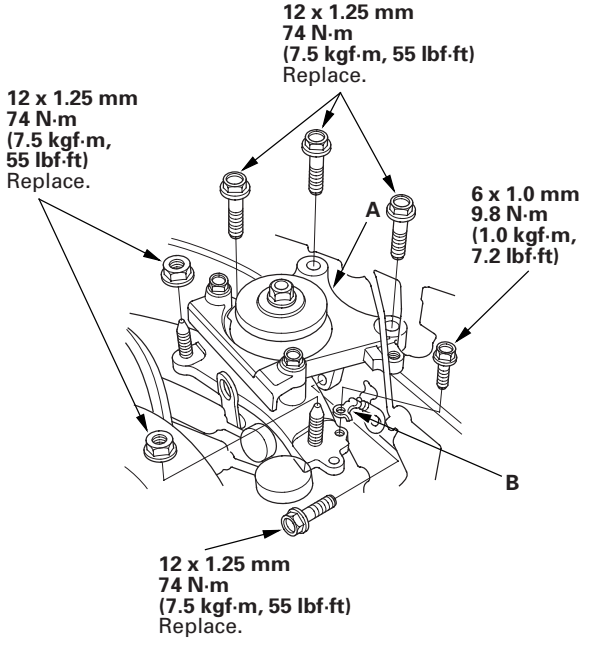
17. Install the stiffener plate (A) and the mounting bracket (B). Connect the exhaust mounting rubber (C).



18. Connect the lower ball joint and the lower arm (see step 8 on page 16-21).

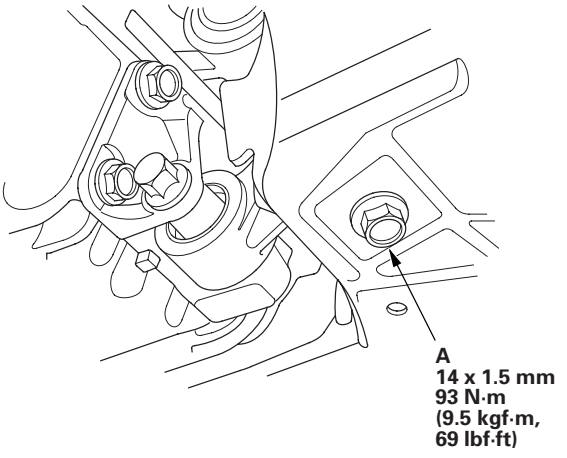
19. Lower the vehicle on the lift.

20. Install the transmission mount bracket (A), and connect the ground cable (B).



21. Raise the vehicle on the lift.

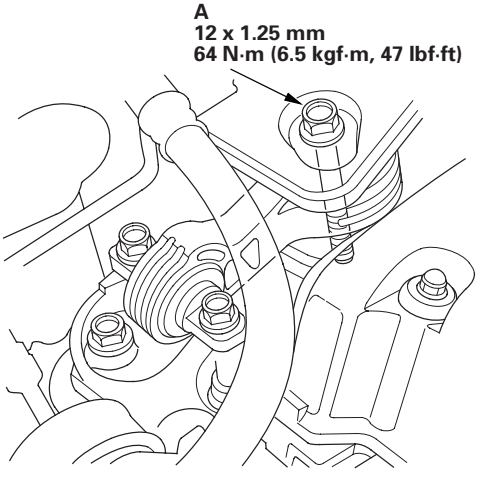
22. Loosen and retighten the lower torque rod mounting bolt (A).



23. Refill the transmission with the recommended transmission fluid (see page 13-82).

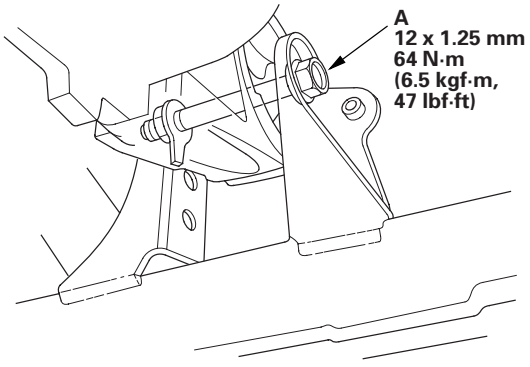
24. Lower the vehicle on the lift.

25. Tighten the upper torque rod mounting bolt (A).

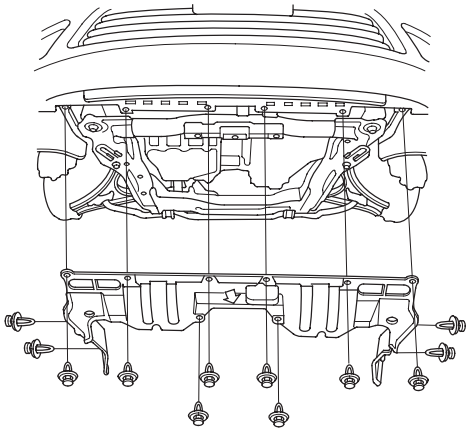


26. Raise the vehicle on the lift.

27. Tighten the front mount mounting bolt (A).



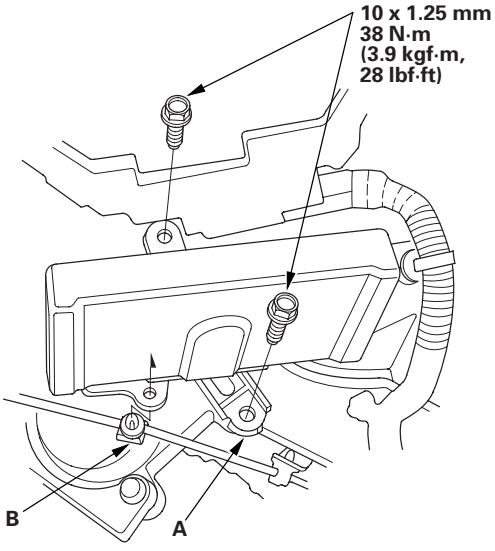
28. Install the splash shield.



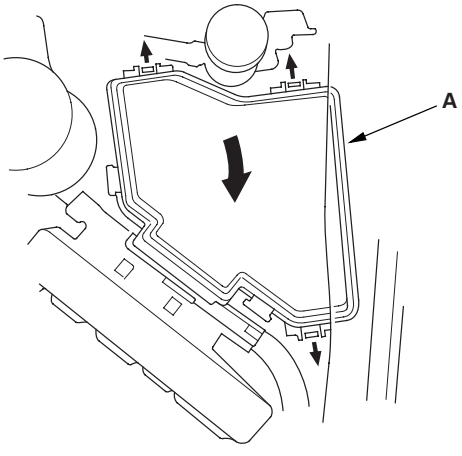
29. Lower the vehicle on the lift

30. Remove the engine support hanger and the engine hanger adapter from the engine.

31. Install the engine control module (ECM) bracket (A), then install the clutch pipe clamp (B).



32. Install the under-food fuse/relay box (A) on the under-hood fuse/relay bracket.



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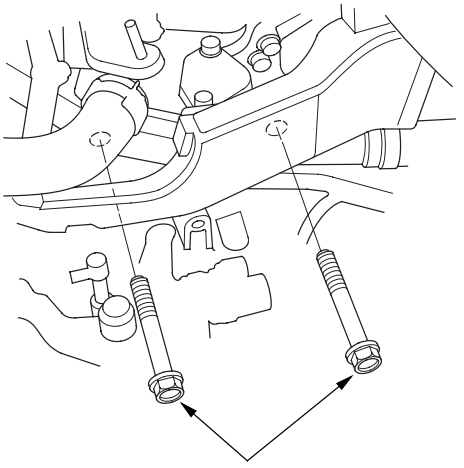
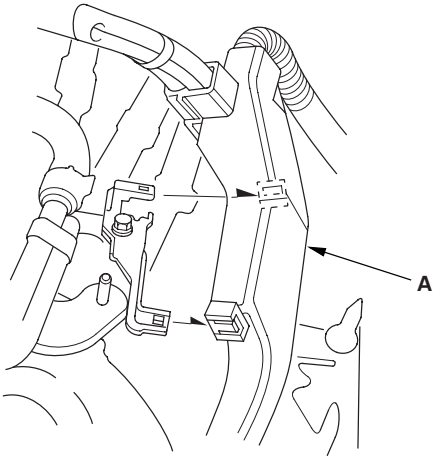
Transmission Installation (cont'd)

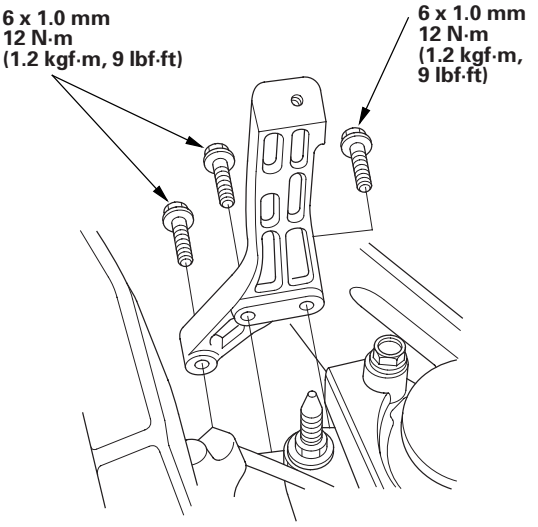
33. Install the two upper transmission mounting bolts.



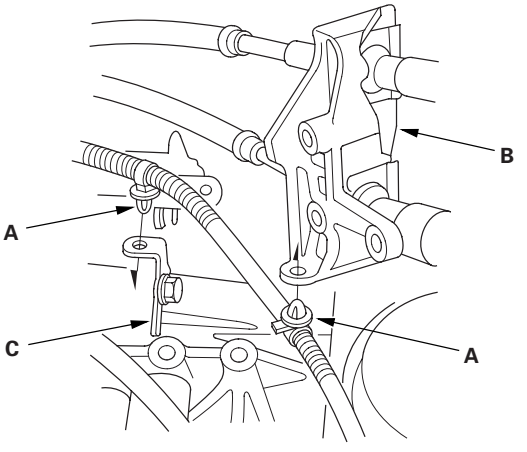
34. Install the engine harness cover (A).



35. Install the air cleaner housing mounting bracket.



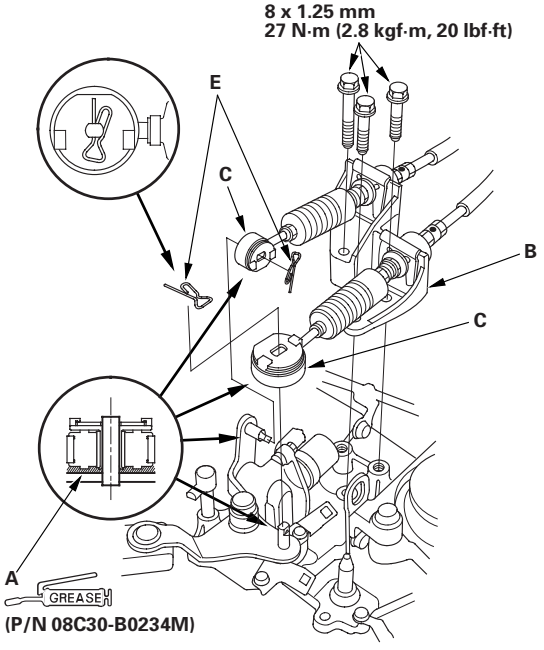
36. Install the harness clips (A) on the shift cable bracket (B) and the harness bracket (C).



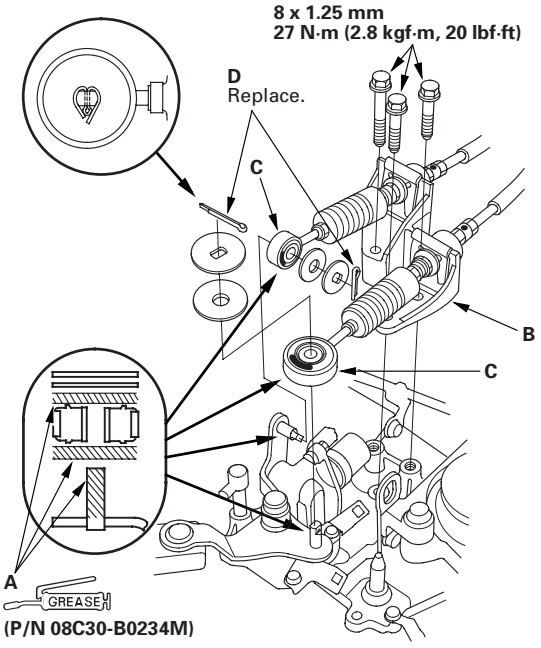
37. Apply a light coat of silicone grease (P/N 08C30-B0234M) to the shift cable ends (A).

NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves

'06 model

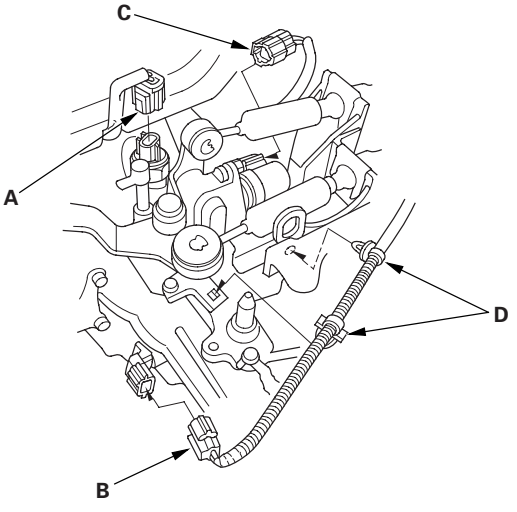


'07-09 models



38. Install the shift cable bracket (B) and the shift cables (C), then install new cotter pins (D) or lock pins (E).

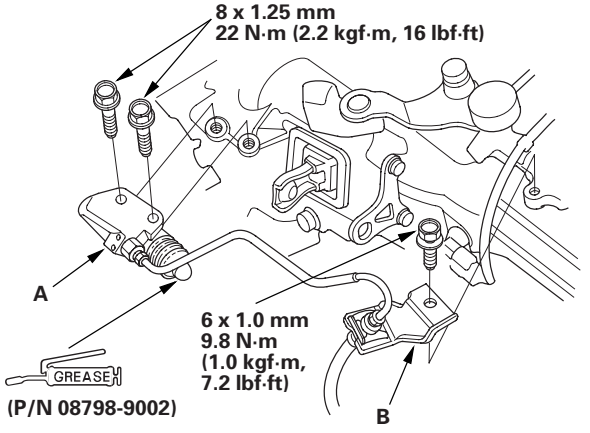
39. Connect the back-up light switch connector (A), the output shaft (countershaft) speed sensor connector (B), and the reverse lockout solenoid connector (C). Install the harness clips (D).



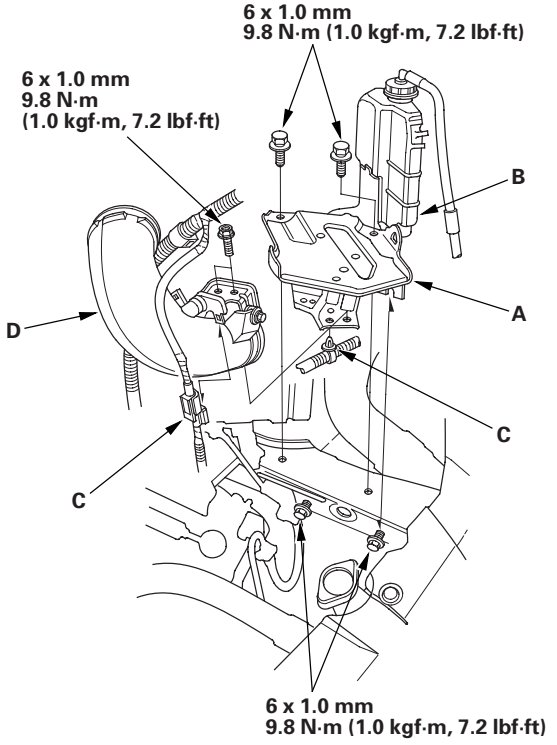
(cont'd)

Transmission Installation (cont'd)

40. Apply super high temp urea grease (P/N 08798-9002) to the end of the slave cylinder pushrod. Install the slave cylinder (A), then install the clutch line bracket (B). Be careful not to bend the clutch line.



41. Install the battery base (A) with the coolant reservoir (B).



42. Install the harness clips (C) and the intake air duct (D).

43. Install the air cleaner assembly (see page 11-345).

44. Do the battery installation procedure (see page 22-69).

45. Install the under-cowl panel and the cowl cover (see page 20-163).

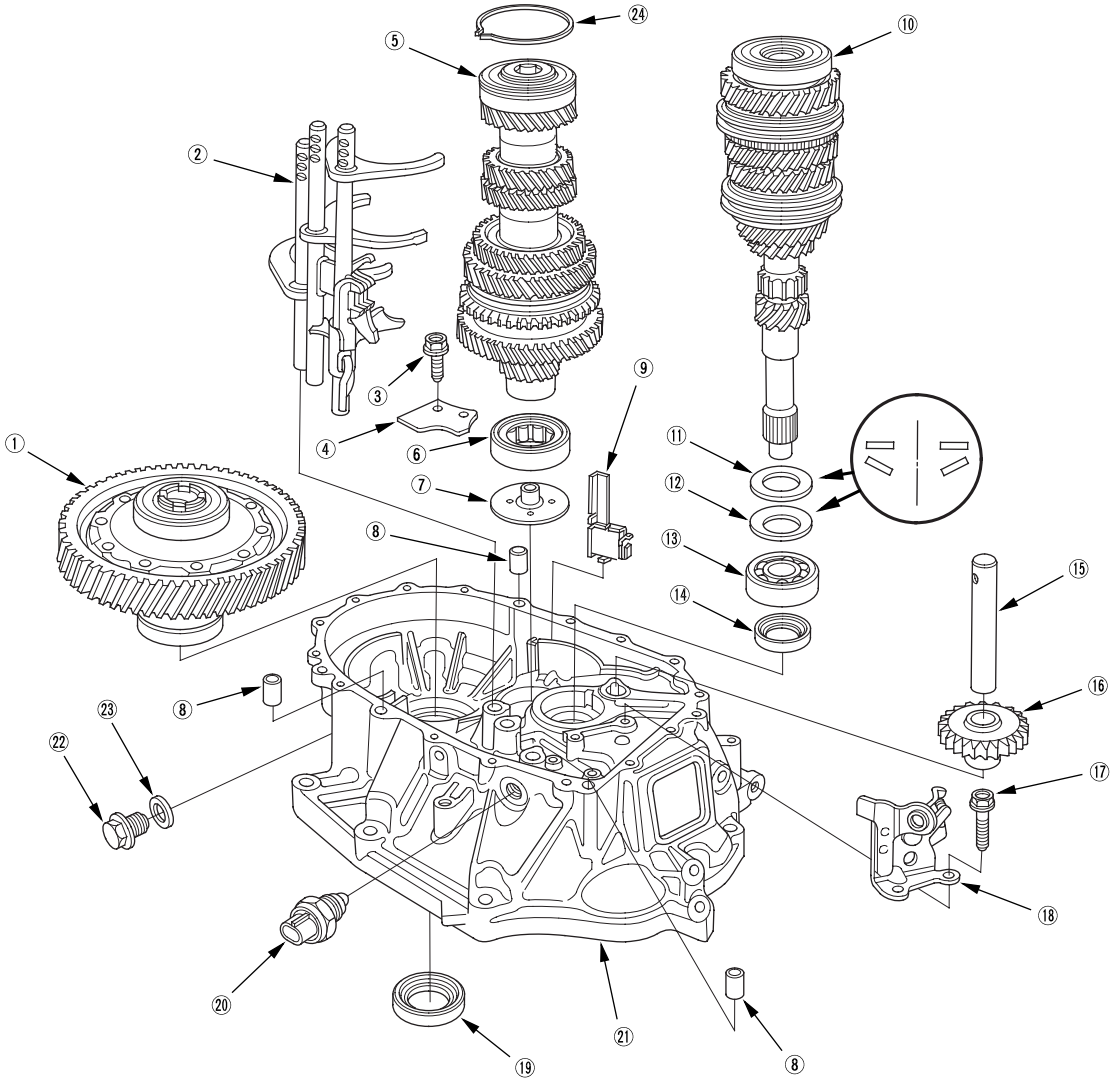
46. Check the shift lever and the clutch operation.

47. Check the wheel alignment (see page 18-5).

48. Test-drive the vehicle.

Transmission Disassembly

Exploded View - Clutch Housing

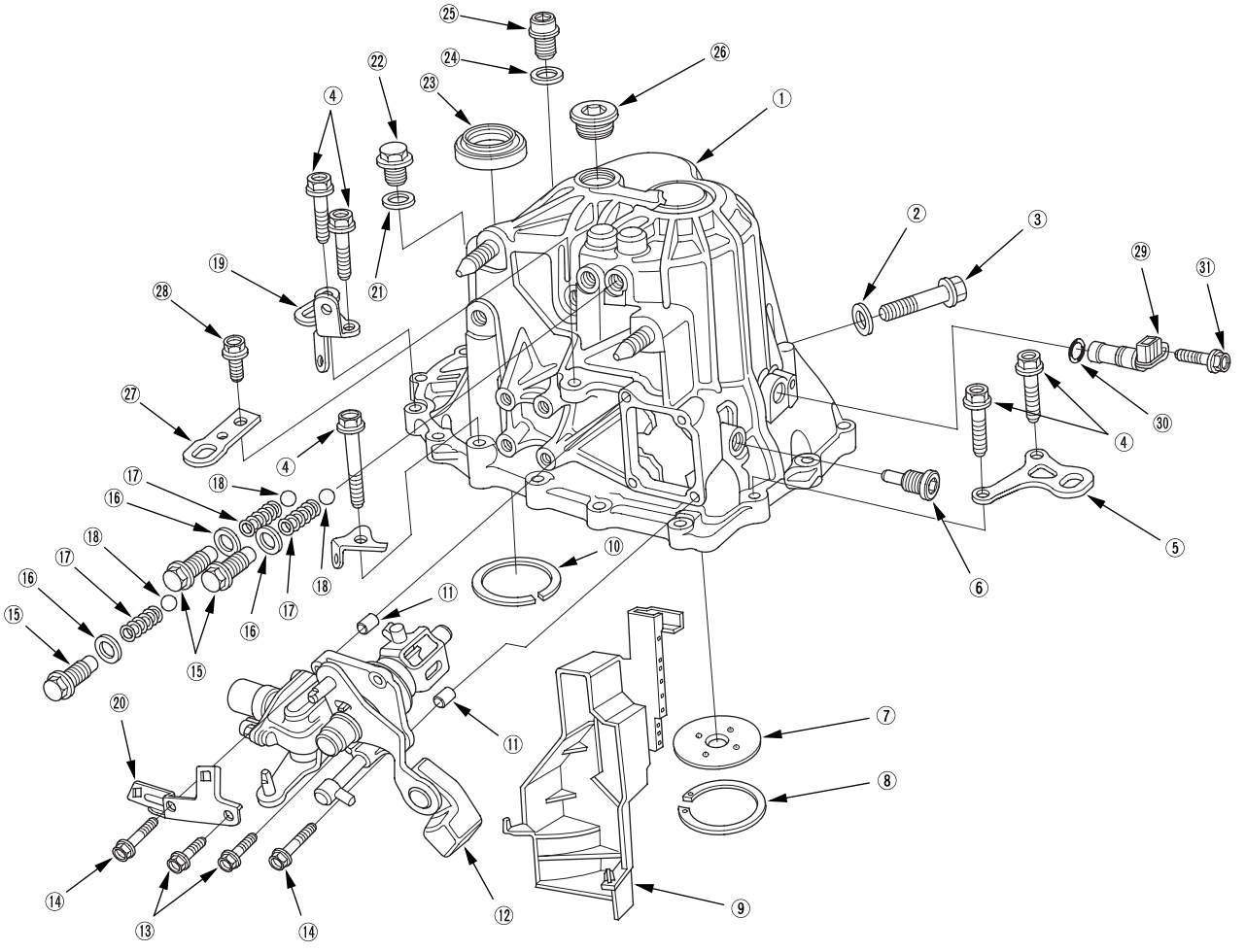


① **DIFFERENTIAL ASSEMBLY**
② **SHIFT FORK ASSEMBLY**
③ **6 mm FLANGE BOLT**
12 N·m (1.2 kgf·m, 9 lbf·ft)
④ **BEARING SET PLATE**
⑤ **COUNTERSHAFT ASSEMBLY**
⑥ **NEEDLE BEARING**
⑦ **OIL GUIDE PLATE C**
⑧ **14 x 20 mm DOWEL PIN**
⑨ **MAGNET**
⑩ **MAINSHAFT ASSEMBLY**
⑪ **28 mm WASHER**
⑫ **28 mm SPRING WASHER**
⑬ **BALL BEARING**
⑭ **28 x 43 x 7 mm OIL SEAL**
Replace.
⑮ **REVERSE IDLER GEAR SHAFT**
⑯ **REVERSE IDLER GEAR**
⑰ **6 mm SPECIAL BOLT**
15 N·m (1.5 kgf·m, 11 lbf·ft)
⑱ **REVERSE SHIFT FORK**
⑲ **35 x 58 x 8 mm OIL SEAL**
Replace.
⑳ **BACK-UP LIGHT SWITCH**
29 N·m (3.0 kgf·m, 22 lbf·ft)
㉑ **CLUTCH HOUSING**
㉒ **20 mm BOLT**
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ **20 mm WASHER**
Replace.
㉔ **72 mm SNAP RING**

(cont'd)

Transmission Disassembly (cont'd)

Exploded View - Transmission Housing

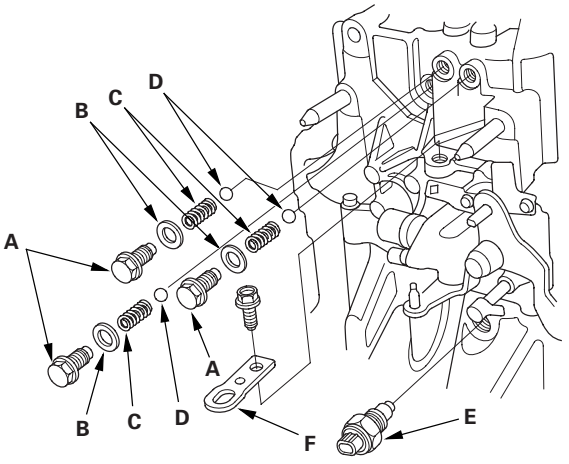


① TRANSMISSION HOUSING
② 10 mm SEALING WASHER
Replace.
③ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
④ 8 mm FLANGE BOLT
27 N·m (2.8 kgf·m, 20 lbf·ft)
⑤ TRANSMISSION HANGER A
⑥ INTERLOCK BOLT
39 N·m (4.0 kgf·m, 29 lbf·ft)
⑦ OIL GUIDE PLATE M
⑧ 72 mm SHIM
⑨ OIL GUTTER PLATE
⑩ 80 mm SHIM
⑪ 8 x 14 mm DOWEL PIN
⑫ CHANGE LEVER ASSEMBLY
⑬ 6 x 30 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑭ 6 x 20 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)
⑮ DETENT BOLT
22 N·m (2.2 kgf·m, 16 lbf·ft)
⑯ 12 mm SEALING WASHER
Replace.
⑰ SPRING
⑱ STEEL BALL
⑲ TRANSMISSION HANGER B
⑳ HARNESS BRACKET A
㉑ 20 mm SEALING WASHER
Replace.
㉒ FILLER PLUG
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉓ 40 x 56 x 8 mm OIL SEAL
Replace.
㉔ 14 mm SEALING WASHER
Replace.
㉕ DRAIN PLUG
39 N·m (4.0 kgf·m, 29 lbf·ft)
㉖ 32 mm SEALING CAP
34 N·m (3.5 kgf·m, 25 lbf·ft)
㉗ TRANSMISSION HANGER
㉘ 10 mm FLANGE BOLT
44 N·m (4.5 kgf·m, 33 lbf·ft)
㉙ OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR
㉚ O-RING
Replace.
㉛ 6 mm FLANGE BOLT
12 N·m (1.2 kgf·m, 9 lbf·ft)

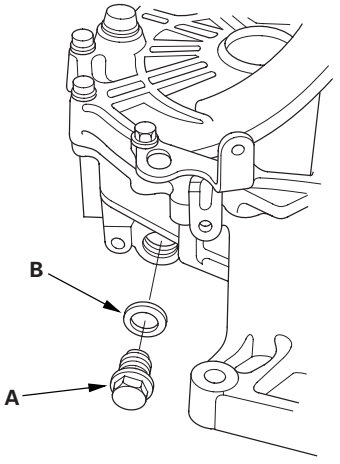
NOTE: Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

1. Remove the release fork and the release bearing (see page 12-24).

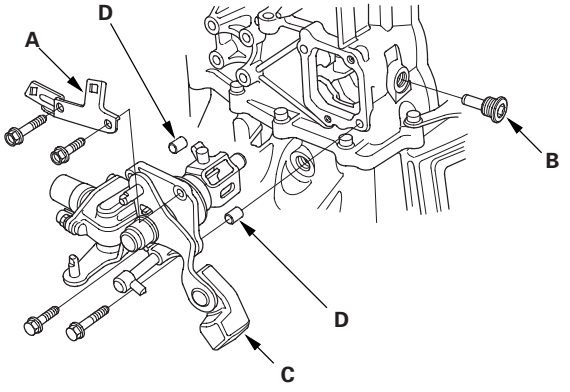
2. Remove the detent bolts (A), the 12 mm sealing washers (B) the springs (C), the steel balls (D), and the back-up light switch (E). Then remove the transmission hanger (F).



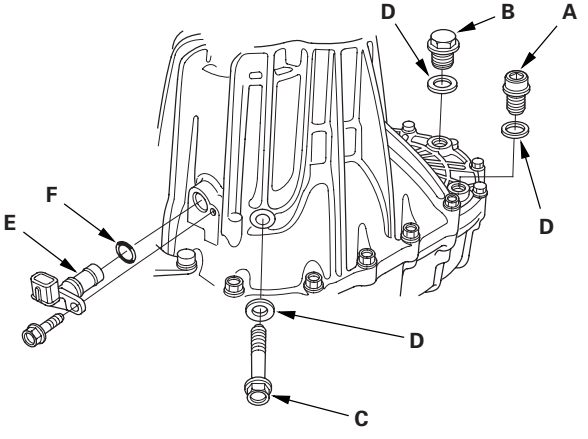
3. Remove the 20 mm bolt (A) and the 20 mm sealing washer (B).



4. Remove the interlock bolt (B), the change lever assembly (C), the 8 x 14 mm dowel pins (D), and harness bracket A.



5. Remove the drain plug (A), the filler plug (B), the 10 mm flange bolt (C), and the sealing washers (D).

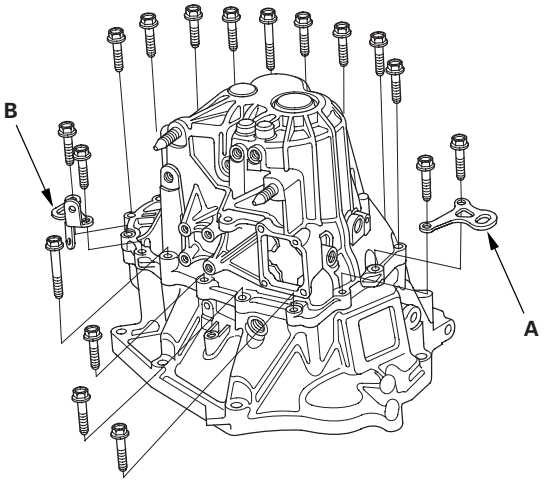


6. Remove the output shaft (countershaft) speed sensor (E) with the O-ring (F).

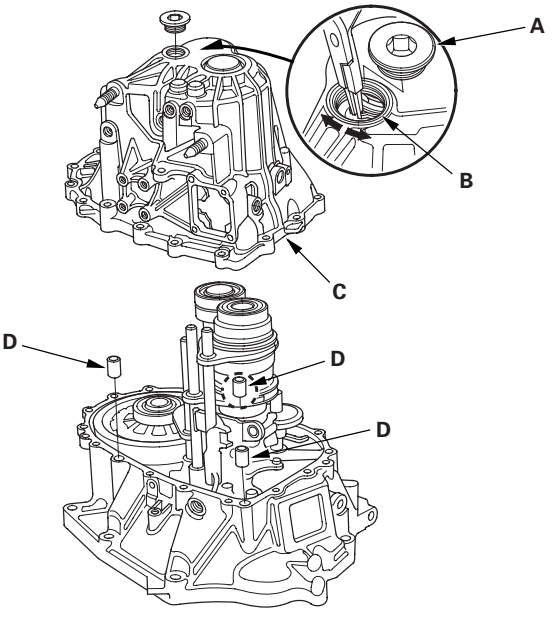
(cont'd)

Transmission Disassembly (cont'd)

7. Loosen the 8 mm flange bolts in a crisscross pattern in several steps, then remove them with transmission hanger A and transmission hanger B.

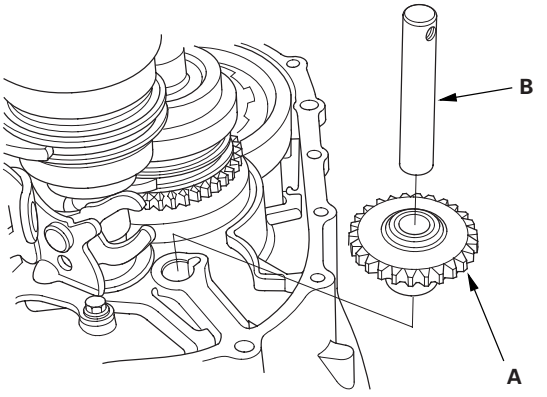


8. Remove the 32 mm sealing cap (A).

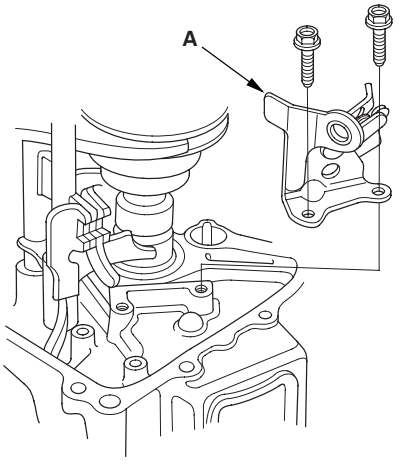


9. While expanding the 72 mm snap ring (B) on the countershaft ball bearing with snap ring pliers, lift the transmission housing (C). Release the snap ring pliers, and remove the transmission housing and the three 14 x 20 mm dowel pins (D).

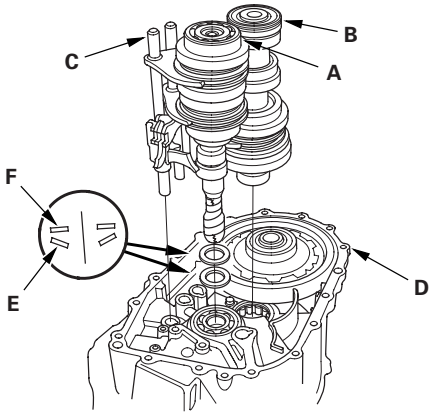
10. Remove the reverse idler gear (A) and the reverse idler gear shaft (B).



11. Remove the reverse shift fork (A).

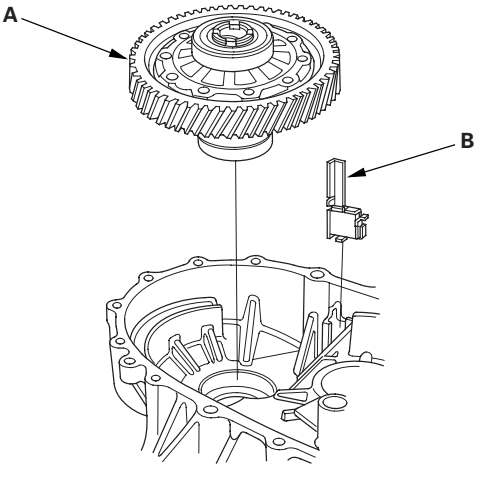


12. Apply tape to the mainshaft splines to protect the seal, then remove the mainshaft assembly (A) and the countershaft assembly (B) with the shift fork assembly (C) from the clutch housing (D).

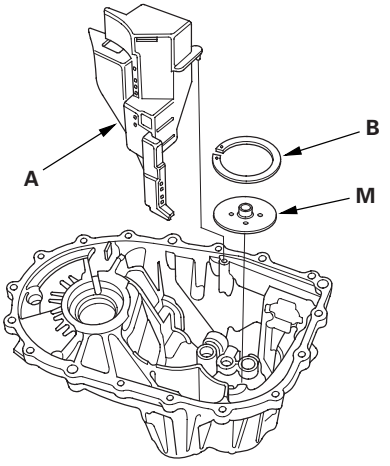


13. Remove the 28 mm spring washer (E) and the 28 mm washer (F).

14. Remove the differential assembly (A) and the magnet (B).



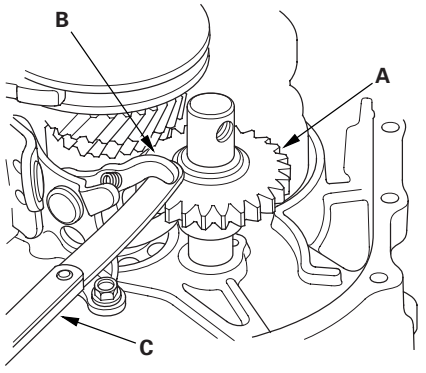
15. Remove the oil gutter plate (A), the 72 mm shim (B), and oil guide plate M.



Reverse Shift Fork Clearance Inspection

1. Measure the clearance between the reverse idler gear (A) and the reverse shift fork (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

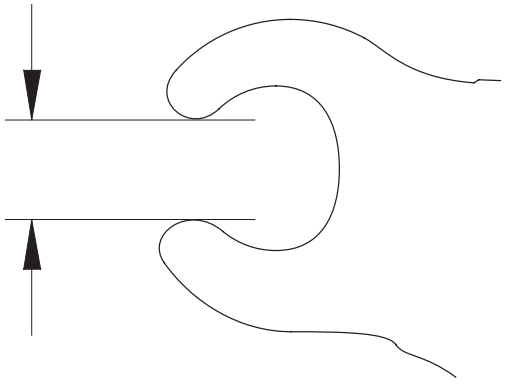
   Standard: 0.20—0.59 mm (0.008—0.023 in.)
   Service Limit: 1.3 mm (0.051 in.)



2. Measure the width of the reverse shift fork.

   - If the width is not within the standard, replace the reverse shift fork.
   - If the width is within the standard, replace the reverse idler gear.

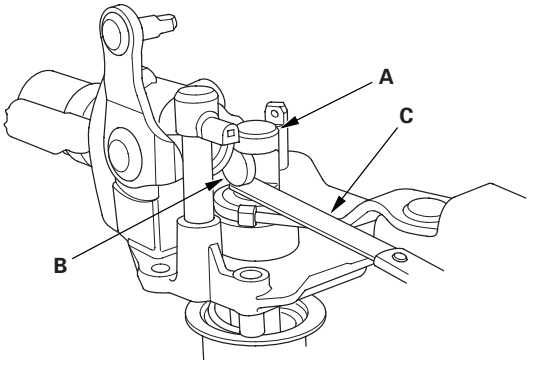
   Standard: 13.4—13.7 mm (0.528—0.539 in.)



Change Lever Clearance Inspection

1. Measure the clearance between the change lever (A) and the select lever (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 2.

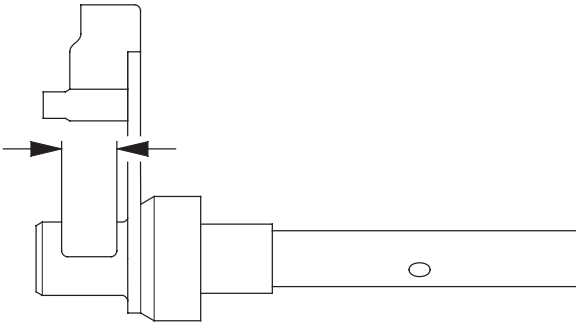
   Standard: 0.05—0.25 mm (0.002—0.010 in.)
   Service Limit: 0.50 mm (0.020 in.)



2. Measure the groove width of the change lever.

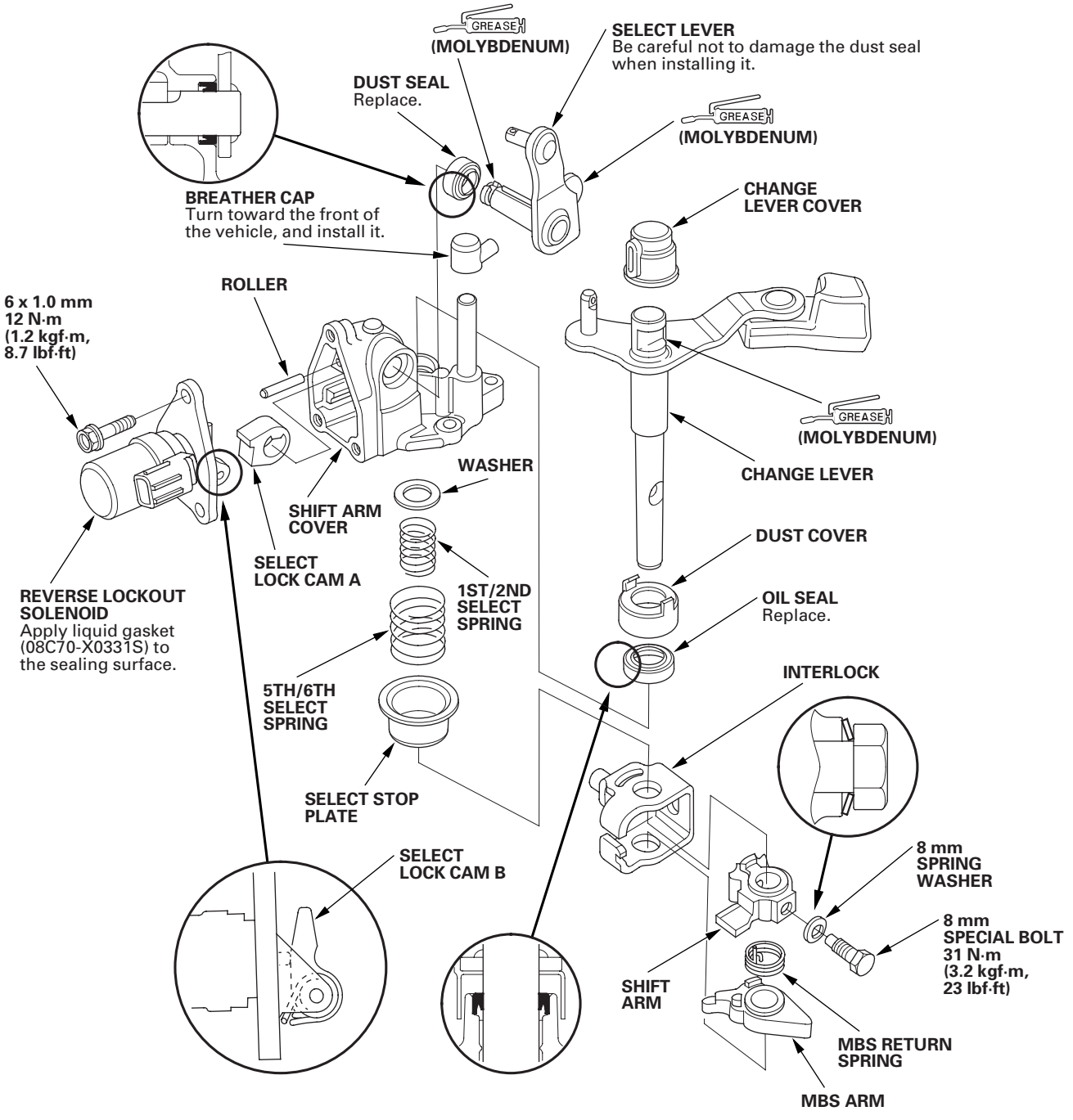
   - If the groove width is not within the standard, replace the change lever.
   - If the groove width is within the standard, replace the select lever.

   Standard: 15.00—15.10 mm (0.591—0.594 in.)



Change Lever Assembly Disassembly/Reassembly

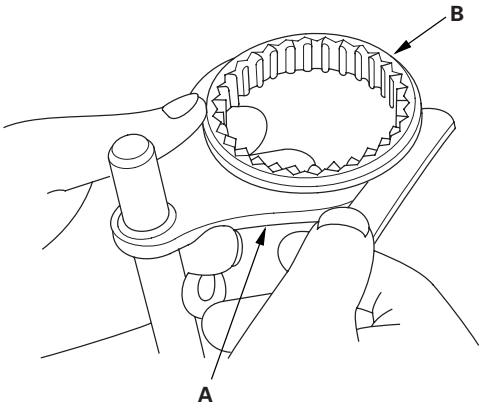
NOTE:
- Do not install components if too much time has passed after applying liquid gasket. Instead, remove the old residue, and reapply liquid gasket.
- Prior to reassembling, clean all parts in solvent, dry them, and apply grease to the contact surfaces as shown.



Shift Fork Clearance Inspection

1. Measure the clearance between each shift fork (A) and its matching synchro sleeve (B). If the clearance exceeds the service limit, go to step 2.

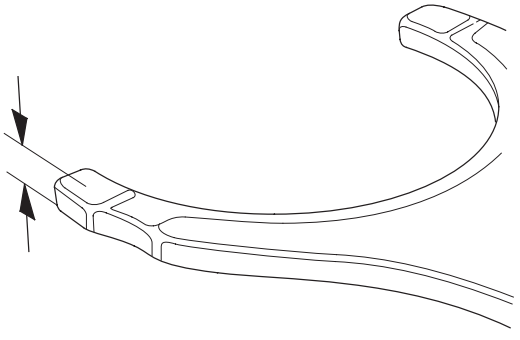
   Standard: 0.35—0.65 mm (0.014—0.026 in.)
   Service Limit: 1.0 mm (0.039 in.)



2. Measure the thickness of the shift fork fingers.

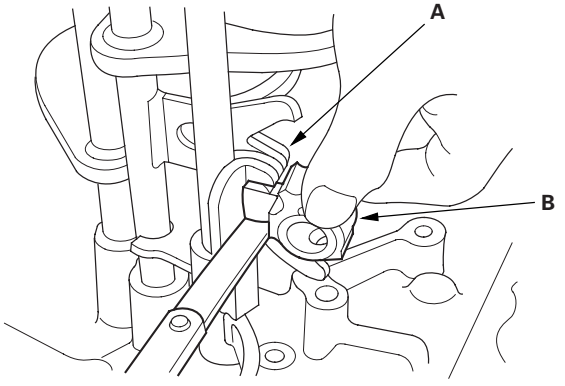
   - If the thickness is not within the standard, replace the shift fork.
   - If the thickness is within the standard, replace the synchro sleeve and the synchro hub as a set.
   - If one arm of the shift fork shows more wear than others, the fork may be bent and needs to be replaced.

   Standard: 7.4—7.6 mm (0.29—0.30 in.)



3. Measure the clearance between the shift fork (A) and the shift arm (B). If the clearance exceeds the service limit, go to step 4.

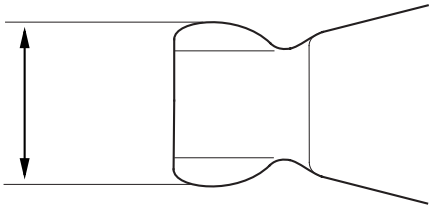
   Standard: 0.2—0.5 mm (0.008—0.020 in.)
   Service Limit: 0.62 mm (0.024 in.)



4. Measure the width of the shift arm.

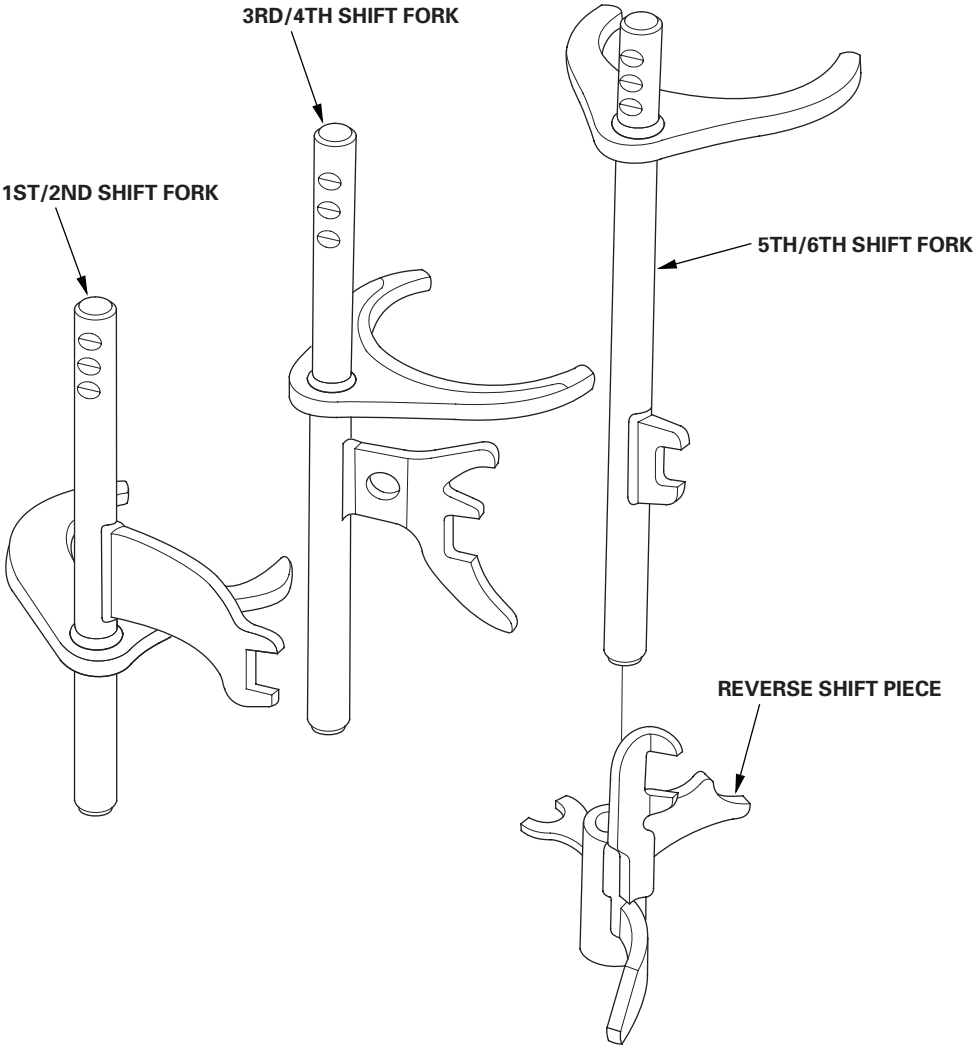
   - If the width is not within the standard, replace the shift arm.
   - If the width is within the standard, replace the shift fork or the reverse shift piece.

   Standard: 16.9—17.0 mm (0.665—0.669 in.)



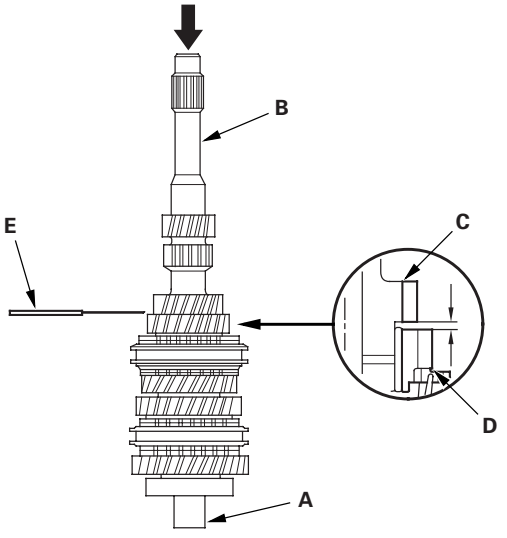
Shift Fork Disassembly/Reassembly

NOTE: Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to all contact surfaces.



Mainshaft Assembly Clearance Inspection

1. Support the bearing inner race with an appropriate sized socket (A), and push down on the mainshaft (B).



2. Measure the clearance between 2nd gear (C) and 3rd gear (D) with a feeler gauge (E).

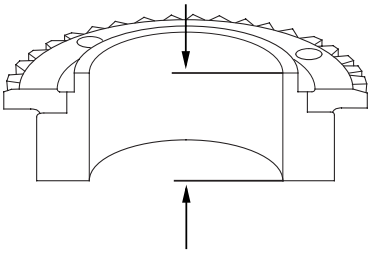
   - If the clearance exceeds the service limit, go to step 3.
   - If the clearance is within the service limit, go to step 4.

   Standard: **0.06—0.16 mm (0.002—0.006 in.)**
   Service Limit: **0.25 mm (0.010 in.)**

3. Measure the thickness of 3rd gear.

   - If the thickness is less than the service limit, replace 3rd gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

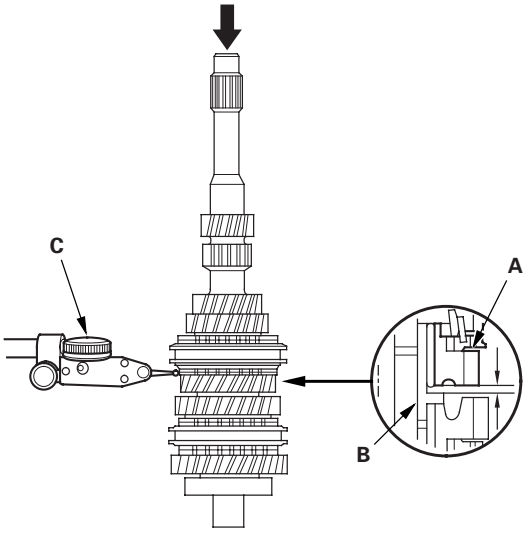
   Standard: **23.92—23.97 mm (0.942—0.944 in.)**
   Service Limit: **23.80 mm (0.937 in.)**



4. Measure the clearance between 4th gear (A) and the 4th/5th gear distance collar (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 5.
   - If the clearance is within the service limit, go to step 7.

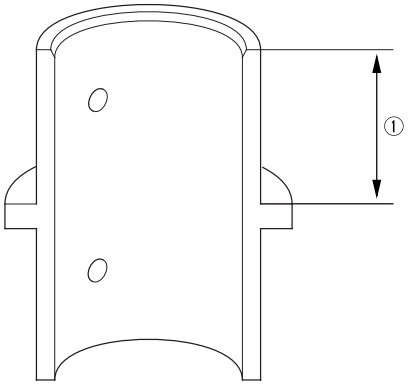
   Standard: **0.06—0.16 mm (0.002—0.006 in.)**
   Service Limit: **0.25 mm (0.010 in.)**



5. Measure the length ① of the 4th/5th gear distance collar as shown.

   - If the length ① is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ① is within the standard, go to step 6.

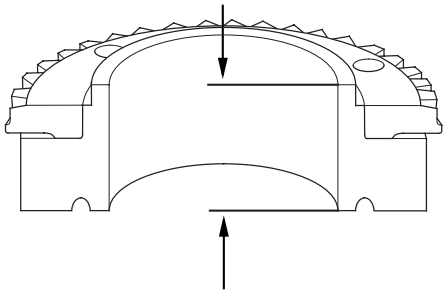
   Standard: 24.03—24.08 mm (0.946—0.948 in.)



6. Measure the thickness of 4th gear.

   - If the thickness is less than the service limit, replace 4th gear.
   - If the thickness is within the service limit, replace the 3rd/4th synchro hub and the 3rd/4th synchro sleeve as a set.

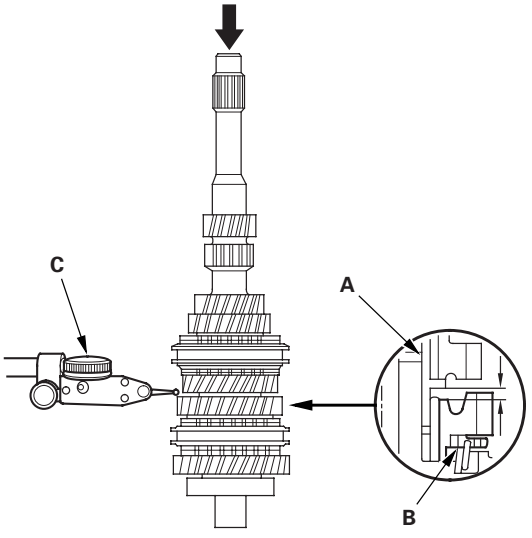
   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



7. Measure the clearance between the 4th/5th gear distance collar (A) and 5th gear (B) with a dial indicator (C).

   - If the clearance exceeds the service limit, go to step 8.
   - If the clearance is within the service limit, go to step 10.

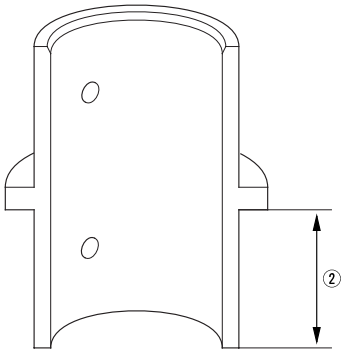
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



8. Measure the length ② of the 4th/5th gear distance collar as shown.

   - If the length ② is not within the standard, replace the 4th/5th gear distance collar.
   - If the length ② is within the standard, go to step 9.

   Standard: 24.03—24.08 mm (0.946—0.948 in.)



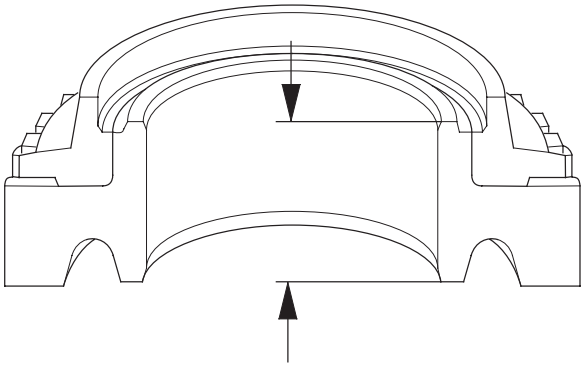
(cont'd)

Mainshaft Assembly Clearance Inspection (cont'd)

9. Measure the thickness of 5th gear.

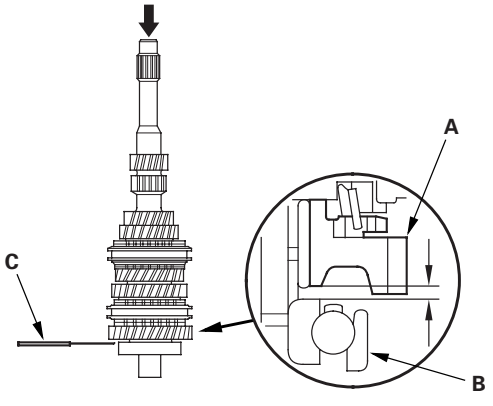
   - If the thickness is less than the service limit, replace 5th gear.
   - If the thickness is within the service limit, replace the 5th/6th synchro hub and the 5th/6th synchro sleeve as a set.

   Standard: 23.92—23.97 mm (0.942—0.944 in.)
   Service Limit: 23.80 mm (0.937 in.)



10. Measure the clearance between 6th gear (A) and the angular ball bearing (B) with a feeler gauge (C). If the clearance exceeds the service limit, go to step 11.

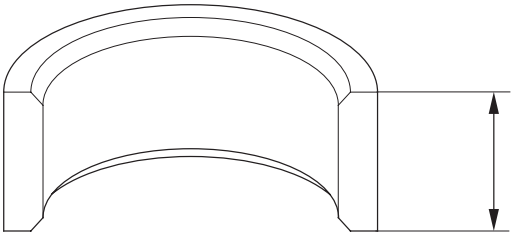
    Standard: 0.06—0.16 mm (0.002—0.006 in.)
    Service Limit: 0.25 mm (0.010 in.)



11. Measure the length of the 6th gear distance collar.

    - If the length is not within the standard, replace the 6th gear distance collar.
    - If the length is within the standard, go to step 12.

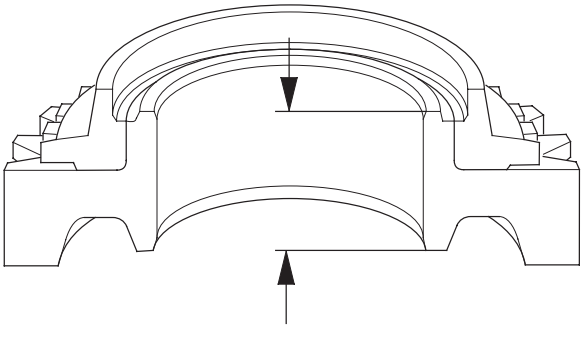
    Standard: 24.03—24.08 mm (0.946—0.948 in.)



12. Measure the thickness of 6th gear.

    - If the thickness is less than the service limit, replace 6th gear.
    - If the thickness is within the service limit, replace the 5th/6th synchro hub and the 5th/6th synchro sleeve as a set.

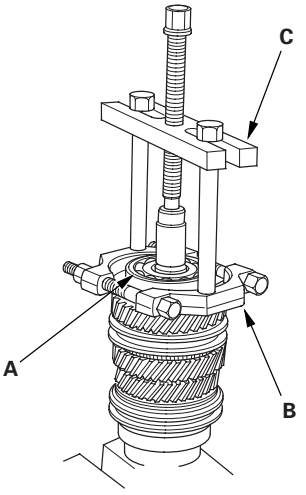
    Standard: 23.92—23.97 mm (0.942—0.944 in.)
    Service Limit: 23.80 mm (0.937 in.)



Mainshaft Disassembly

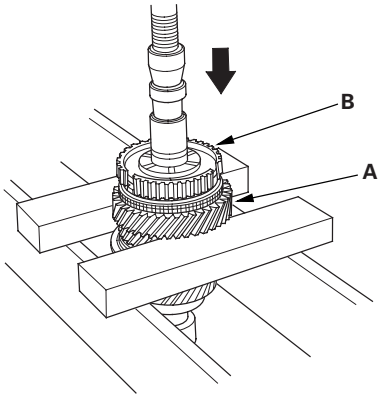
NOTE: Refer to the Exploded view in the Mainshaft Reassembly, as needed, when removing components pressed on to the mainshaft (see page 13-113).

1. Remove the angular ball bearing (A) using a commercially available bearing separator (B) and a commercially available bearing puller (C).



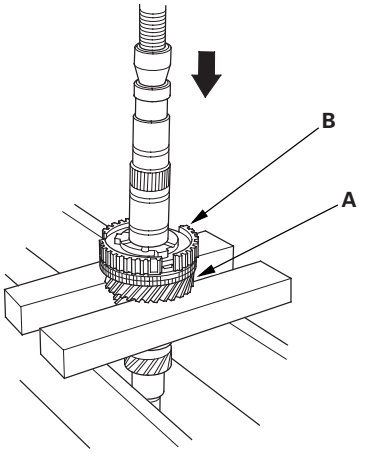
2. Support 5th gear (A) on steel blocks, and press the mainshaft out of the 5th/6th synchro hub (B) and 5th gear.

   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



3. Support 3rd gear (A) on steel blocks, and press the mainshaft out of the 3rd/4th synchro hub (B) and 3rd gear.

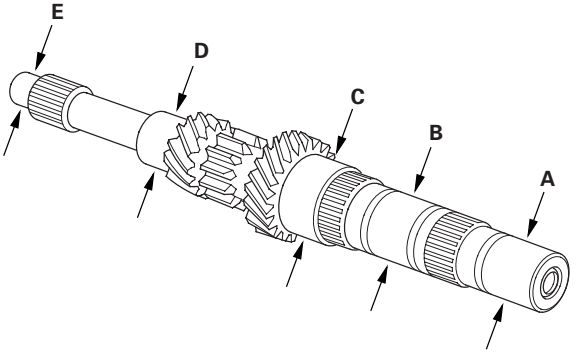
   NOTE: Do not use a jaw-type puller; it can damage the gear teeth.



Mainshaft Inspection

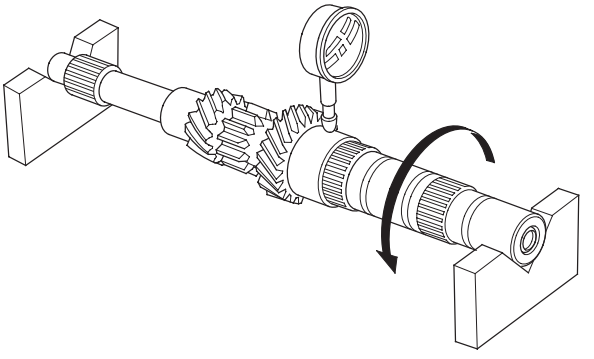
1. Inspect the gear and bearing contact areas for wear and damage, then measure the mainshaft at points A, B, C, D, and E. If any part of the mainshaft is less than the service limit, replace it.

Standard:
A Ball Bearing Contact Area (Transmission Housing Side):
27.987—28.000 mm (1.1018—1.1024 in.)
B 4th/5th Gear Distance Collar Contact Area:
31.984—32.000 mm (1.2592—1.2598 in.)
C Needle Bearing Contact Area:
38.984—39.000 mm (1.5348—1.5354 in.)
D Ball Bearing Contact Area (Clutch Housing Side):
27.977—27.990 mm (1.1015—1.1020 in.)
E Bushing Contact Area:
20.80—20.85 mm (0.819—0.821 in.)
Service Limit:
A: 27.93 mm (1.100 in.)
B: 31.93 mm (1.257 in.)
C: 38.93 mm (1.533 in.)
D: 27.92 mm (1.099 in.)
E: 20.75 mm (0.817 in.)



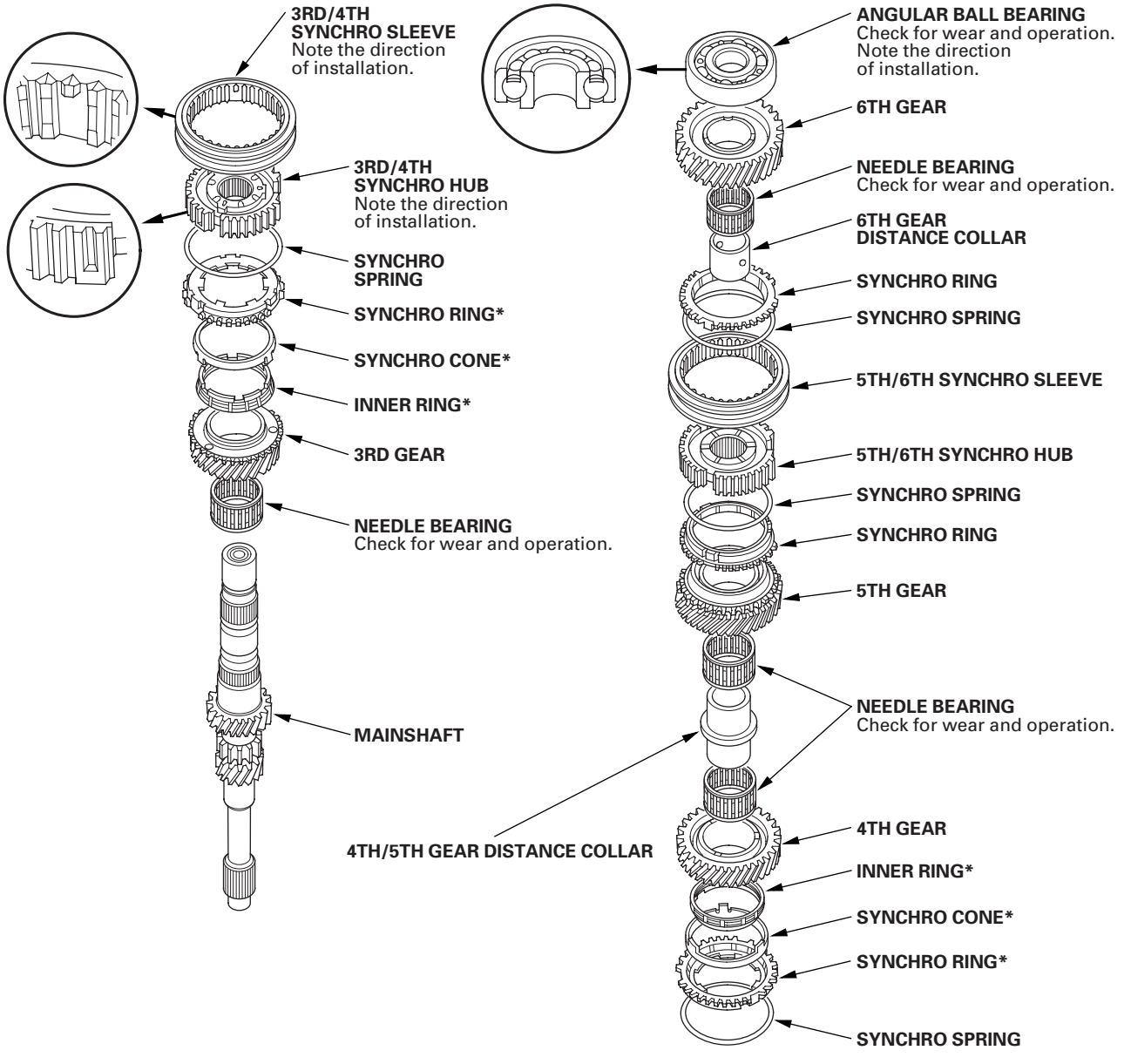
2. Inspect the runout by supporting both ends of the mainshaft. Then rotate the mainshaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the mainshaft.

Standard: 0.02 mm (0.001 in.) max.
Service Limit: 0.05 mm (0.002 in.)



Mainshaft Reassembly

Exploded View



*: The components of the double cone synchro assembly.

(cont'd)

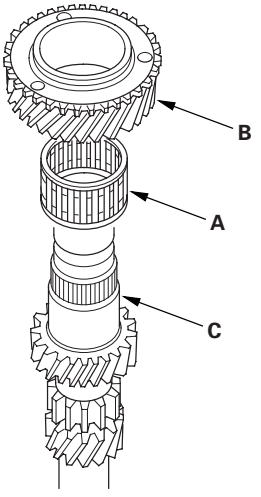
Mainshaft Reassembly (cont'd)

Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

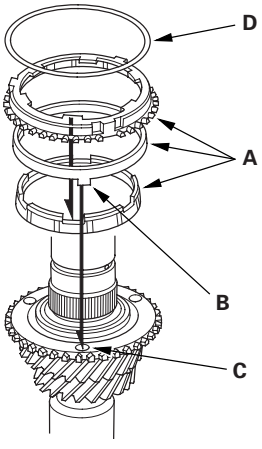
NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

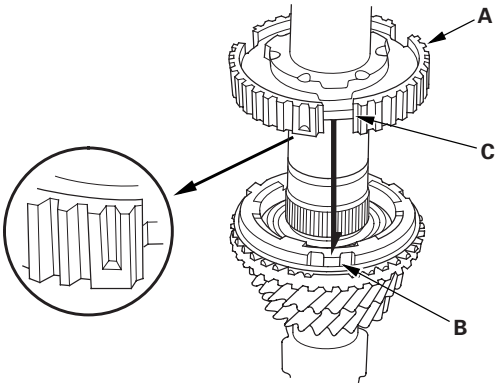
2. Install the needle bearing (A) and 3rd gear (B) on the mainshaft (C).



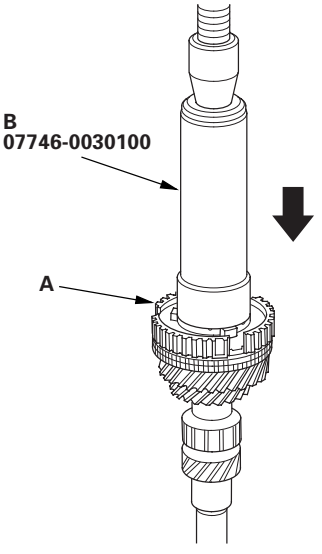
3. Install the double cone synchro assembly (A) by aligning the synchro cone fingers (B) with the holes (C) in 3rd gear, then install the synchro spring (D).



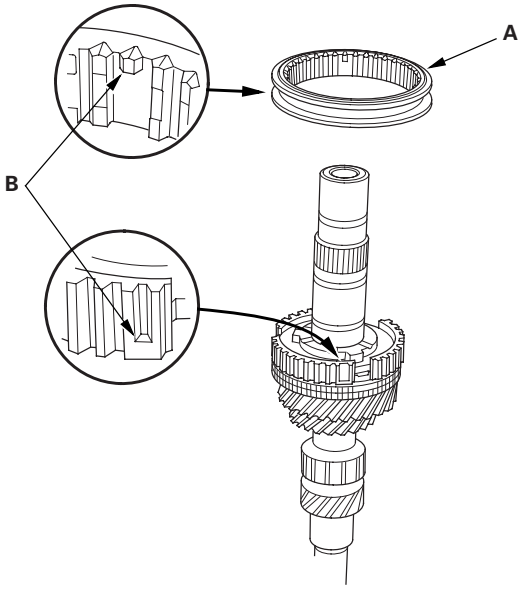
4. Install the 3rd/4th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 3rd/4th synchro hub.



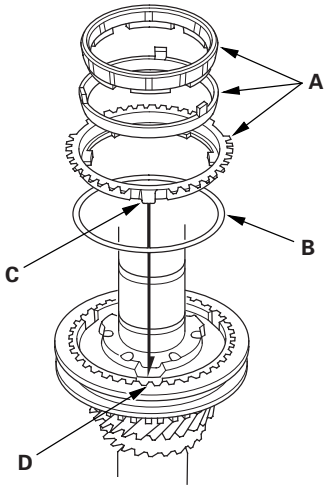
5. Press on the 3rd/4th synchro hub (A) using the 40 mm inner driver handle (B) and a press.



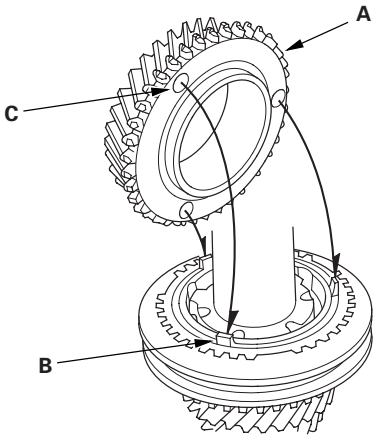
6. Install the 3rd/4th synchro sleeve (A) by aligning the stops (B) of the 3rd/4th synchro sleeve and the 3rd/4th synchro hub. After installing, check the operation of the 3rd/4th synchro hub set.



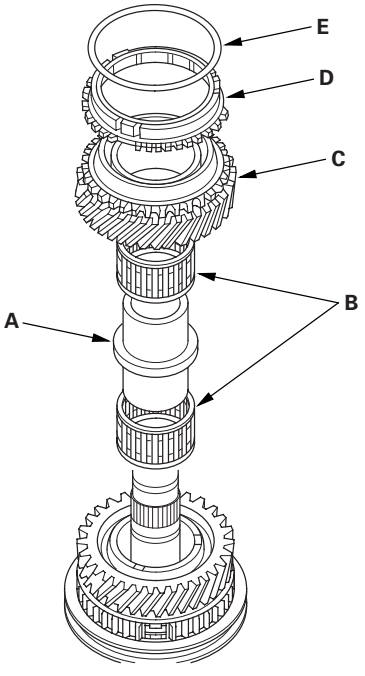
7. Install the double cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 3rd/4th synchro hub.



8. Install 4th gear (A) by aligning the synchro cone fingers (B) with the holes (C) in 4th gear.



9. Install the 4th/5th gear distance collar (A) with the needle bearings (B), then install 5th gear (C).

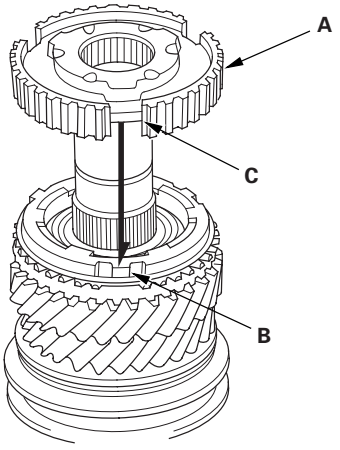


10. Install the synchro ring (D) with the synchro spring (E) onto 5th gear.

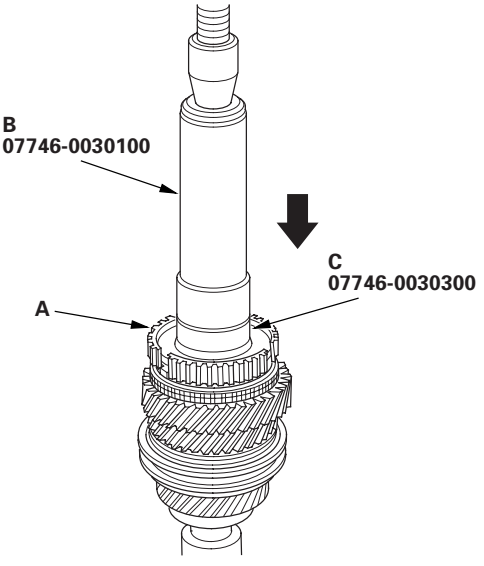
(cont'd)

Mainshaft Reassembly (cont'd)

11. Install the 5th/6th synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 5th/6th synchro hub.

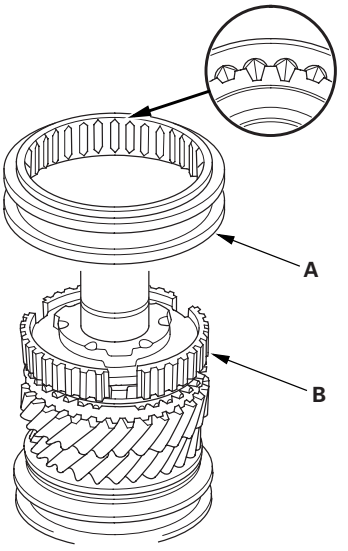


12. Press on the 5th/6th synchro hub (A) using the 40 mm inner driver handle (B) and the 30 mm inner bearing driver attachment (C).

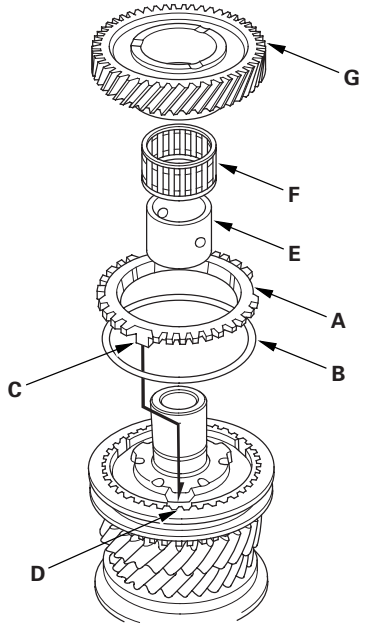


13. Install the 5th/6th synchro sleeve (A) by aligning the slots of the 5th/6th synchro sleeve and the 5th/6th synchro hub (B). After installing, check the operation of the 5th/6th synchro hub set.

NOTE: Make sure to align the slots in the 5th/6th synchro hub as shown.

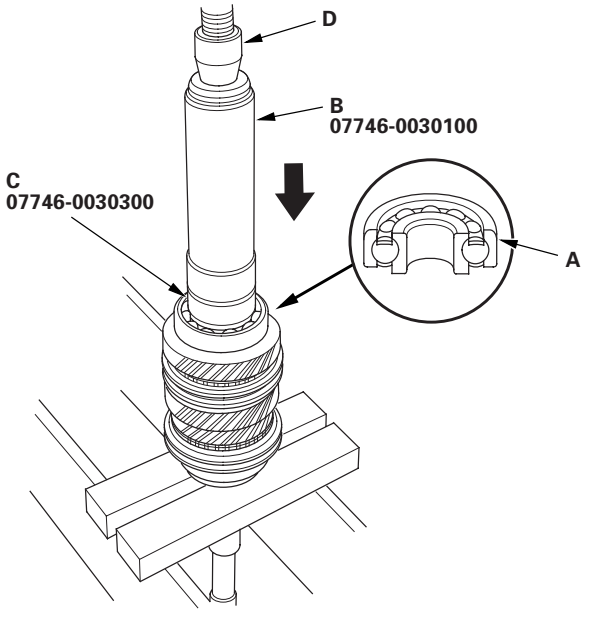


14. Install the synchro ring (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 5th/6th synchro hub.



15. Install the 6th gear distance collar (E) with the needle bearing (F), then install 6th gear (G).

16. Press on new angular ball bearing (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press (D).

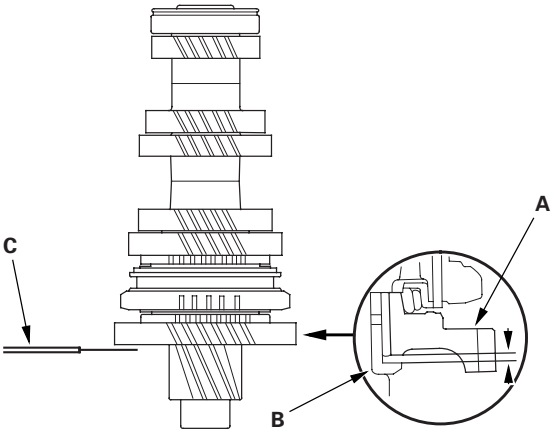


Countershaft Assembly Clearance Inspection

1. Measure the clearance between 1st gear (A) and the 1st gear distance collar (B) with a feeler gauge (C).

   - If the clearance exceeds the service limit, go to step 2.
   - If the clearance is within the service limit, go to step 4.

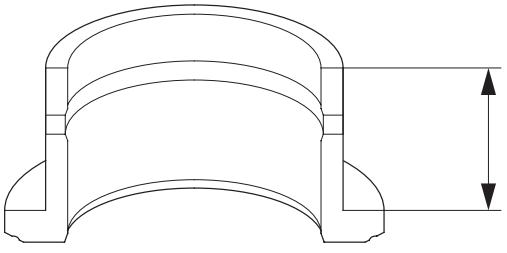
   Standard: 0.06—0.16 mm (0.002—0.006 in.)
   Service Limit: 0.25 mm (0.010 in.)



2. Measure the length of the 1st gear distance collar as shown.

   - If the length is not within the standard, replace the 1st gear distance collar.
   - If the length is within the standard, go to step 3.

   Standard: 23.03—23.08 mm (0.907—0.909 in.)

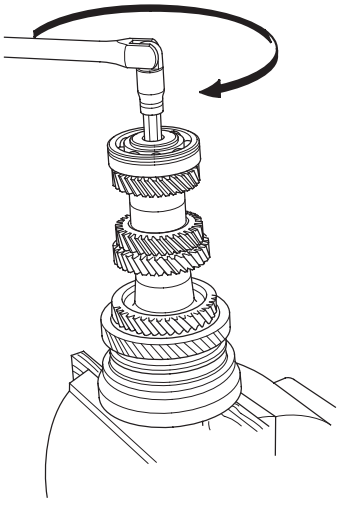


(cont'd)

Countershaft Disassembly

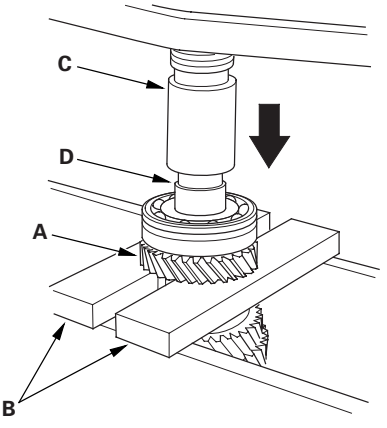
NOTE: Refer to the Exploded View in the Countershaft Reassembly, as needed, when removing components pressed on to the countershaft (see page 13-121).

1. Securely clamp the countershaft assembly in a bench vise with wood blocks.



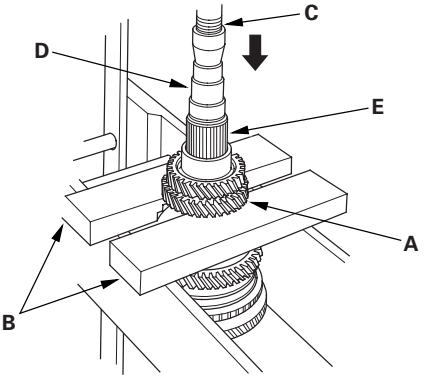
2. Remove the special bolt (left-hand threads).

3. Support 6th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft out of the ball bearing and 6th gear.

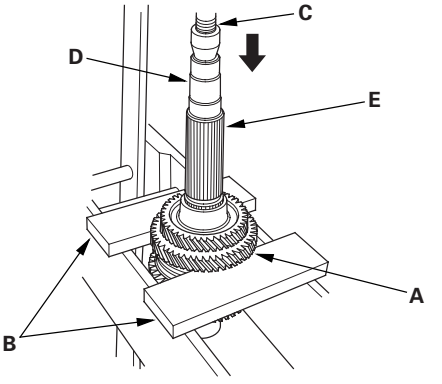


4. Remove the 35 mm shim.

5. Support 4th gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 4th gear and 5th gear.



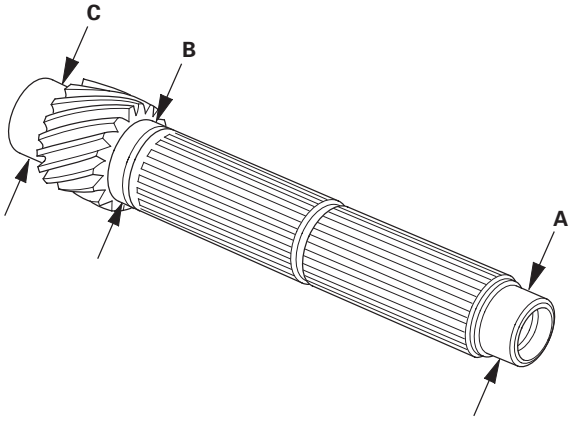
6. Support 2nd gear (A) on steel blocks (B), then use a press (C) and an attachment (D) to press the countershaft (E) out of 2nd gear and 3rd gear.



Countershaft Inspection

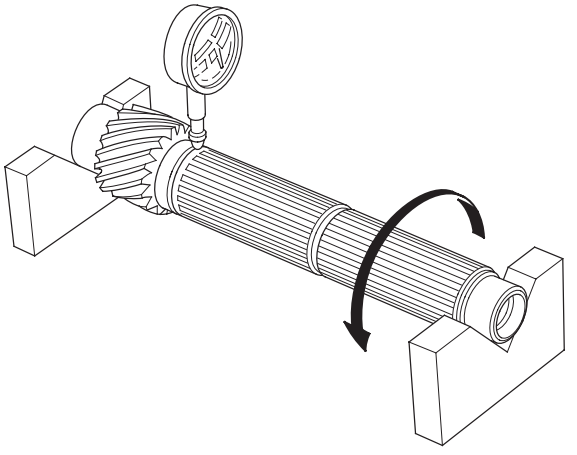
1. Inspect the gear and bearing contact areas for wear and damage, then measure the countershaft at points A, B, and C. If any part of the countershaft is less than the service limit, replace it.

   Standard:
   A Ball Bearing Contact Area (Transmission Housing Side):
   30.020—30.033 mm (1.1819—1.1824 in.)
   B 1st Gear Distance Collar Contact Area:
   39.937—39.950 mm (1.5723—1.5728 in.)
   C Needle Bearing Contact Area (Clutch Housing Side):
   35.000—35.015 mm (1.3780—1.3785 in.)
   Service Limit:
   A: 29.97 mm (1.180 in.)
   B: 39.883 mm (1.5702 in.)
   C: 34.95 mm (1.376 in.)



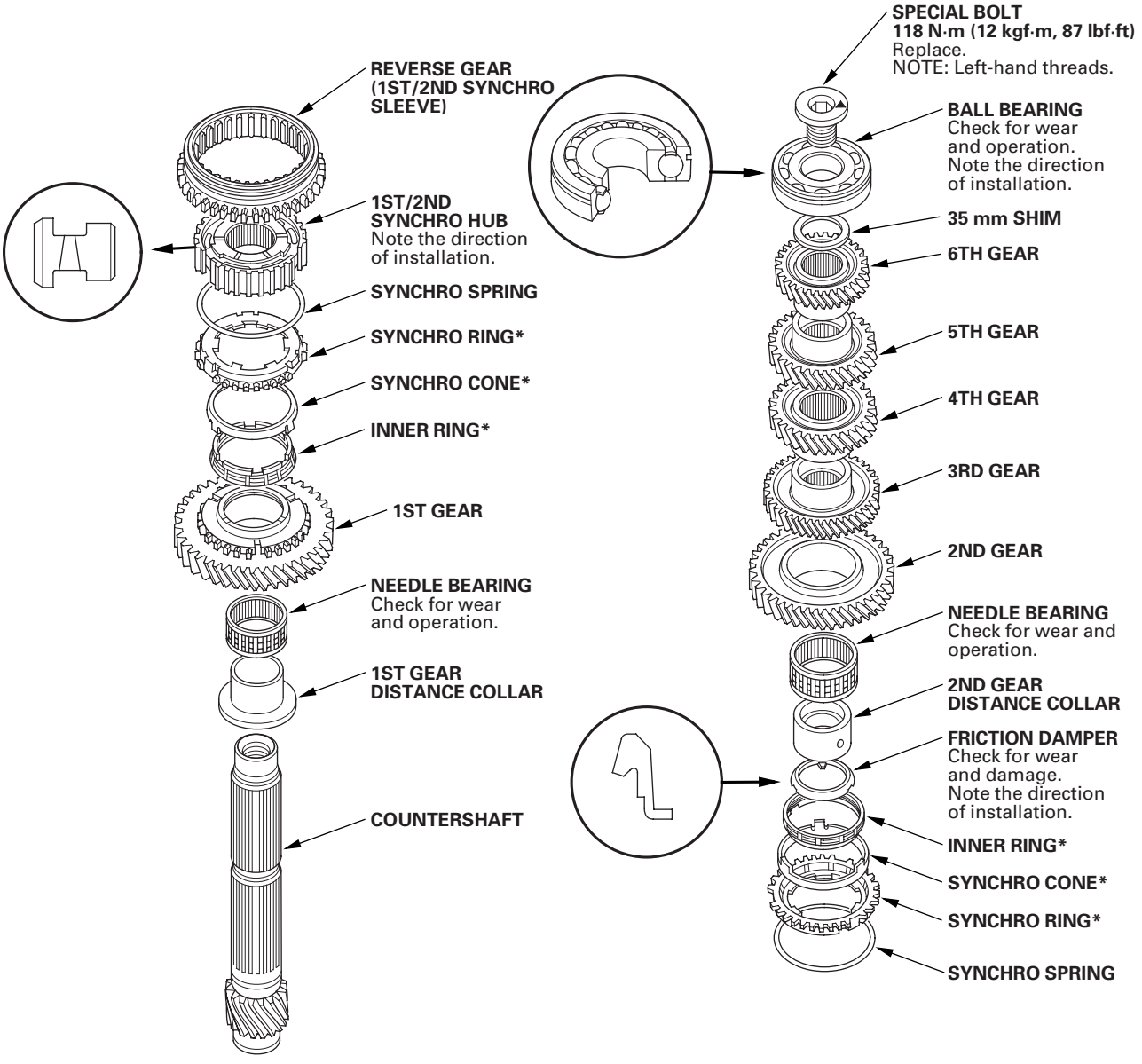
2. Inspect the runout by supporting both ends of the countershaft. Then rotate the countershaft two complete turns while measuring with a dial gauge. If the runout exceeds the service limit, replace the countershaft.

   Standard: 0.02 mm (0.001 in.) max.
   Service Limit: 0.05 mm (0.002 in.)



Countershaft Reassembly

Exploded View



*: The components of the triple cone synchro assembly.

(cont'd)

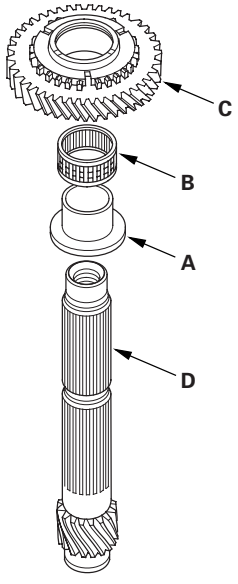
Countershaft Reassembly (cont'd)

Special Tools Required
- Inner driver handle, 40 mm 07746-0030100
- Inner bearing driver attachment, 30 mm 07746-0030300

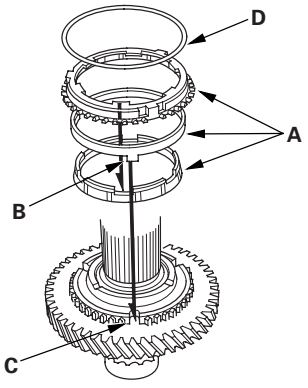
NOTE: Refer to the Exploded View, as needed, during this procedure.

1. Clean all parts in solvent, dry them, and apply MTF to all contact surfaces.

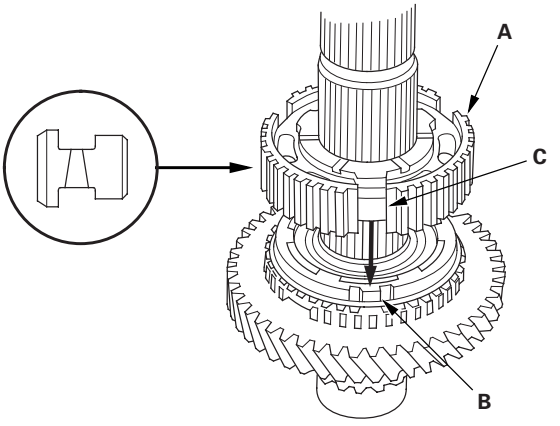
2. Install the 1st gear distance collar (A), the needle bearing (B), and 1st gear (C) onto the countershaft (D).



3. Install the triple cone synchro assembly (A) by aligning the synchro ring fingers (B) with the grooves (C) in 1st gear, then install the synchro spring (D).

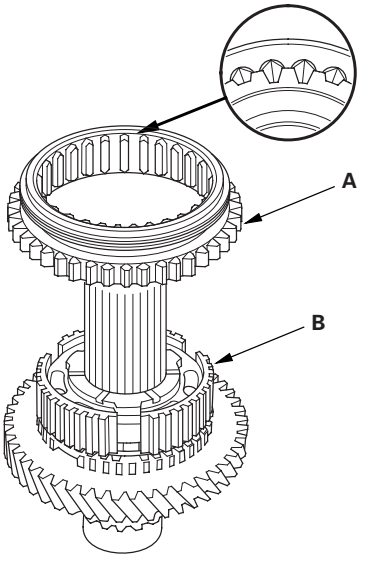


4. Install the 1st/2nd synchro hub (A) by aligning the synchro ring fingers (B) with the grooves (C) in the 1st/2nd synchro hub.

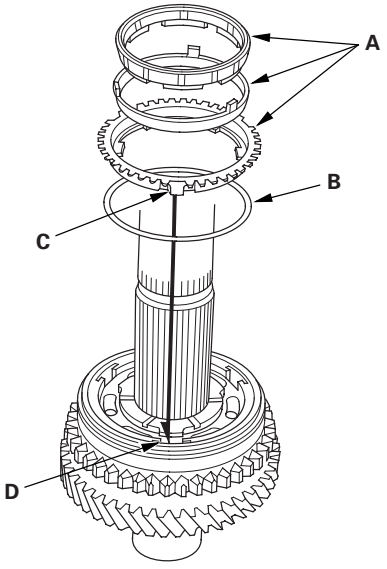


5. Install the reverse gear (A) by aligning the slots of reverse gear and the 1st/2nd synchro hub (B). After installing, check the operation of the 1st/2nd synchro hub set.

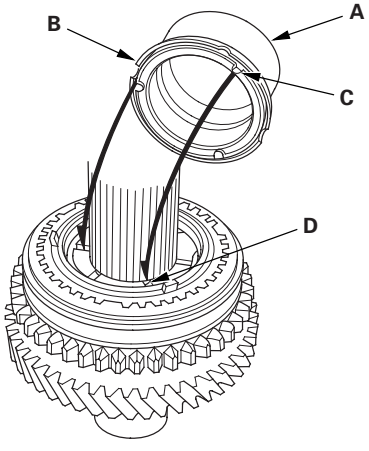
   NOTE: Make sure to align the slots in the 1st/2nd synchro hub as shown.



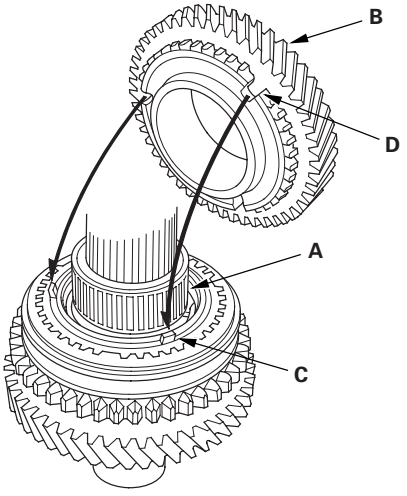
6. Install the triple cone synchro assembly (A) with the synchro spring (B) by aligning the synchro ring fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



7. Install the distance collar (A) and the friction damper (B) by aligning the friction damper fingers (C) with the grooves (D) in the 1st/2nd synchro hub.



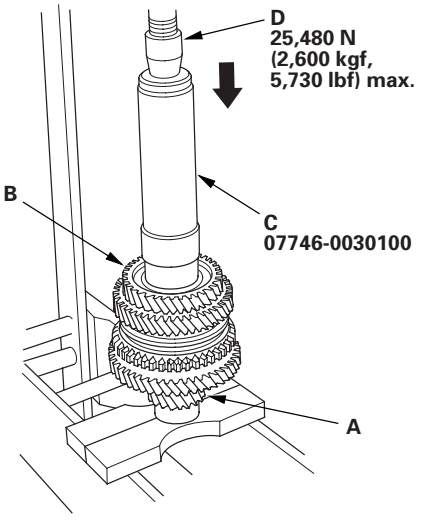
8. Install the needle bearing (A).



9. Install 2nd gear (B) by aligning the synchro cone fingers (C) with the grooves (D) in 2nd gear.

10. Support the countershaft (A) on steel blocks, then press on 3rd gear (B) using the 40 mm inner driver handle (C) and a press (D).

    NOTE: Do not exceed the maximum pressure.

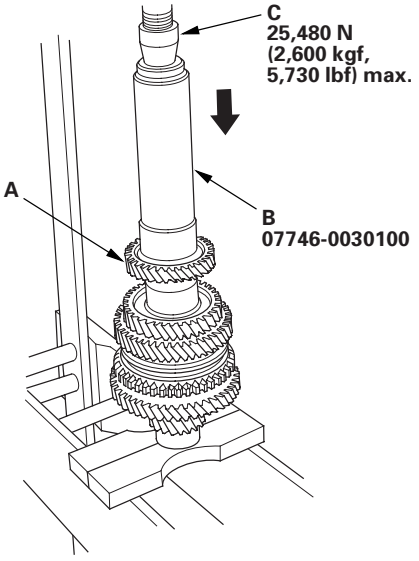


(cont'd)

Countershaft Reassembly (cont'd)

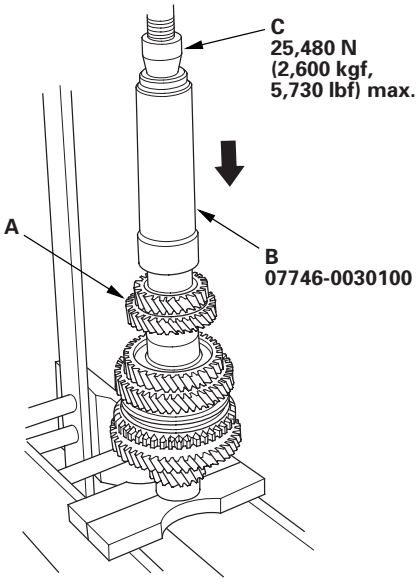
11. Press on 4th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



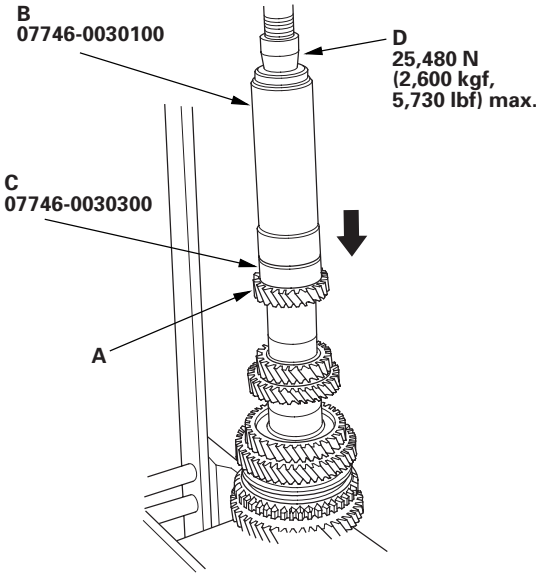
12. Press on 5th gear (A) using the 40 mm inner driver handle (B) and a press (C).

    NOTE: Do not exceed the maximum pressure.



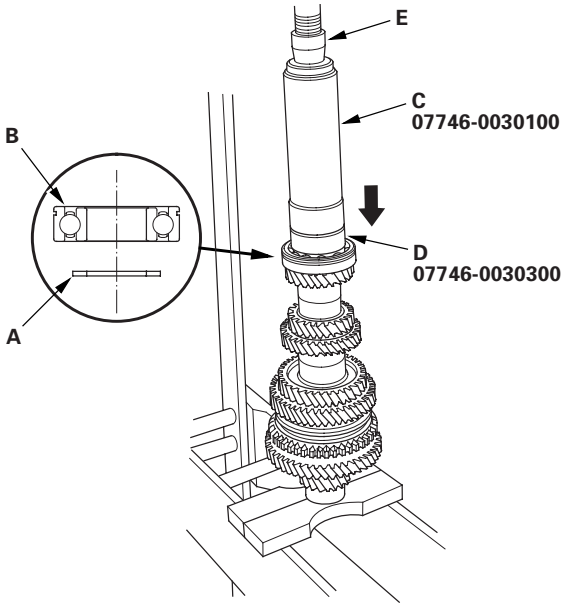
13. Press on 6th gear (A) using the 40 mm inner driver handle (B), the 30 mm inner bearing driver attachment (C), and a press (D).

    NOTE: Do not exceed the maximum pressure.



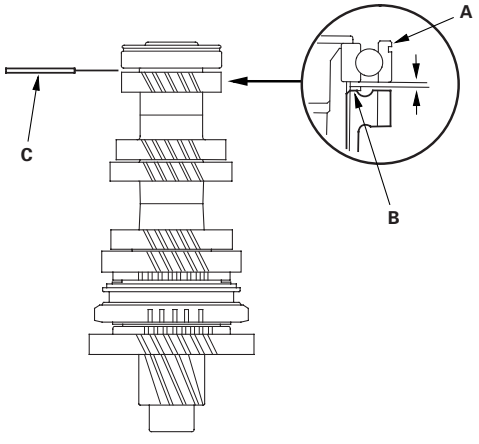
14. Install the 35 mm shim (A), and temporary press on the old ball bearing (B) using the 40 mm inner driver handle (C), the 30 mm inner bearing driver attachment (D), and a press (E).

    NOTE:
    - Use any size of 35 mm shim, and note size you used. Measurements taken in the following steps will determine the correct shim to use for final assembly.
    - Make sure to install the ball bearing as shown.



15. Measure the clearance between the old bearing (A) and the 35 mm shim (B) with a feeler gauge (C).

    Standard: 0.04—0.10 mm (0.0016—0.0039 in.)



16. If the measured clearance in step 15 is not within the standard, select another suitable 35 mm shim from the table, then go to next step to replace the 35 mm shim and the ball bearing. If the measured clearance in step 15 is within the standard, go to next step to replace only the ball bearing.

35 mm Shim

Type	Part Number	Thickness
A	23981-PPP-000	0.87 mm (0.034 in.)
AA	23981-PPP-900	0.91 mm (0.036 in.)
B	23982-PPP-000	0.95 mm (0.037 in.)
AB	23982-PPP-900	0.99 mm (0.039 in.)
C	23983-PPP-000	1.03 mm (0.041 in.)
AC	23983-PPP-900	1.07 mm (0.042 in.)
D	23984-PPP-000	1.11 mm (0.044 in.)
AD	23984-PPP-900	1.15 mm (0.045 in.)
E	23985-PPP-000	1.19 mm (0.047 in.)
AE	23985-PPP-900	1.23 mm (0.048 in.)
F	23986-PPP-000	1.27 mm (0.050 in.)
AF	23986-PPP-900	1.31 mm (0.052 in.)
G	23987-PPP-000	1.35 mm (0.053 in.)
AG	23987-PPP-900	1.39 mm (0.055 in.)
H	23988-PPP-000	1.43 mm (0.056 in.)
AH	23988-PPP-900	1.47 mm (0.058 in.)
J	23989-PPP-000	1.51 mm (0.060 in.)
AJ	23989-PPP-900	1.55 mm (0.061 in.)
K	23990-PPP-000	1.59 mm (0.063 in.)
AK	23990-PPP-900	1.63 mm (0.064 in.)
L	23991-PPP-000	1.67 mm (0.066 in.)
AL	23991-PPP-900	1.71 mm (0.067 in.)
M	23992-PPP-000	1.75 mm (0.069 in.)
AM	23992-PPP-900	1.79 mm (0.070 in.)
N	23993-PPP-000	1.83 mm (0.072 in.)
AN	23993-PPP-900	1.87 mm (0.074 in.)
P	23994-PPP-000	1.91 mm (0.075 in.)
AP	23994-PPP-900	1.95 mm (0.077 in.)
Q	23995-PPP-000	1.99 mm (0.078 in.)

(cont'd)

Countershaft Reassembly (cont'd)

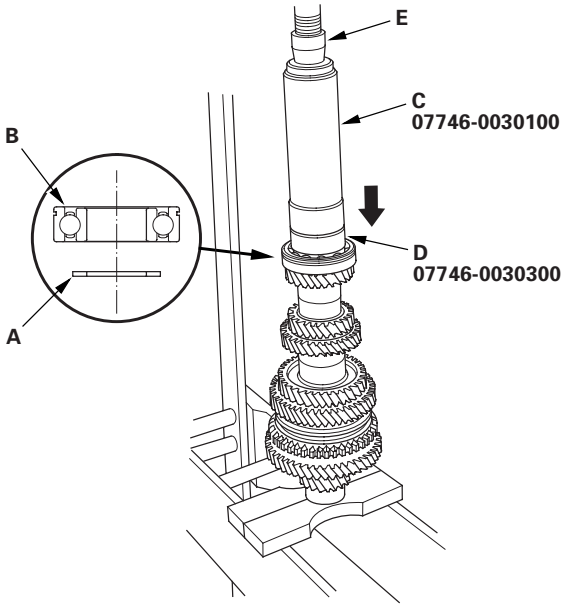
17. Remove 6th gear and the ball bearing (see step 3 on page 13-119).

18. Remove the 35 mm shim.

19. Repeat step 13 to install 6th gear.

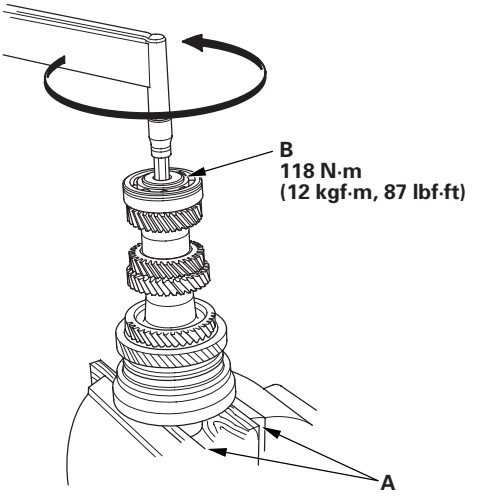
20. Install the correct 35 mm shim (A), then press on new ball bearing (B) using the 40 mm inner driver handle (C), the 30 mm inner bearing driver attachment (D), and a press (E), then recheck the clearance.

    NOTE:
    - If necessary, replace the 35 mm shim with the correct one selected in step 16.
    - Make sure to install the ball bearing as shown.



21. Check the clearance between the bearing and the 35 mm shim with a feeler gauge.

22. Securely clamp the countershaft assembly in a bench vise with wood blocks (A).



23. Tighten new special bolt (B) (left-hand threads).

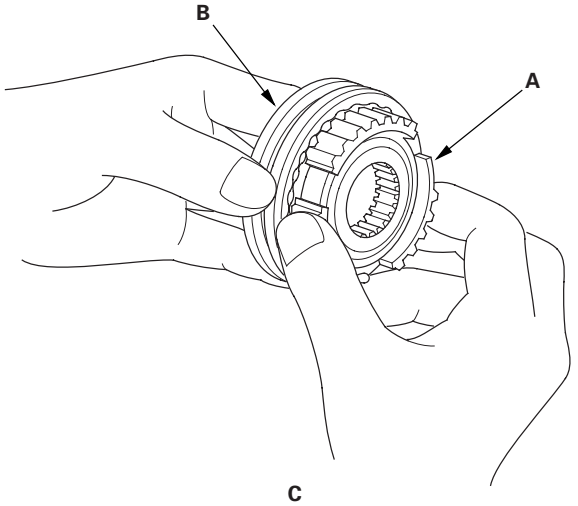
    NOTE: Apply MTF to the bolt threads and flange.

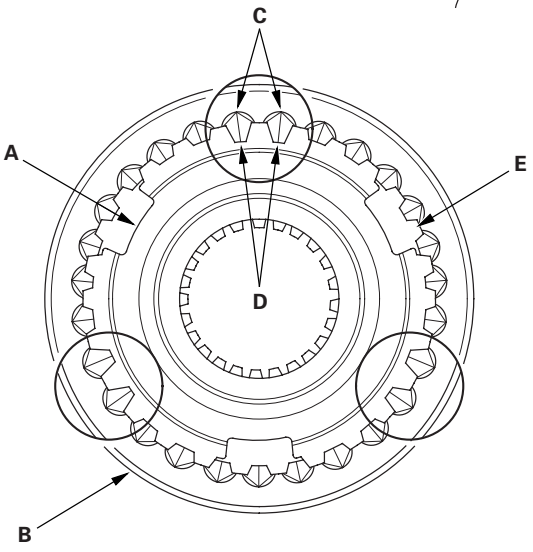
Synchro Sleeve and Hub Inspection and Reassembly

1. Inspect the gear teeth on all synchro hubs and synchro sleeves for rounded off corners, which indicate wear.

2. Install each synchro hub (A) in its mating synchro sleeve (B), and check for free movement. Make sure to match the three sets of longer teeth (C) (120 degrees apart) on the synchro sleeve with the three sets of deeper grooves (D) in the synchro hub.

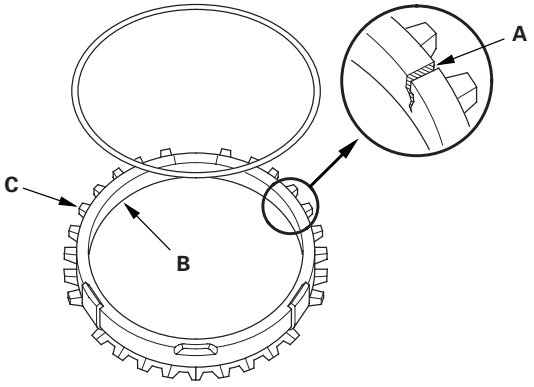
   NOTE:
   - Do not install the synchro sleeve with its longer teeth in the 1st/2nd and 5th/6th synchro hub slots (E) because it will damage the spring ring.
   - If replacement is required, always replace the synchro sleeve and the synchro hub as a set.





Synchro Ring and Gear Inspection

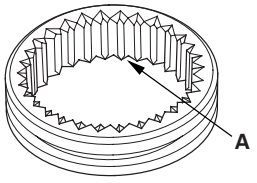
1. Inspect the synchro ring for scoring, cracks, and damage (A).



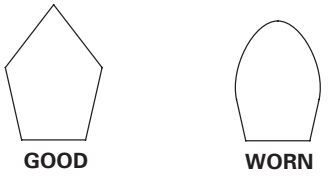
Example of synchro ring teeth

2. Inspect the inside of each synchro ring (B) for wear. Inspect the teeth (C) on each synchro ring for wear (rounded off).

3. Inspect the teeth (A) on each synchro sleeve and matching teeth on each gear for wear (rounded off).



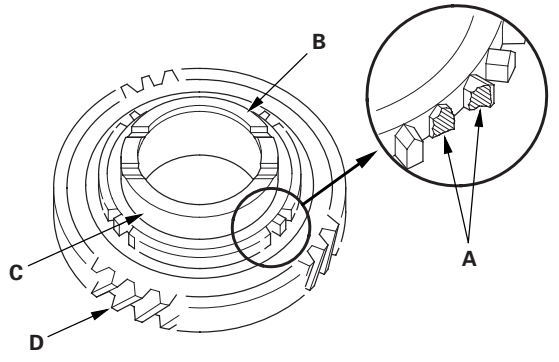
Example of synchro sleeve teeth and gear teeth



(cont'd)

Synchro Ring and Gear Inspection (cont'd)

4. Inspect the synchro teeth on gear for scoring, cracks, and damage (A).



5. Inspect the thrust surface (B) on each gear hub for wear.

6. Inspect the cone surface (C) on each gear hub for wear and roughness.

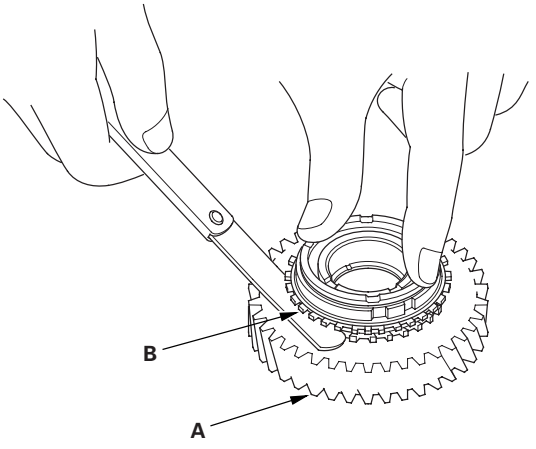
7. Inspect the teeth on all gears (D) for uneven wear, scoring, and cracks.

8. Coat the cone surface of each gear with MTF, and place its synchro ring on it. Rotate the synchro ring, making sure that it does not slip.

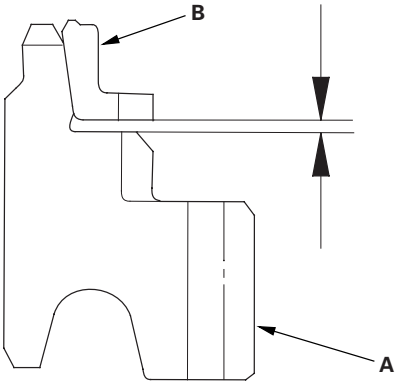
9. Measure the clearance between each gear (A) and its synchro ring (B) all around the gear. Hold the synchro ring against the gear evenly while measuring the clearance. If the clearance is less than the service limit, replace the synchro ring and gear.

Synchro Ring-to-Gear Clearance
Standard: 0.70—1.49 mm (0.028—0.059 in.)
Service Limit: 0.4 mm (0.016 in.)

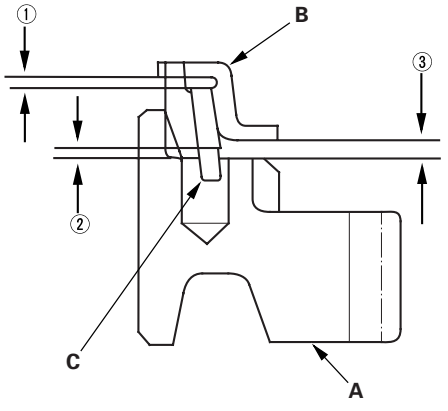
Double Cone Synchro and Triple Cone Synchro-to-Gear Clearance
Standard:
①: Outer Synchro Ring (B) to Synchro Cone (C) 0.70—1.19 mm (0.028—0.047 in.)
②: Synchro Cone (C) to Gear (A) 0.50—1.04 mm (0.020—0.041 in.)
③: Outer Synchro Ring (B) to Gear (A) 0.95—1.68 mm (0.037—0.066 in.)
Service Limit:
①: 0.3 mm (0.012 in.)
②: 0.3 mm (0.012 in.)
③: 0.6 mm (0.024 in.)



Synchro ring-to-gear



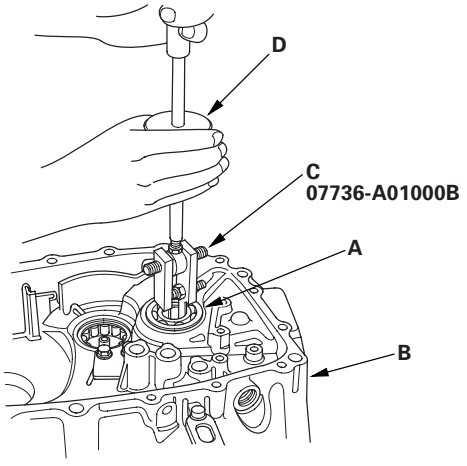
Double cone synchro and triple cone synchro-to-gear



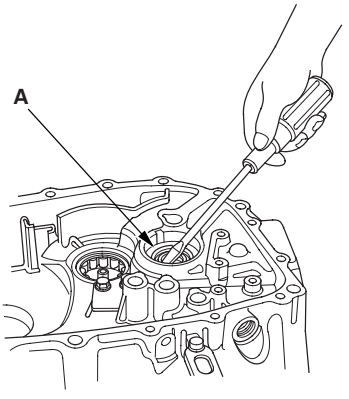
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Bearing driver attachment, 42 x 47 mm 07746-0010300
- Driver handle, 15 x 135L 07749-0010000
- Slide hammer, 3/8''-16 UNF commercially available

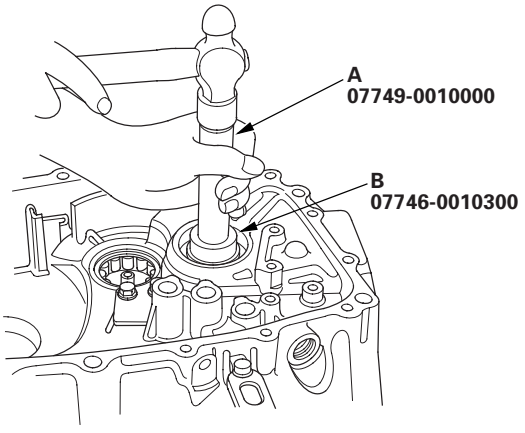
1. Remove the ball bearing (A) from the clutch housing (B) using the 20—40 mm adjustable bearing puller (C) and a commercially available 3/8''-16 UNF slide hammer (D).



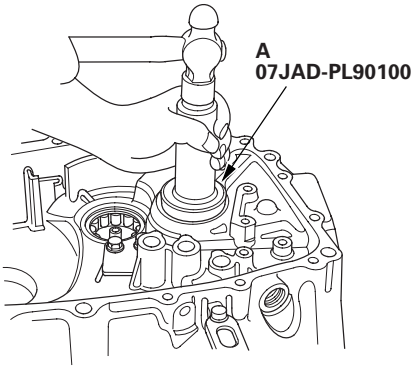
2. Remove the oil seal (A) from the clutch housing. Be careful when removing the oil seal so the clutch housing is not damaged.



3. Drive in new oil seal from the transmission side using the 15 x 135L driver handle (A) and the 42 x 47 mm bearing driver attachment (B).



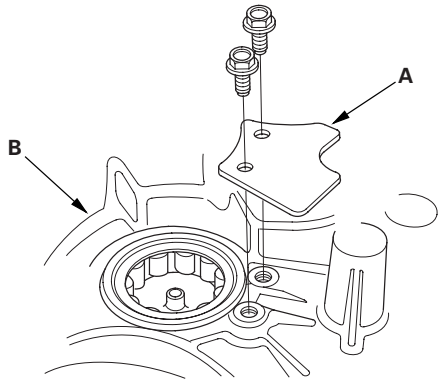
4. Drive in new ball bearing from the transmission side using the 65 mm oil seal driver (A).



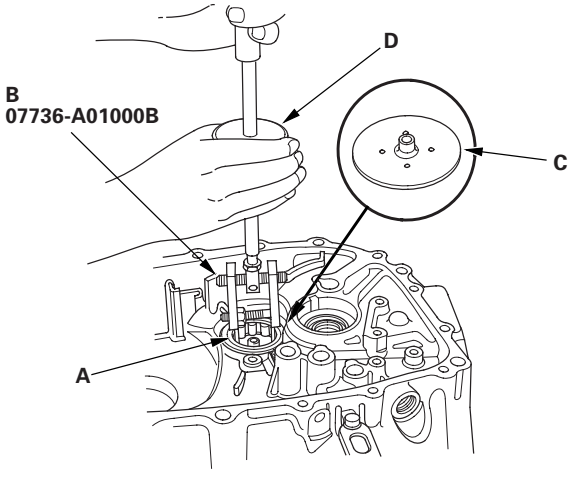
Countershaft Bearing Replacement

Special Tools Required
- Oil seal driver, 65 mm 07JAD-PL90100
- Adjustable bearing puller, 20—40 mm 07736-A01000B
- Slide hammer, 3/8''-16 UNF commercially available

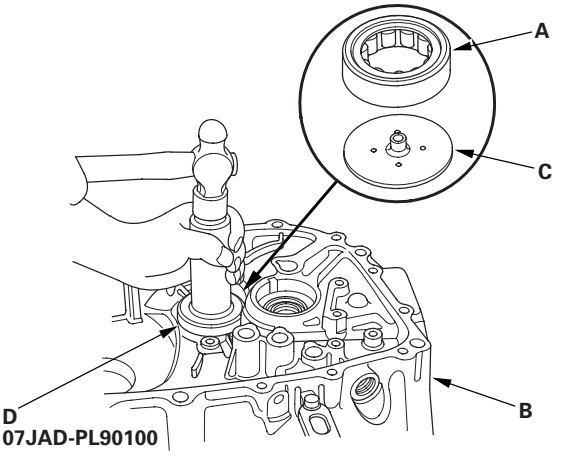
1. Remove the bearing set plate (A) from the clutch housing (B).



2. Remove the needle bearing (A) using the 20—40 mm adjustable bearing puller (B) and a commercially available 3/8''-16 UNF slide hammer (D), then remove oil guide plate C.

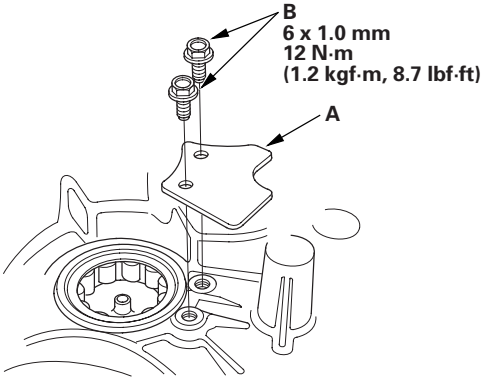


3. Position oil guide plate C and new needle bearing (A) in the bore of the clutch housing (B).



4. Install the needle bearing using the 65 mm oil seal driver (D).

5. Install the bearing set plate (A) with the bolts (B).

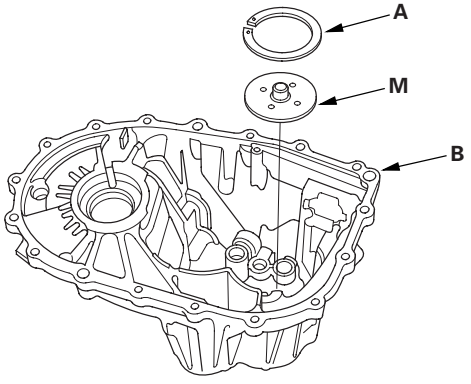


Mainshaft Thrust Clearance Adjustment

Special Tools Required
- Catch adapter 07GAJ-PG20110
- Base adapter 07GAJ-PG20130

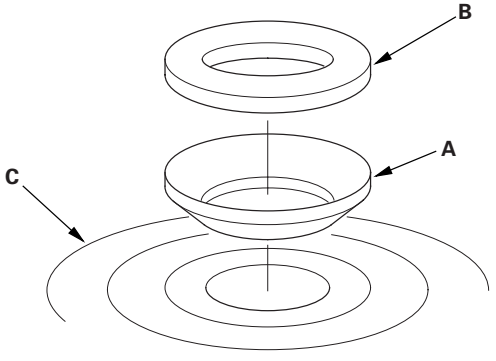
NOTE:
- Take measurement at normal room temperature.
- Clean all the parts thoroughly before installation.

1. Remove the 72 mm shim (A) and oil guide plate M from the transmission housing (B).



2. Thoroughly clean the 28 mm spring washer (A) and the 28 mm washer (B) before installing them on the clutch housing side ball bearing (C).

   NOTE: Install the spring washer in the direction shown.



3. Assemble all of the mainshaft components.

   NOTE: Refer to the Exploded View, as needed during the assembly (see page 13-113).

4. Install the mainshaft assembly into the clutch housing.

5. Place the transmission housing over the mainshaft and onto the clutch housing.

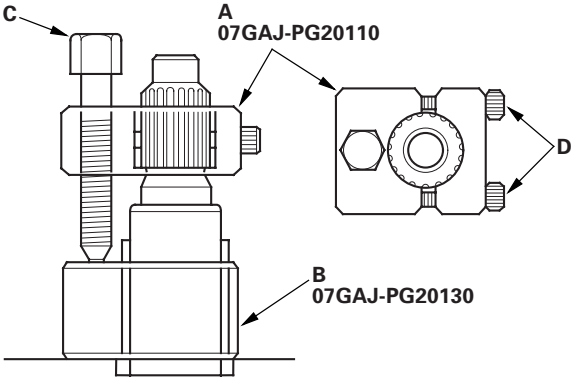
6. Tighten the clutch and transmission housings with several 8 mm bolts.

   NOTE: It is not necessary to use sealing agent between the housing for this procedure.

7. Lightly tap on the mainshaft with a plastic hammer.

8. Attach the catch adapter (A) and the base adapter (B) to the mainshaft as follows:

   - Back out the catch adapter bolt (C), and loosen the two hex bolts (D).
   - Fit the catch adapter over the mainshaft so its lip is towards the transmission.
   - Align the catch adapter lip around the groove at the inside of the mainshaft splines, then tighten the hex bolts.



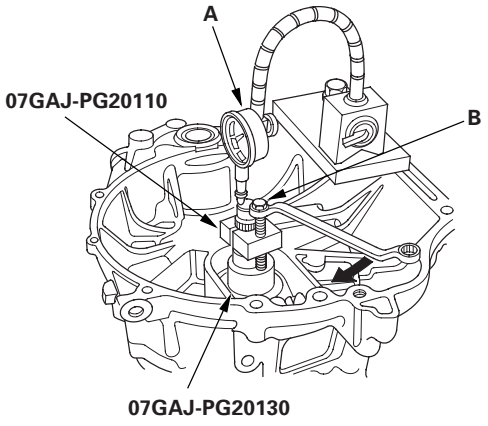
9. Fully seat the mainshaft by tapping its end with a plastic hammer.

10. Thread the catch adapter bolt in until it just contacts the wide surface of the base adapter.

(cont'd)

Mainshaft Thrust Clearance Adjustment (cont'd)

11. Zero a dial gauge (A) on the end of the mainshaft.



12. Turn the catch adapter bolt (B) clockwise; stop turning when the dial gauge has reached its maximum movement. The reading on the dial gauge is the amount of mainshaft thrust clearance.

    NOTE: Do not turn the catch adapter bolt exceeds 60 degrees after the needle of the dial gauge stops moving. Applying more pressure with the catch adapter bolt could damage the transmission.

13. If the reading is within the standard, the clearance is correct. If the reading is not within the standard, select the appropriate shim needed from the table, and recheck the thrust clearance.

    Standard: 0.11—0.17 mm (0.004—0.007 in.)

    (Example)
    Measure reading: 1.93 mm (0.076 in.)

    Subtract the total clearance measurement from the middle of the clearance standard 0.14 mm (0.0056 in.)

    1.93 — 0.14 = 1.79 mm (0.070 in.)

    Select the shim closest to the amount calculated. For this example, the 1.80 mm (0.071 in.) shim is best.

14. With oil guide plate M and the appropriate size shim installed in the transmission housing, check the thrust clearance again to make sure the clearance is within the standard.

72 mm Shim

Type	Part Number	Thickness
A	23931-P21-000	0.60 mm (0.024 in.)
B	23932-P21-000	0.63 mm (0.025 in.)
C	23933-P21-000	0.66 mm (0.026 in.)
D	23934-P21-000	0.69 mm (0.027 in.)
E	23935-P21-000	0.72 mm (0.028 in.)
F	23936-P21-000	0.75 mm (0.030 in.)
G	23937-P21-000	0.78 mm (0.031 in.)
H	23938-P21-000	0.81 mm (0.032 in.)
I	23939-P21-000	0.84 mm (0.033 in.)
J	23940-P21-000	0.87 mm (0.034 in.)
K	23941-P21-000	0.90 mm (0.035 in.)
L	23942-P21-000	0.93 mm (0.037 in.)
M	23943-P21-000	0.96 mm (0.038 in.)
N	23944-P21-000	0.99 mm (0.039 in.)
O	23945-P21-000	1.02 mm (0.040 in.)
P	23946-P21-000	1.05 mm (0.041 in.)
Q	23947-P21-000	1.08 mm (0.043 in.)
R	23948-P21-000	1.11 mm (0.044 in.)
S	23949-P21-000	1.14 mm (0.045 in.)
T	23950-P21-000	1.17 mm (0.046 in.)
U	23951-P21-000	1.20 mm (0.047 in.)
V	23952-P21-000	1.23 mm (0.048 in.)
W	23953-P21-000	1.26 mm (0.050 in.)
X	23954-P21-000	1.29 mm (0.051 in.)
Y	23955-P21-000	1.32 mm (0.052 in.)
Z	23956-P21-000	1.35 mm (0.053 in.)
AA	23957-P21-000	1.38 mm (0.054 in.)
AB	23958-P21-000	1.41 mm (0.056 in.)
AC	23959-P21-000	1.44 mm (0.057 in.)
AD	23960-P21-000	1.47 mm (0.058 in.)
AE	23961-P21-000	1.50 mm (0.059 in.)
AF	23962-P21-000	1.53 mm (0.060 in.)
AG	23963-P21-000	1.56 mm (0.061 in.)
AH	23964-P21-000	1.59 mm (0.063 in.)
AI	23965-P21-000	1.62 mm (0.064 in.)
AJ	23966-P21-000	1.65 mm (0.065 in.)
AK	23967-P21-000	1.68 mm (0.066 in.)
AL	23968-P21-000	1.71 mm (0.067 in.)
AM	23969-P21-000	1.74 mm (0.069 in.)
AN	23970-P21-000	1.77 mm (0.070 in.)
AO	23971-P21-000	1.80 mm (0.071 in.)

(cont'd)

72 mm Shim (cont'd)

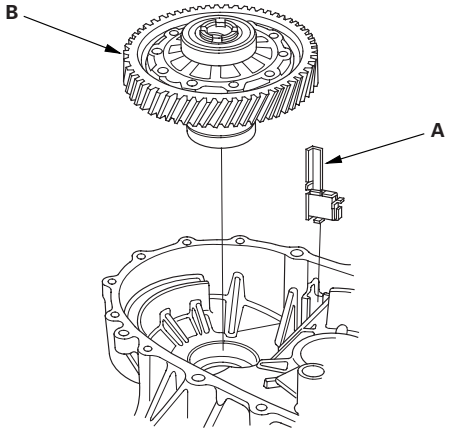
Type	Part Number	Thickness
AP	23972-PPP-J00	1.83 mm (0.072 in.)
AQ	23973-PPP-J00	1.86 mm (0.073 in.)
AR	23974-PPP-J00	1.89 mm (0.074 in.)
AS	23975-PPP-J00	1.92 mm (0.076 in.)
AT	23976-PPP-J00	1.95 mm (0.077 in.)
AV	23977-PPP-J00	1.98 mm (0.078 in.)
AW	23978-PPP-J00	2.01 mm (0.079 in.)
AX	23979-PPP-J00	2.04 mm (0.080 in.)
AY	23980-PPP-J00	2.07 mm (0.081 in.)
AZ	23981-PPP-J00	2.10 mm (0.083 in.)
BA	23982-PPP-J00	2.13 mm (0.084 in.)
BB	23983-PPP-J00	2.16 mm (0.085 in.)
BC	23984-PPP-J00	2.19 mm (0.086 in.)
BD	23985-PPP-J00	2.22 mm (0.087 in.)
BE	23986-PPP-J00	2.25 mm (0.089 in.)

Transmission Reassembly

NOTE:
- Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.
- Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

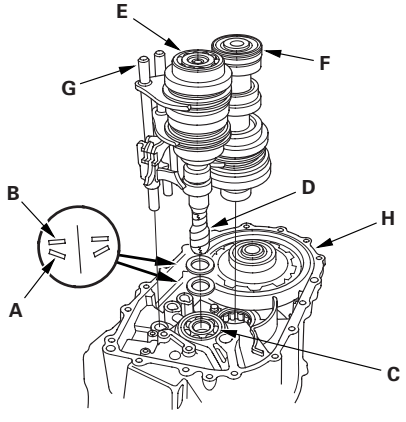
1. Install the magnet (A) and the differential assembly (B).

   NOTE: Clean the magnet anytime the transmission is disassembled.



2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

   NOTE: Install the spring washer in the direction shown.



3. Apply tape to the mainshaft splines (D) to protect the seal. Install the mainshaft assembly (E), the countershaft assembly (F), and the shift fork assembly (G) into the clutch housing (H), as an assembly.

(cont'd)

72 mm Shim (cont'd)

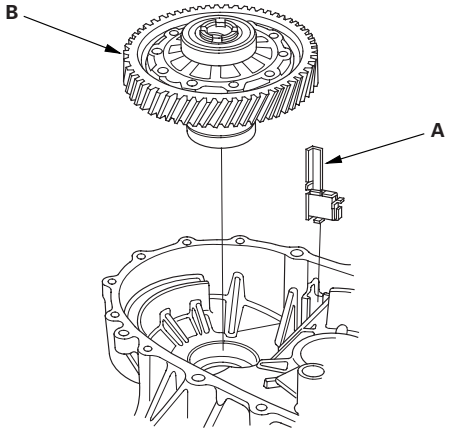
Type	Part Number	Thickness
AP	23972-PPP-J00	1.83 mm (0.072 in.)
AQ	23973-PPP-J00	1.86 mm (0.073 in.)
AR	23974-PPP-J00	1.89 mm (0.074 in.)
AS	23975-PPP-J00	1.92 mm (0.076 in.)
AT	23976-PPP-J00	1.95 mm (0.077 in.)
AV	23977-PPP-J00	1.98 mm (0.078 in.)
AW	23978-PPP-J00	2.01 mm (0.079 in.)
AX	23979-PPP-J00	2.04 mm (0.080 in.)
AY	23980-PPP-J00	2.07 mm (0.081 in.)
AZ	23981-PPP-J00	2.10 mm (0.083 in.)
BA	23982-PPP-J00	2.13 mm (0.084 in.)
BB	23983-PPP-J00	2.16 mm (0.085 in.)
BC	23984-PPP-J00	2.19 mm (0.086 in.)
BD	23985-PPP-J00	2.22 mm (0.087 in.)
BE	23986-PPP-J00	2.25 mm (0.089 in.)

Transmission Reassembly

NOTE:
- Prior to reassembling, clean all the parts in solvent, dry them, and apply MTF to any contact surfaces.
- Place the clutch housing on two pieces of wood thick enough to keep the mainshaft from hitting the workbench.

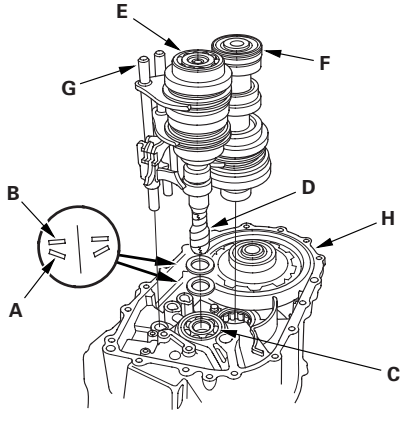
1. Install the magnet (A) and the differential assembly (B).

   NOTE: Clean the magnet anytime the transmission is disassembled.



2. Install the 28 mm spring washer (A) and the 28 mm washer (B) over the ball bearing (C).

   NOTE: Install the spring washer in the direction shown.

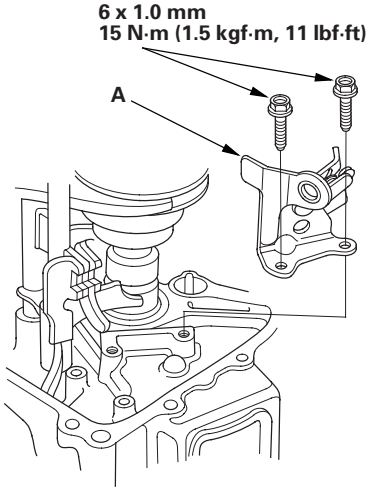


3. Apply tape to the mainshaft splines (D) to protect the seal. Install the mainshaft assembly (E), the countershaft assembly (F), and the shift fork assembly (G) into the clutch housing (H), as an assembly.

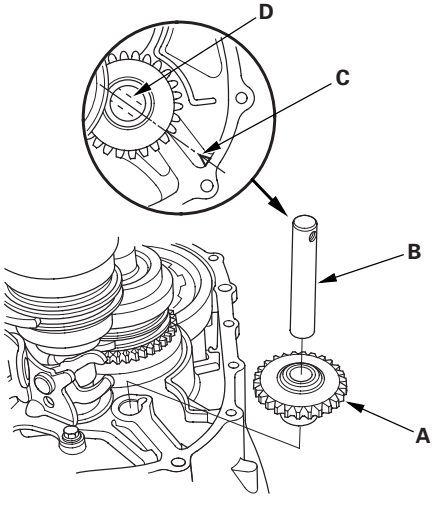
(cont'd)

Transmission Reassembly (cont'd)

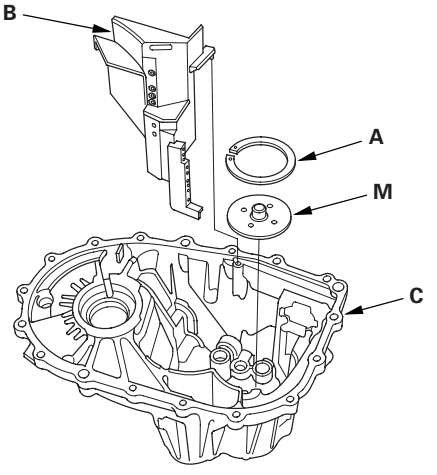
4. Install the reverse shift fork (A).



5. Install the reverse idler gear (A) and the reverse idler gear shaft (B) by aligning the mark (C) on the clutch housing with the reverse idler gear shaft hole (D).

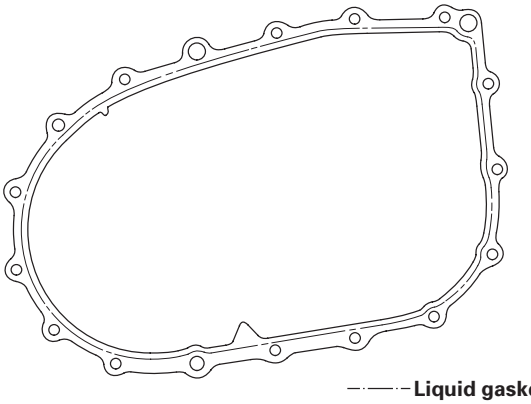


6. Select the proper size 72 mm shim (A) according to the measurements made during the Mainshaft Thrust Clearance Adjustment (see page 13-131). Install the oil gutter plate (B), oil guide plate M, and the 72 mm shim into the transmission housing (C).

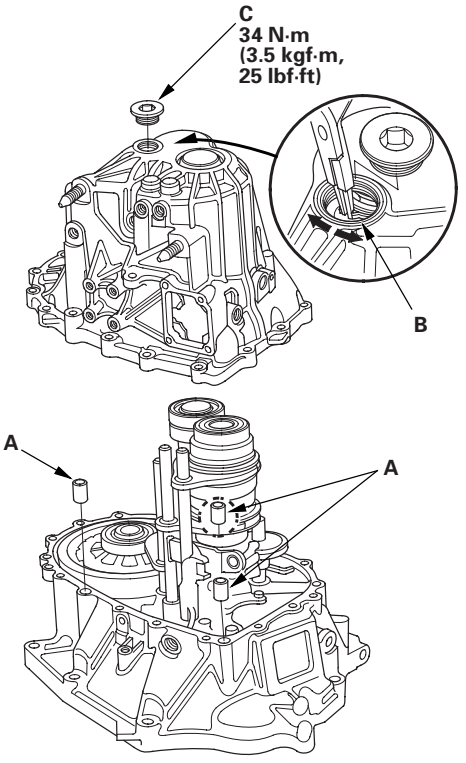


7. Clean any dirt or oil from the mating surface of the transmission housing and the clutch housing. Apply liquid gasket, P/N 08718-0001 evenly to the mating surface of the transmission housing and the clutch housing. Install the component within 5 minutes of applying the liquid gasket.

NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



8. Install the three 14 x 20 mm dowel pins (A).



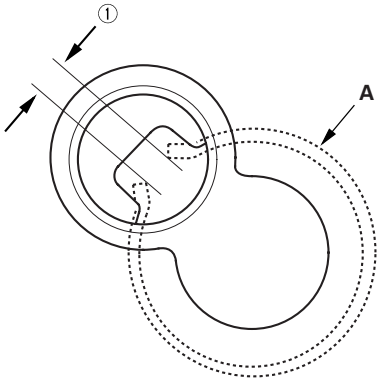
9. Place the transmission housing on the clutch housing, making sure to line up the shafts.

10. While expanding the 72 mm snap ring (B) on the countershaft ball bearing using snap ring pliers, push the transmission housing down to start the countershaft ball bearing through the snap ring. Release the pliers, and push down the housing until it bottoms and the snap ring snaps in place in the countershaft ball bearing snap ring groove.

    NOTE: Install the 32 mm sealing cap (C) after setting in the 72 mm snap ring.

11. Make sure the 72 mm snap ring (A) is securely seated in the groove of the countershaft bearing.

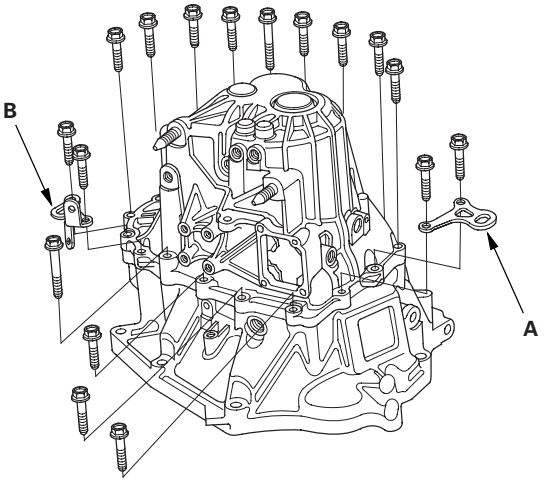
    Dimension ① as installed: 3.3—6.0 mm (0.13—0.24 in.)



12. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the 32 mm searing cap, and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

13. Install the 8 mm flange bolts finger-tight with transmission hanger A, and transmission hanger B.

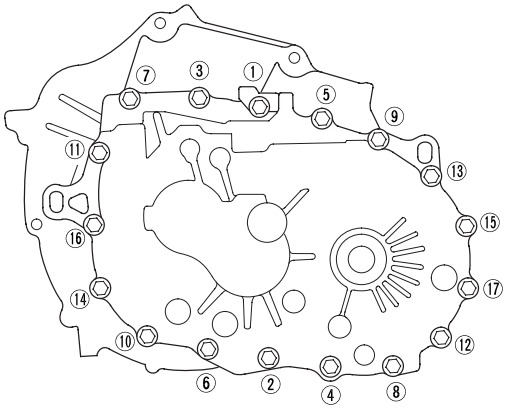


(cont'd)

Transmission Reassembly (cont'd)

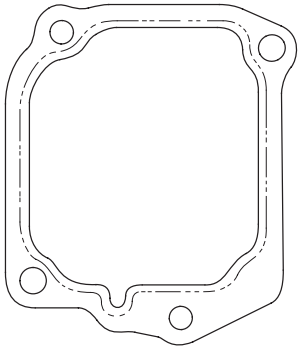
14. Tighten the 8 mm flange bolts in a crisscross pattern in several steps.

    Specified Torque:
    8 x 1.25 mm
    27 N·m (2.8 kgf·m, 20 lbf·ft)



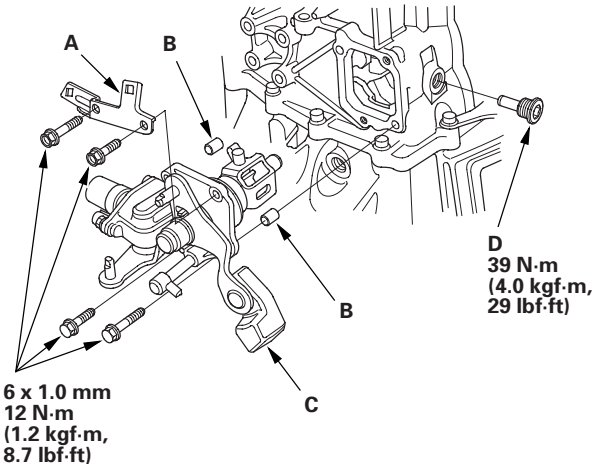
15. Clean any dirt or oil from the mating surface of the change lever assembly and the transmission housing. Apply liquid gasket, P/N 08718-0001, evenly to the mating surface of the change lever assembly and the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.



Liquid gasket

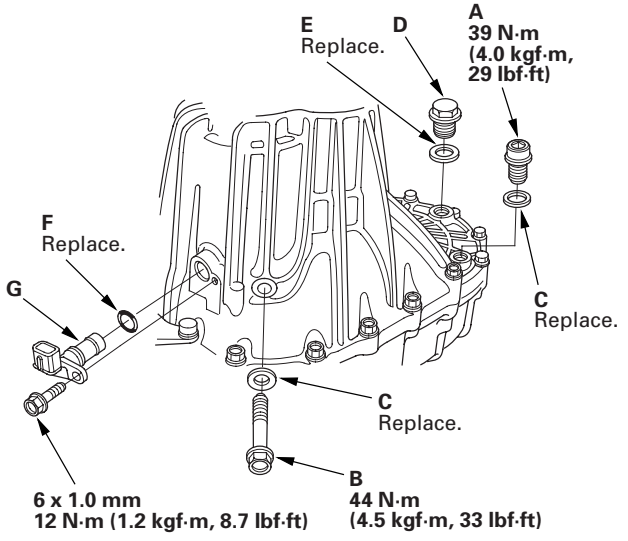
16. Install the 8 x 14 mm dowel pins (B) and the change lever assembly (C) with harness bracket A.



17. Apply liquid gasket, P/N 08718-0001, evenly to the threads of the inter lock bolt (D). Install the component within 5 minutes of applying the liquid gasket.

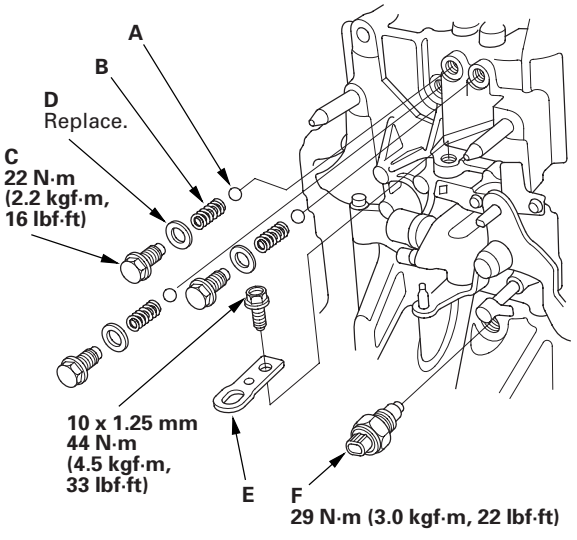
    NOTE:
    - If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
    - If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

18. Install the drain plug (A) and the 10 mm flange bolt (B) with new washers (C). Install the filler plug (D) finger-tight with new sealing washer (E).



19. Apply MTF to a new O-ring (F). Then install the output shaft (countershaft) speed sensor (G) with the O-ring.

20. Install the steel balls (A), the springs (B), and the detent bolts (C) with new washers (D).

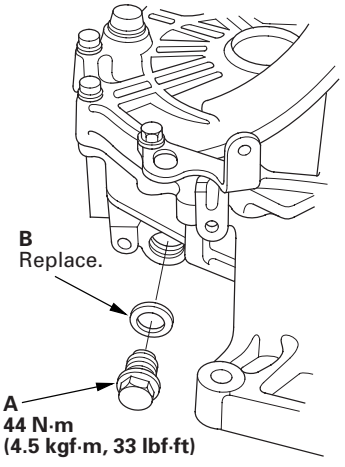


21. Install the transmission hanger (E).

22. Apply liquid gasket, P/N 08718-0001 evenly to the threads of the back-up light switch (F), and install it on the transmission housing. Install the component within 5 minutes of applying the liquid gasket.

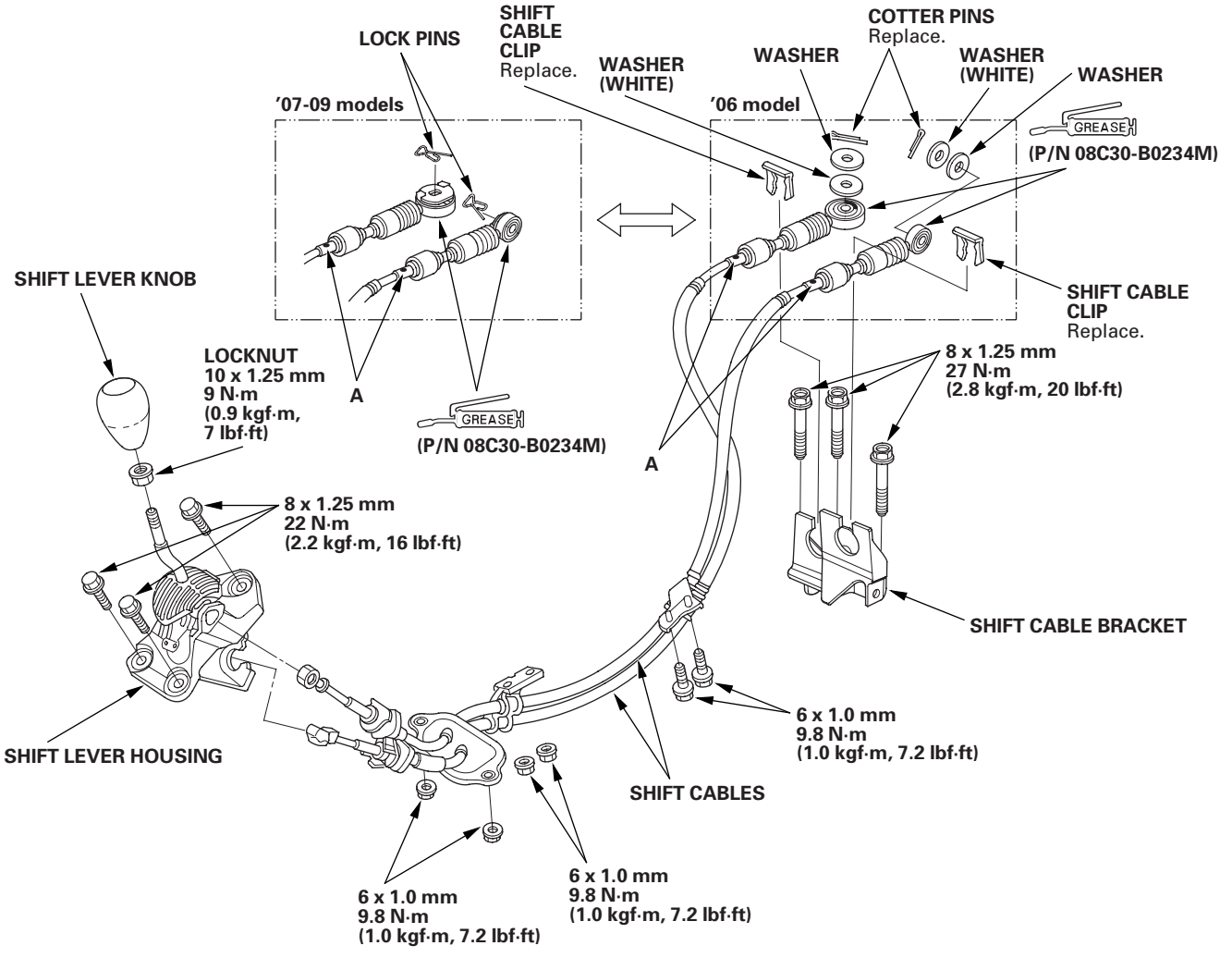
NOTE:
- If you apply liquid gasket P/N 08718-0012, the component must be installed within 4 minutes.
- If too much time has passed after applying the liquid gasket, remove the old liquid gasket and residue, then reapply new liquid gasket.

23. Install the 20 mm bolt (A) with new 20 mm sealing washer (B).

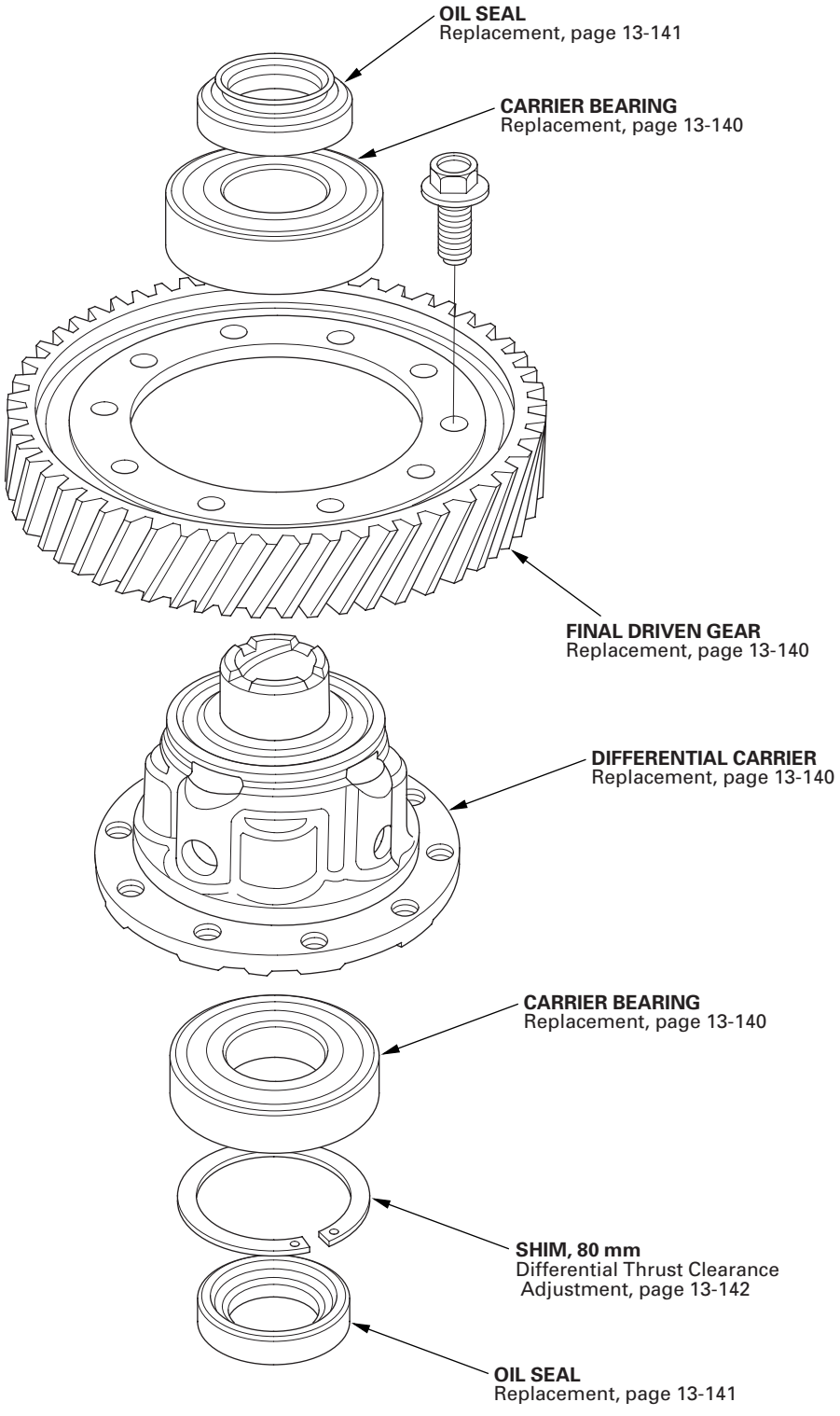


Gearshift Mechanism Replacement

NOTE:
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.
- When installing the shift cables (transmission side), position the paint mark (A) facing the upward.

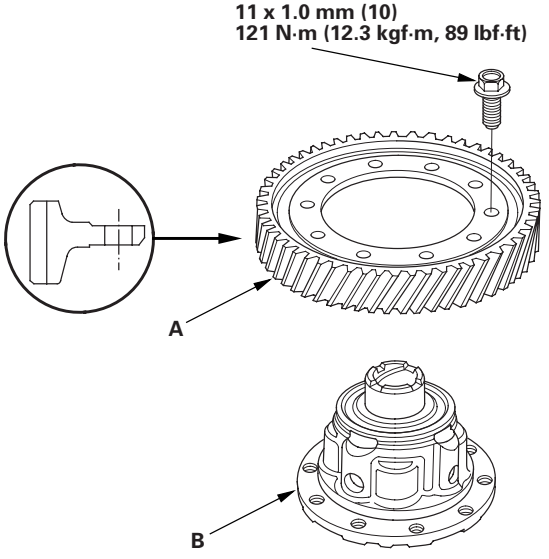


Component Location Index



Differential Carrier, Final Driven Gear Replacement

1. Loosen the bolts in a crisscross pattern in several steps, then remove the bolts and the final driven gear (A) from the differential carrier (B).



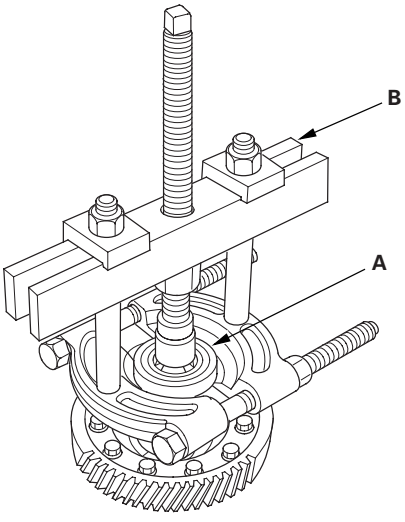
2. Install the final driven gear with the chamfer on the inside diameter facing the carrier. Tighten the bolts in a crisscross pattern in several steps.

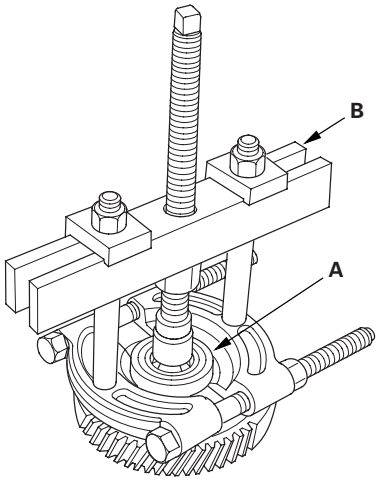
Carrier Bearing Replacement

Special Tools Required
Inner driver handle, 40 mm 07746-0030100

1. Check the carrier bearings for wear and rough rotation. If they rotate smoothly and their rollers show no signs of wear, the bearings are OK.

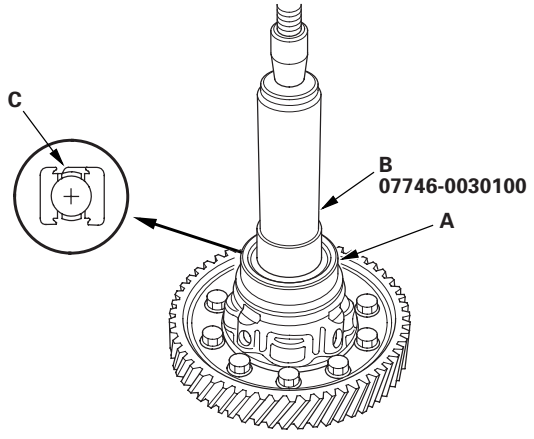
2. Remove the carrier bearings (A) with a commercially available bearing puller (B).

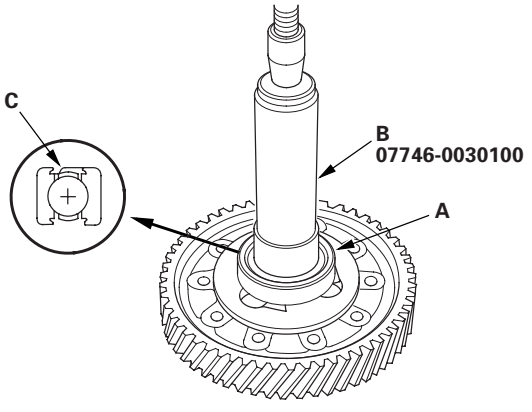




3. Install new bearings (A) on with the 40 mm inner driver handle (B) and a press. Press on each bearing until it bottoms. There should be no clearance between the bearings and the carrier.

   NOTE: Place the seal (C) part of the bearing towards the outside of the differential, and install it.

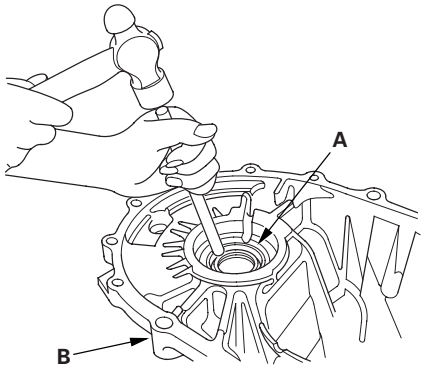




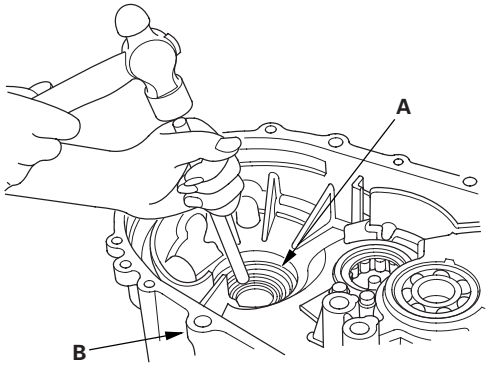
Oil Seal Replacement

Special Tools Required
- Oil seal driver attachment 07NAD-P20A100
- Driver handle, 15 x 135L 07749-0010000

1. Remove the oil seal (A) from the transmission housing (B).



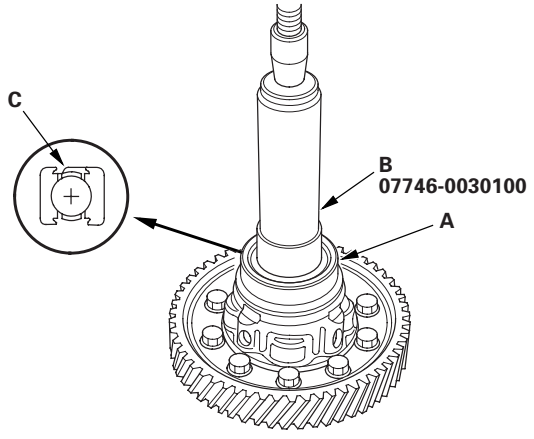
2. Remove the oil seal (A) from the clutch housing (B).

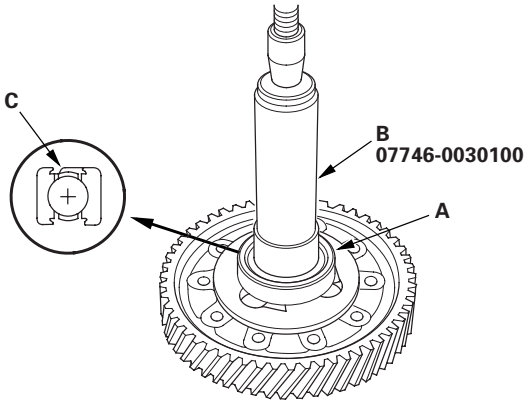


(cont'd)

3. Install new bearings (A) on with the 40 mm inner driver handle (B) and a press. Press on each bearing until it bottoms. There should be no clearance between the bearings and the carrier.

   NOTE: Place the seal (C) part of the bearing towards the outside of the differential, and install it.

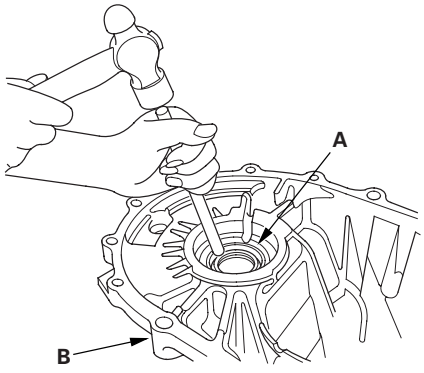




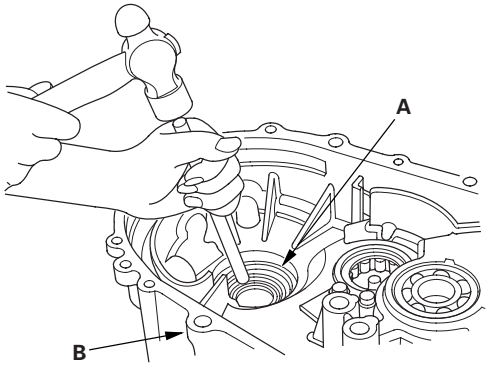
Oil Seal Replacement

Special Tools Required
- Oil seal driver attachment 07NAD-P20A100
- Driver handle, 15 x 135L 07749-0010000

1. Remove the oil seal (A) from the transmission housing (B).



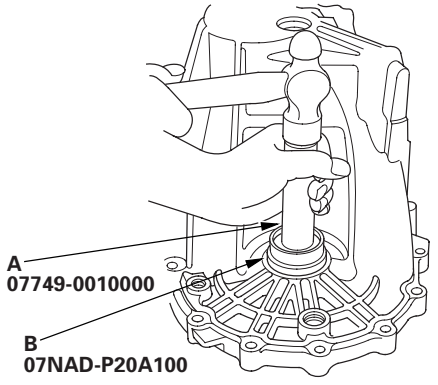
2. Remove the oil seal (A) from the clutch housing (B).



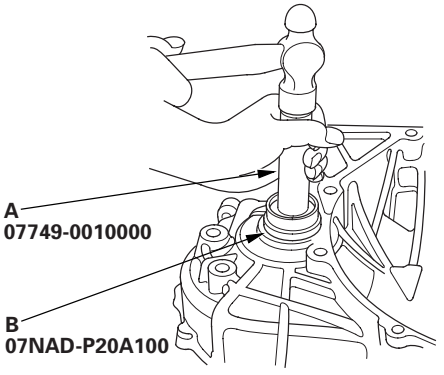
(cont'd)

Oil Seal Replacement (cont'd)

3. Install a new oil seal flush with the transmission housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



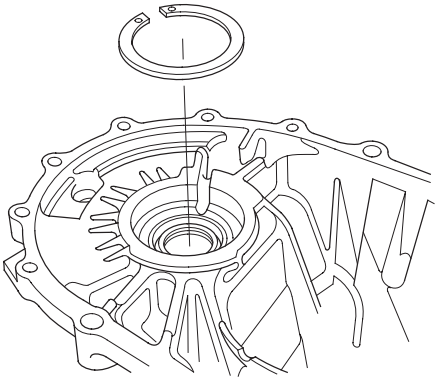
4. Install a new oil seal flush with the clutch housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



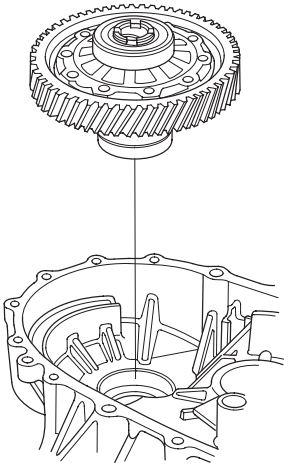
Differential Thrust Clearance Adjustment

Special Tools Required
Inner driver handle, 40 mm 07746-0030100

1. If you removed the 80 mm shim from the transmission housing reinstall is the same sized shim.

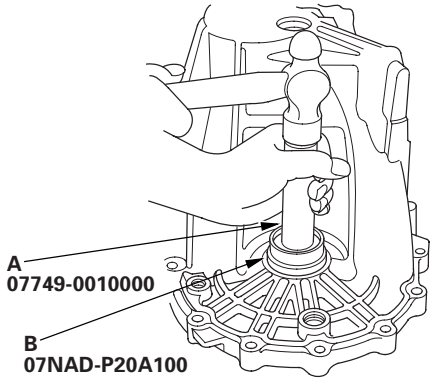


2. Install the differential assembly into the clutch housing.

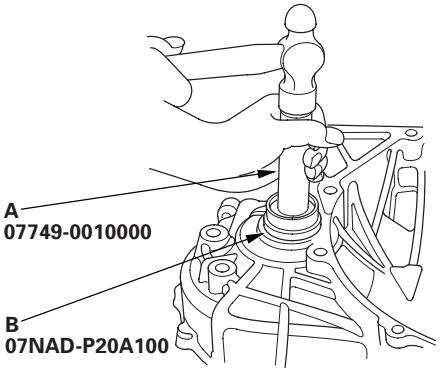


Oil Seal Replacement (cont'd)

3. Install a new oil seal flush with the transmission housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



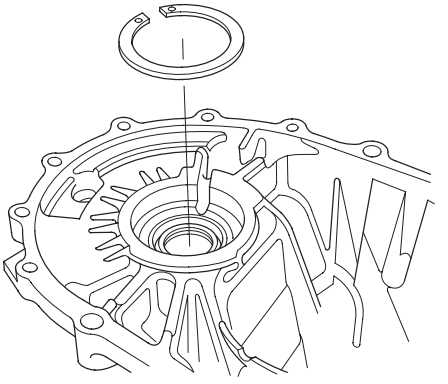
4. Install a new oil seal flush with the clutch housing with the 15 x 135L driver handle (A) and the oil seal driver attachment (B).



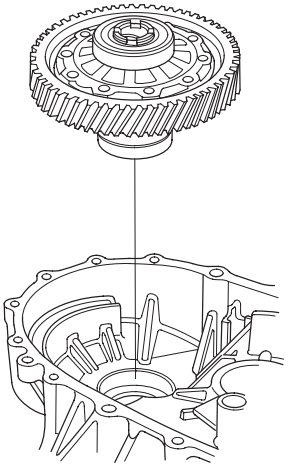
Differential Thrust Clearance Adjustment

Special Tools Required
Inner driver handle, 40 mm 07746-0030100

1. If you removed the 80 mm shim from the transmission housing reinstall is the same sized shim.



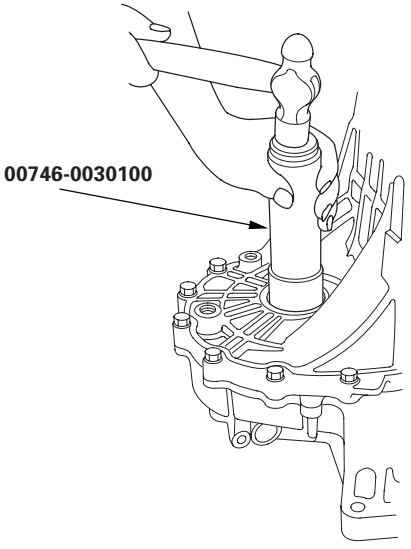
2. Install the differential assembly into the clutch housing.



3. Install the transmission housing onto the clutch housing, then tighten the 8 mm flange bolts in a crisscross pattern in several steps (see step 14 on page 13-136).

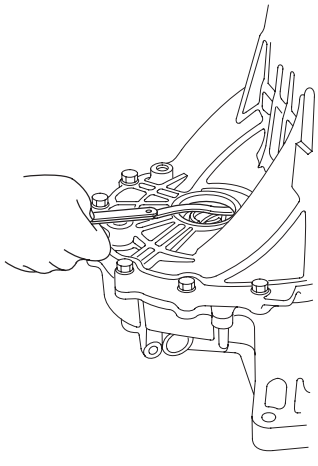
   Specified Torque:
   8 x 1.25 mm
   27 N·m (2.8 kgf·m, 20 lbf·ft)

4. Use the 40 mm inner driver handle to bottom the differential assembly in the clutch housing.



5. Measure the clearance between the 80 mm shim and the bearing outer race in transmission housing.

   Standard: 0—0.10 mm (0—0.039 in.)



6. If the clearance exceeds the standard, select a new 80 mm shim from the following table. If the clearance measured in step 5 is within the standard, go to step 9.

   80 mm Shim

Type	Part Number	Thickness
A	41441-PL3-B00	1.00 mm (0.0394 in.)
B	41442-PL3-B00	1.10 mm (0.0433 in.)
C	41443-PL3-B00	1.20 mm (0.0472 in.)
D	41444-PL3-B00	1.30 mm (0.0512 in.)
E	41445-PL3-B00	1.40 mm (0.0551 in.)
F	41446-PL3-B00	1.50 mm (0.0591 in.)
G	41447-PL3-B00	1.60 mm (0.0630 in.)
H	41448-PL3-B00	1.70 mm (0.0669 in.)
J	41449-PL3-B00	1.80 mm (0.0709 in.)
K	41450-PL3-B00	1.05 mm (0.0413 in.)
L	41451-PL3-B00	1.15 mm (0.0453 in.)
M	41452-PL3-B00	1.25 mm (0.0492 in.)
N	41453-PL3-B00	1.35 mm (0.0531 in.)
P	41454-PL3-B00	1.45 mm (0.0571 in.)
Q	41455-PL3-B00	1.55 mm (0.0610 in.)
R	41456-PL3-B00	1.65 mm (0.0650 in.)
S	41457-PL3-B00	1.75 mm (0.0689 in.)

7. Remove the bolts and transmission housing.

8. Replace the thrust shim selected in step 6, then recheck the clearance.

9. Reinstall the transmission housing.

DYNOMITE -2009-

Automatic Transmission

Automatic Transmission

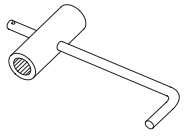
A/T Gear Position Indicator

A/T Interlock System

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07GAB-PF50101	Mainshaft Holder	1
②	07HAJ-PK40201	Preload Inspection Tool	1
③	07JAD-PH80101	Oil Seal Driver Attachment	1
④	07LAD-PW50601	Attachment, 40 mm	1
⑤	07LAE-PX40000	Clutch Spring Compressor Set	1
⑥	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	3
⑦	07MAJ-PY40120	A/T Pressure Hose Adapter	3
⑧	07NAD-PX40100	Attachment, 78 x 80 mm	1
⑨	07QAD-P0A0100	Attachment, 42 mm I.D.	1
⑩	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑪	07406-0020401	A/T Oil Pressure Gauge Set	1
⑫	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25—40 mm	1
⑬	07746-0010100	Attachment, 32 x 35 mm	1
⑭	07746-0010300	Attachment, 42 x 47 mm	1
⑮	07746-0010400	Attachment, 52 x 55 mm	1
⑯	07746-0010500	Attachment, 62 x 68 mm	1
⑰	07746-0010600	Attachment, 72 x 75 mm	1
⑱	07746-001A800	Attachment, 22 x 24 mm	1
⑲	07746-0030100	Driver Handle, 40 mm I.D.	1
⑳	07749-0010000	Driver	1
㉑	07947-SD90101	Oil Seal Driver Attachment	1
㉒	07947-ZV00100	Oil Seal Driver Attachment	1

⑫: Must be used with commercially available 3/8 ″-16 slide hammer.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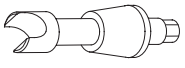
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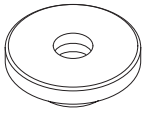
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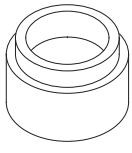
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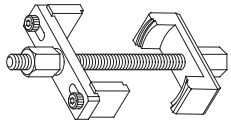
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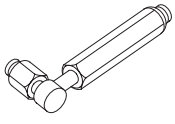
⑥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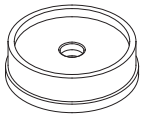
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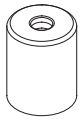
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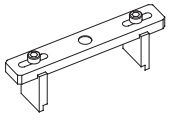
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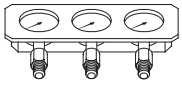
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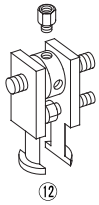
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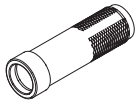
⑬⑭⑮⑯⑰⑱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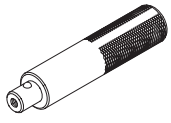
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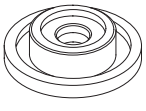
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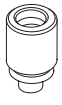
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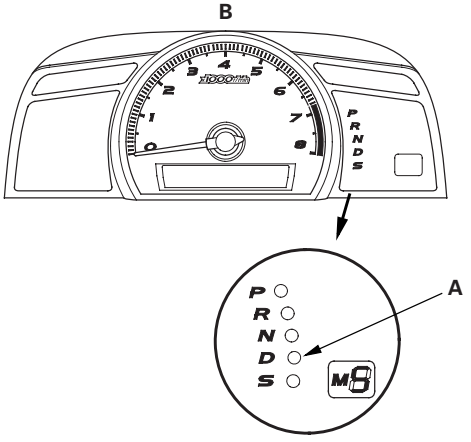
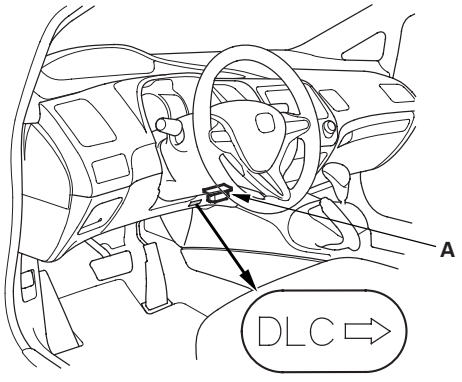
General Troubleshooting Information

How to Check for DTCs with the Honda Diagnostic System (HDS)

When the powertrain control module (PCM) senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (tach) (B) will usually blink.



When the Honda diagnostic system (HDS) is connected to the data link connector (DLC) (A) located under the driver's side of the dashboard and the SCS mode is selected, it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned to ON (II) and the appropriate menu is selected.



If the D indicator or the malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
3. Select A/T system, and observe the DTC in the DTCs MENU on the HDS screen.
4. Record the freeze data and the on-board snapshots for all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and data.
7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the indicated DTC's troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will not trigger DTCs or cause the D indicator to blink. If the MIL was reported ON or the D indicator has been blinking, check for DTCs. If the vehicle has an abnormal symptom, and there are no DTCs stored, do the symptom troubleshooting. Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.

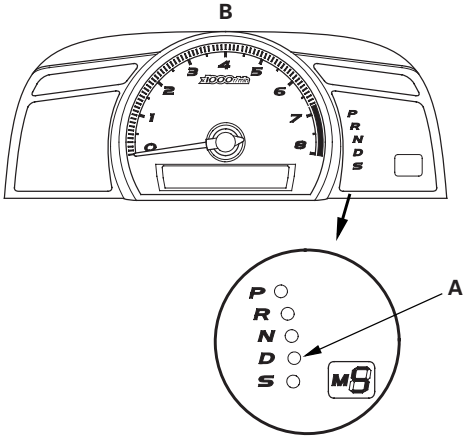
(cont'd)

General Troubleshooting Information (cont'd)

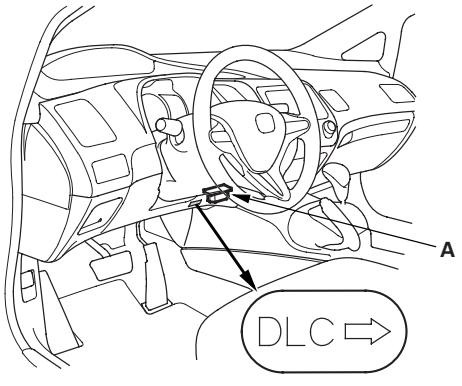
How to Check for DTCs with the SCS Mode (retrieving the flash codes)

NOTE: The preferred method is to use the HDS to retrieve the DTCs.

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge control module (tach) (B) will usually blink.



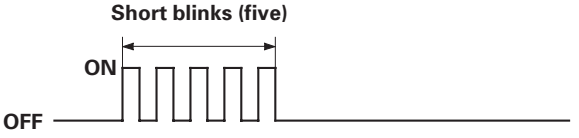
When the D indicator has been reported on, connect the HDS to the DLC (A) located under the driver's side of the dashboard. Turn the ignition switch to ON (II), select SCS mode, then the D indicator will indicate (flash) the DTC.



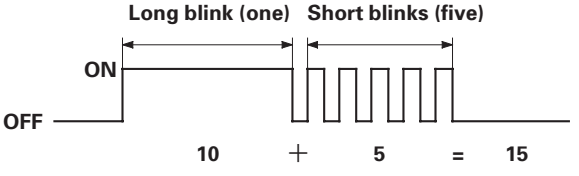
If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
3. Select SCS mode, then observe the D indicator in the gauge control module (tach). Codes 1 through 9 are indicated by individual short blinks. Codes 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

Example: DTC P0705 (5)



Example: DTC P0717 (15)



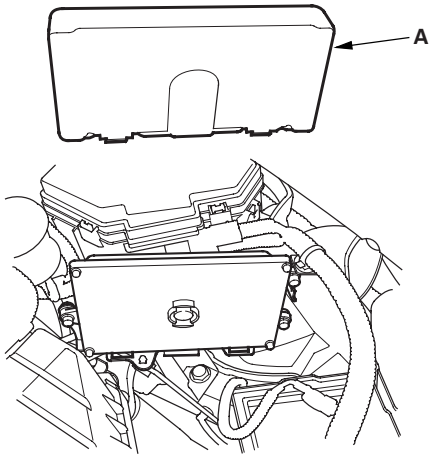
4. Record all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and the data.
7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTCs. If the A/T DTC returns, go to the indicated DTC's troubleshooting. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

How to Troubleshoot Circuits at the PCM Connectors

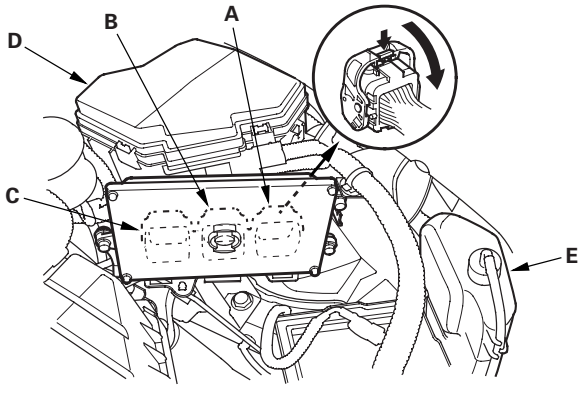
NOTE: The PCM overwrites data and monitors the EVAP system for about 30 minutes after the ignition switch is turned to LOCK (0) or ACC (I). Jumping the SCS line after turning the ignition switch to LOCK (0) or ACC (I) cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

1. Make sure the ignition switch is turned to LOCK (0), then jump the SCS line with the HDS.

2. Remove the cover (A).



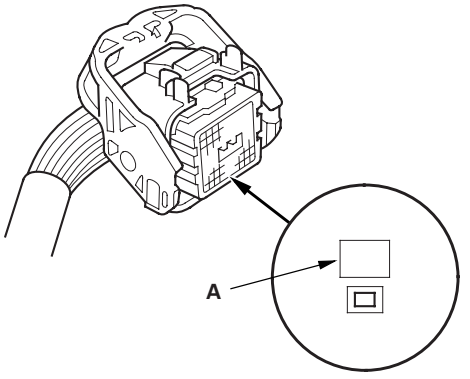
3. Lift up the under-hood fuse/relay box (D).



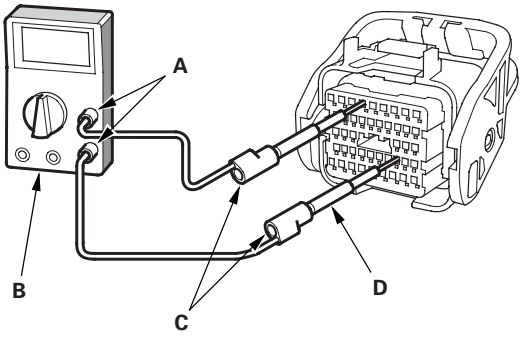
4. Remove the coolant reservoir (E). Disconnect PCM connectors A, B, and C, and probe the terminals from the terminal side of the connectors.

   NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

5. When diagnosis/troubleshooting is done at the PCM connector, use the terminal test port (A) above the terminal you need to check.



6. Connect one side of the patch cord's terminals (A) to a commercially available digital multimeter (B), and connect the other side cord's terminals (C) to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (D).



7. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

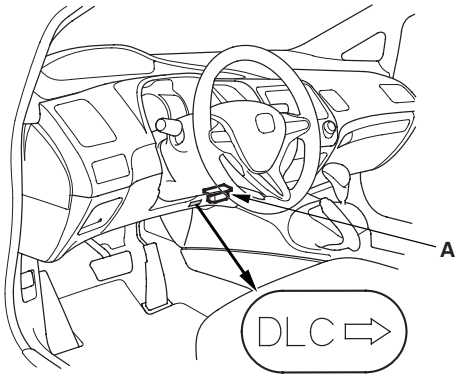
- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

(cont'd)

General Troubleshooting Information (cont'd)

Clear A/T DTCs Procedure

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
4. Clear the DTC(s) on the HDS screen.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on-board diagnosis is successfully completed.
- FAILED: The on-board diagnosis has finished but failed.
- NOT COMPLETED: The on-board diagnosis was running but is out of the enable conditions of the DTC.

How to End a Troubleshooting Session (required after any troubleshooting)

NOTE: Reset the PCM with the HDS while the engine is stopped.

1. Turn the ignition switch to LOCK (0).
2. Turn the ignition switch to ON (II), and wait for 30 seconds.
3. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
4. Do the PCM idle learn procedure (see page 11-310).
5. Start the engine with the shift lever in P or N, and warm it up to normal operating temperature (the radiator fan comes on).
6. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 50 km/h (31 mph) or under the same conditions as those indicated by the freeze data.

Failure Reproduction Technique

Make sure to follow these points while the vehicle is raised on a lift for the test-drive.

- Disable the VSA by pressing the VSA OFF switch.
- VSA DTC's may come on when test-driving on a lift. If the VSA DTC(s) come on, clear the DTC(s) with the HDS.

DTC Troubleshooting Index

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-3).

DTC *(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0107 (12) *(3)	———	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	(see page 14-80)
P0108 (12) *(3)	———	Blinks	ON or OFF	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	(see page 14-80)
P0335 (88) *(3)	———	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor No Signal	(see page 14-81)
P0339 (88) *(3)	———	Blinks	ON or OFF	Crankshaft Position (CKP) Sensor Intermittent Interruption	(see page 14-81)
P0365 (89) *(3)	———	Blinks	ON or OFF	Camshaft Position (CMP) Sensor B No Signal	(see page 14-82)
P0369 (89) *(3)	———	Blinks	ON or OFF	Camshaft Position (CMP) Sensor B Intermittent Interruption	(see page 14-82)
P0705 (5) *(2)	———	Blinks	ON	Short in Transmission Range Switch Circuit (Multiple Shift-position Input)	(see page 14-83)
P0706 (6) *(2)	○	OFF	ON	Open in Transmission Range Switch Circuit	(see page 14-92)
P0711 (28) *(2)	———	Blinks	OFF	Problem in ATF Temperature Sensor Circuit	(see page 14-96)
P0712 (28) *(2)	———	Blinks	OFF	Short in ATF Temperature Sensor Circuit	(see page 14-98)
P0713 (28) *(2)	———	Blinks	OFF	Open in ATF Temperature Sensor Circuit	(see page 14-100)
P0716 (15) *(2)	———	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit	(see page 14-103)
P0717 (15) *(2)	———	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)	(see page 14-103)
P0718 (15) *(2)	○	Blinks	ON	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure	(see page 14-107)
P0721 (9) *(2)	———	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit	(see page 14-111)
P0722 (9) *(2)	———	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)	(see page 14-111)
P0723 (9) *(2)	○	Blinks	ON	Output Shaft (Countershaft) Speed Sensor Intermittent Failure	(see page 14-116)

NOTE:

* (1): The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (3): The MIL comes on when the PGM-FI system detects the same failure.

(cont'd)

DTC Troubleshooting Index (cont'd)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-3).

DTC * (1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0731 (64)	○	Blinks	OFF	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)	(see page 14-120)
P0732 (64)	○	Blinks	OFF	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)	(see page 14-122)
P0733 (64)	○	Blinks	OFF	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)	(see page 14-123)
P0734 (64)	○	Blinks	OFF	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)	(see page 14-125)
P0735 (64)	○	Blinks	OFF	Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)	(see page 14-126)
P0741 (40)	○	Blinks	OFF	Torque Converter Clutch Hydraulic Circuit Stuck OFF	(see page 14-128)
P0747 (76)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck ON	(see page 14-129)
P0752 (70)	○	Blinks	ON	Shift Solenoid Valve A Stuck ON	(see page 14-130)
P0756 (71)	○	Blinks	ON	Shift Solenoid Valve B Stuck OFF	(see page 14-132)
P0757 (71)	○	Blinks	ON	Shift Solenoid Valve B Stuck ON	(see page 14-132)
P0761 (72)	○	Blinks	ON	Shift Solenoid Valve C Stuck OFF	(see page 14-133)
P0771 (74)	○	Blinks	ON	Shift Solenoid Valve E Stuck OFF	(see page 14-135)
P0776 (77)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF	(see page 14-136)
P0777 (77)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck ON	(see page 14-136)
P0780 (45)	○	Blinks	ON	Shift Control System	(see page 14-138)
P0796 (78)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck OFF	(see page 14-139)
P0797 (78)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck ON	(see page 14-139)

DTC *(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0842 (25) *(2)	○	Blinks	ON	Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-140)
P0843 (25) *(2)	○	Blinks	ON	Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-142)
P0847 (26) *(2)	———	Blinks	OFF	Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON	(see page 14-145)
P0848 (26) *(2)	———	Blinks	OFF	Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF	(see page 14-147)
P0962 (16) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit	(see page 14-150)
P0963 (16) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A	(see page 14-153)
P0966 (23) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit	(see page 14-155)
P0967 (23) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B	(see page 14-158)
P0970 (29) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit	(see page 14-160)
P0971 (29) *(2)	———	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C	(see page 14-163)
P0973 (7) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve A Circuit	(see page 14-165)
P0974 (7) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve A Circuit	(see page 14-167)
P0976 (8) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve B Circuit	(see page 14-170)
P0977 (8) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve B Circuit	(see page 14-172)
P0979 (22) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve C Circuit	(see page 14-175)
P0980 (22) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve C Circuit	(see page 14-177)
P0982 (60) *(2)	———	Blinks	ON	Short in Shift Solenoid Valve D Circuit	(see page 14-180)
P0983 (60) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve D Circuit	(see page 14-182)
P0985 (61) *(2), *(4)	———	Blinks	ON	Short in Shift Solenoid Valve E Circuit	(see page 14-185)
P0985 (61) *(2), *(5)	———	Blinks	ON	Short in Shift Solenoid Valve E Circuit	(see page 14-187)
P0986 (61) *(2)	———	Blinks	ON	Open in Shift Solenoid Valve E Circuit	(see page 14-189)

NOTE:

* (1): The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (4): '06 model
* (5): '07-09 models

(cont'd)

DTC Troubleshooting Index (cont'd)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review General Troubleshooting Information (see page 14-3).

DTC * (1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P16C0 (99)	———	OFF	ON	PCM A/T Control System Incomplete Update	(see page 14-192)
P1717 (62) * (2)	○	Blinks	OFF	Open in Transmission Range Switch ATPRVS Switch Circuit	(see page 14-192)
P1730 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves A or D Stuck OFF • Shift Solenoid Valve B Stuck ON • Shift Valves A, B, or D Stuck	(see page 14-195)
P1731 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valve E Stuck ON • Shift Valve E Stuck • A/T Clutch Pressure Control Solenoid Valve A Stuck OFF	(see page 14-197)
P1732 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves B or C Stuck ON • Shift Valves B or C Stuck	(see page 14-198)
P1733 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valve D Stuck ON • Shift Valve D Stuck • A/T Clutch Pressure Control Solenoid Valve C Stuck OFF	(see page 14-200)
P1734 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves B or C Stuck OFF • Shift Valves B or C Stuck	(see page 14-201)
P2122 (20)	———	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input	(see page 14-203)
P2123 (20)	———	Blinks	ON	Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input	(see page 14-204)
U0028 (107) * (3)	———	Blinks	ON or OFF	F-CAN Malfunction (BUS-OFF (PCM))	(see page 14-205)
U0122 (107)	———	Blinks	OFF	F-CAN Malfunction (PCM-VSA Modulator-Control Unit)	(see page 14-206)
U0155 (107) * (3)	———	Blinks	ON or OFF	F-CAN Malfunction (PCM-Gauge Control Module)	(see page 14-207)

NOTE:
* (1): The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
* (2): This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
* (3): The MIL comes on when the PGM-FI system detects the same failure.

Symptom Troubleshooting Index

Symptom	Probable cause(s)	Notes
When you turn the ignition switch to ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	• F-CAN communication line error • Gauge control module (tach) defective • PCM defective	• Check the F-CAN communication line for a DTC (see page 22-265). • Check the A/T gear position indicator drive circuit in the gauge control module (tach) by using the gauge control module self-diagnostic function (see page 22-242).
A/T gear position indicator does not come on while the shift lever is in that position	• F-CAN communication line error • Gauge control module (tach) defective • PCM defective • Transmission range switch defective • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn	• Check the F-CAN communication line for a DTC (see page 22-265). • Check the A/T gear position indicator drive circuit in the gauge control module (tach) by using the gauge control module self-diagnostic function (see page 22-242). • Inspect the transmission range switch (see page 14-265). • Check for a loose shift cable at the shift lever and the selector control lever.
Shift indicator does not work	• F-CAN communication line error • Gauge control module (tach) defective • PCM defective • Transmission range switch defective • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn	• Check the F-CAN communication line for a DTC (see page 22-265). • Check the F-CAN communication line by using the gauge control module self-diagnostic function (see page 22-243). • Check the A/T gear position indicator drive circuit in the gauge control module (tach) by using the gauge control module self-diagnostic function (see page 22-242). • Inspect the transmission range switch (see page 14-265). • Check for a loose shift cable at the shift lever and the selector control lever.
When you press the paddle shifter + (upshift switch) in S, the transmission does not upshift gears	A problem in the paddle shifter + (upshift switch) circuit	Check the paddle shifter + (upshift switch) circuit (see page 14-270).
When you press the paddle shifter − (downshift switch) in S, the transmission does not downshift gears	A problem in the paddle shifter − (downshift switch) circuit	Check the paddle shifter − (downshift switch) circuit (see page 14-273).

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Shift lever cannot be moved from P while pressing on the brake pedal	• Accelerator pedal position sensor circuit • Accelerator pedal position sensor defective • Brake pedal position switch circuit • Brake pedal position switch defective • Shift lock solenoid defective • Shift lock solenoid control circuit • Shift lock mechanism defective • Throttle body defective • Transmission range switch ATPP switch stuck OFF • Transmission range switch ATPP switch line opened	• Inspect the APP Sensor signal (see page 11-268). • Troubleshoot the shift lock system circuit (see page 14-280). • Test the shift lock solenoid (see page 14-287). • Inspect the transmission range switch (see page 14-265).
Ignition switch cannot be moved from ACCESSORY (I) to LOCK (0) (key is pushed in, the shift lever in P)	• Interlock control system circuit • Key interlock solenoid stuck ON • Park pin switch stuck OFF • Transmission range switch	• Troubleshoot the key interlock system circuit (see page 14-285). • Inspect the transmission range switch (see page 14-265).
HDS does not communicate with the PCM or the vehicle	DLC circuit error	Troubleshoot the DLC circuit (see page 11-204).

Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any gear	1. Low ATF level 2. Shift cable broken or out of adjustment 3. Connection between the shift cable and transmission or body is worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Transmission-to-engine assembly error 10. Axle disengaged	• Check the ATF level, and check the ATF cooler lines for leaks and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the selector control lever. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and clean the torque converter, cooler, and lines.
Vehicle moves in R, but not in D, S, or 1st in S	1. 1st accumulator defective 2. 1st gears worn or damaged 3. 1st clutch defective	• Check the 1st clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged. • Check the 1st accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in D and R, but not in 2nd in S	1. 2nd accumulator defective 2. 2nd gears worn or damaged 3. 2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check the 2nd accumulator piston, the O-ring, and the springs in the servo valve body for wear and damage.
Vehicle moves in D and S, but not in R	1. Shift solenoid valve E defective 2. Shift fork shaft stuck 3. Shift valve E defective 4. 4th/reverse accumulator defective 5. 4th clutch defective 6. Reverse gears worn or damaged	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Check for a missing shift fork bolt on the shift fork shaft. • Check shift valve E in the main valve body for free movement, and check the shift valve E spring for wear and damage. • Check the 4th clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the reverse selector teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 4th gear and the reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes a clicking, grinding, or whirring noise, also replace the mainshaft 4th gear, the reverse idler gear, and the countershaft 4th gear.

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D, S, and R; stall speed high in D and S in 1st and 2nd	1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective	• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the selector control lever. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter.
Poor acceleration; flares when starting off in D, S, and R; stall speed high when starting off in 2nd in S	2nd clutch defective	• Check the 2nd clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; flares when starting off in D, S, and R; stall speed high in R	1. Shift cable broken or out of adjustment 2. 4th clutch defective	• Check for a loose shift cable at the shift lever and the selector control lever. • Check the 4th clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares when starting off in D, S, and R; stall speed low in D and S in 1st and 2nd	1. Shift solenoid valve E defective 2. Torque converter one-way clutch defective 3. Engine output low 4. Torque converter clutch piston defective 5. Lock-up shift valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Replace the torque converter. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Poor acceleration; flares when starting off in D, S, and R; stall speed low in R	1. Torque converter one-way clutch defective 2. Engine output low 3. Torque converter clutch piston defective 4. Lock-up shift valve defective	• Replace the torque converter. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Engine idle vibration	1. Low ATF level 2. Shift solenoid valve E defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective	• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Inspect the ATF strainer for clogging with particles of steel or aluminum. If the ATF strainer is clogged, replace it, and clean the torque converter, cooler, and lines. • Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Check for a misinstalled/damaged drive plate. • Check that the idle rpm in gear is the specified idle speed. If the idle speed is correct, adjust the engine and the transmission mounts. • Replace the torque converter. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.

Symptom	Probable cause(s)	Notes
Vehicle moves in N	1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. 1st clutch defective 5. 2nd clutch defective 6. 3rd clutch defective 7. 4th clutch defective 8. 5th clutch defective 9. Clearance between clutch end-plate and top disc incorrect 10. Needle bearing seized, worn, or damaged 11. Thrust washer seized, worn, or damaged	• Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the ATF level, and drain the ATF if it is over-filled. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter. • Check the 1st, 2nd, 3rd, 4th, and 5th clutch pressures. • Check the relief valve in the main valve body for free movement, and check the relief valve spring for wear and damage. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal (for 1st, 2nd, and 3rd clutch only) for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 1st or the 3rd clutch feed pipe is loose or damaged. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Late shift after shifting from N to D and S, or excessive shock when shifted into D and S	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Connection between the shift cable and transmission or body is worn 7. Input shaft (mainshaft) speed sensor defective 8. Output shaft (countershaft) speed sensor defective 9. ATF temperature sensor defective 10. Foreign material in separator plate orifice 11. Servo control valve defective 12. 1st accumulator defective 13. 1st check ball stuck 14. Lock-up shift valve defective 15. 1st clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a loose shift cable at the shift lever and the selector control lever. • Check the 1st clutch pressure. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the servo control valve in the main valve body for free movement, and check the servo control valve spring for wear and damage. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged. • Check the 1st accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.

Symptom	Probable cause(s)	Notes
Late shift after shifting from N to R, or excessive shock when shifted into R	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Shift cable broken or out of adjustment 4. Connection between the shift cable and transmission or body is worn 5. Input shaft (mainshaft) speed sensor defective 6. Output shaft (countershaft) speed sensor defective 7. ATF temperature sensor defective 8. Shift fork shaft stuck 9. Foreign material in separator plate orifice 10. Shift valve E defective 11. 4th/reverse accumulator defective 12. Lock-up shift valve defective 13. 4th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a loose shift cable at the shift lever and the selector control lever. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check for a missing shift fork bolt on the shift fork shaft. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the 4th clutch pressure. • Inspect the servo valve and the O-ring for wear and damage. • Check shift valve E in the main valve body for free movement, and check the shift valve E spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Transmission does not shift	1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective	• Check for a stored DTC, and check for loose connectors. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on all upshifts and downshifts	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. ATF temperature sensor defective 6. Foreign material in separator plate orifice	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. 2nd clutch transmission fluid pressure switch defective 6. Foreign material in separator plate orifice 7. 1st accumulator defective 8. 2nd accumulator defective 9. 1st check ball stuck 10. 2nd check ball stuck 11. Lock-up shift valve defective 12. 1st clutch defective 13. 2nd clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 1st and the 2nd clutch pressures. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged. • Check the 1st accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage. • Check the 2nd accumulator piston, the O-ring, and the springs in the servo valve body for wear and damage.

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. 3rd clutch transmission fluid pressure switch defective 4. Foreign material in separator plate orifice 5. 2nd accumulator defective 6. 3rd accumulator defective 7. 2nd check ball stuck 8. 2nd clutch defective 9. 3rd clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 2nd and the 3rd clutch pressures. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged. • Check the 2nd accumulator piston, the O-ring, and the springs in the servo body for wear and damage. • Check the 3rd accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 3-4 upshift or 4-3 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 3rd accumulator defective 5. 4th/reverse accumulator defective 6. 3rd clutch defective 7. 4th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the 3rd and the 4th clutch pressures. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal (for 3rd clutch only) for wear, damage, and peeling. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged. • Check the 3rd accumulator piston, the O-ring, and the springs in the regulator valve body for wear and damage.

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	1. A/T clutch pressure control solenoid valve B defective 2. A/T clutch pressure control solenoid valve C defective 3. Foreign material in separator plate orifice 4. 4th/reverse accumulator defective 5. 5th accumulator defective 6. 4th clutch defective 7. 5th clutch defective	• Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check for a clogged orifice in the separator plate. If the orifice is clogged, remove it and clean the separator plate orifice. • Check the 4th and the 5th clutch pressures. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged. • Check the 4th and the 5th accumulator pistons, the O-rings, and the springs in the servo body for wear and damage.
Noise from transmission in all shift lever positions	1. ATF pump worn or binding 2. Mainshaft bearing, countershaft bearing, or secondary shaft bearing defective	• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage. • Inspect the ATF strainer is clogged with particles of steel or aluminum. If the ATF strainer is clogged, replace it, and clean the torque converter, cooler, and lines. • Inspect the mainshaft, the countershaft, and the secondary shaft for wear or damage.

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle does not accelerate above 50 km/h (31 mph)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	• Check for a misinstalled/damaged drive plate. • Check that the idle rpm in gear is the specified idle speed. If the idle speed is correct, adjust the engine and the transmission mounts.
Shift lever does not operate smoothly	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between the shift cable and transmission or body is worn	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch for operation. • Check for a loose shift cable at the shift lever and the selector control lever.
Transmission does not shift into P	1. Shift cable broken or out of adjustment 2. Connection between the shift cable and transmission or body is worn 3. Park mechanism defective	• Check for a loose shift cable at the shift lever and the selector control lever. • Check the park pawl spring installation and the park lever spring installation. If installation is incorrect, install the spring correctly. Make sure that the park lever stop is not installed upside down. Check the distance between the park pawl shaft and the park lever roller pin. If the distance is out of tolerance, select and install the appropriate park lever stop.
Torque converter clutch does not disengage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the lock-up control valve in the main valve body for free movement, and check the lock-up control valve spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.

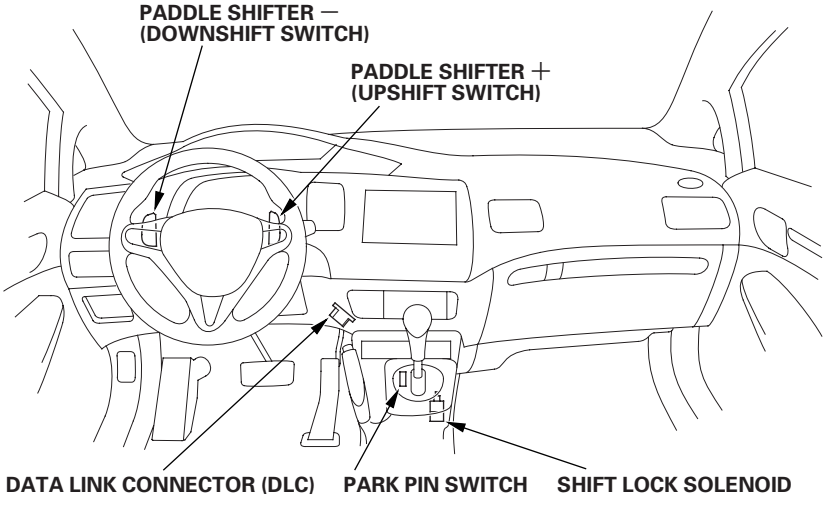
Symptom	Probable cause(s)	Notes
Torque converter clutch does not operate smoothly	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Torque converter clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the lock-up control valve in the main valve body for free movement, and check the lock-up control valve spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
Torque converter clutch does not engage	1. Shift solenoid valve E defective 2. A/T clutch pressure control solenoid valve A defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective	• Check for a stored DTC, and check for loose connectors. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect the A/T clutch pressure control solenoid valve filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Replace the torque converter. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check the lock-up control valve in the main valve body for free movement, and check the lock-up control valve spring for wear and damage. • Check the lock-up shift valve in the regulator valve body for free movement, and check the lock-up shift valve spring for wear and damage.
A/T gear position indicator does not indicate shift lever positions	1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between the shift cable and transmission or body is worn	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch operation. • Check for a loose shift cable at the shift lever and the selector control lever.

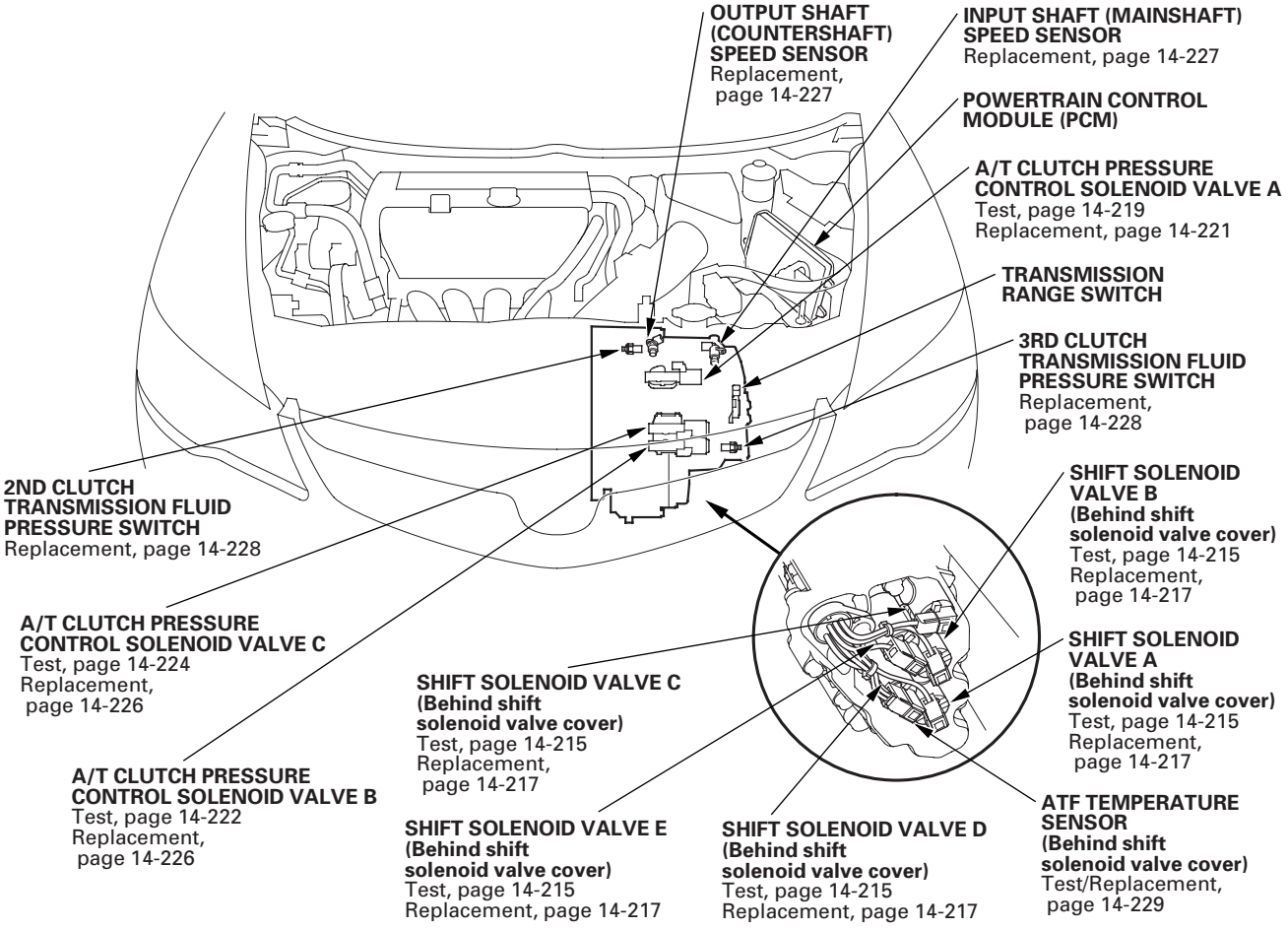
(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	• Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch operation. • Check the output shaft (countershaft) speed sensor installation.
Engine does not rev to high rpm, and the transmission upshifts at low rpm (engine at normal operating temperature)	VTEC rocker arms defective	Check the engine rocker arms.

Component Location Index





System Description

General Operation

The automatic transmission is a combination of a three-element torque converter and triple-shaft electronically controlled unit which provides five speeds forward and one in reverse. The entire unit is positioned in line with the engine.

Torque Converter, Gears, and Clutches
The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turns as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter drive gear when the engine is being started. The entire torque converter assembly serves as a flywheel while transmitting power to the transmission mainshaft. The transmission has three parallel shafts; the mainshaft, the countershaft, and the secondary shaft. The mainshaft is in line with the engine crankshaft, and includes the 4th and 5th clutches, and gears for 5th, 4th, reverse, and idler. The mainshaft reverse gear is integral with the mainshaft 4th gear. The countershaft includes the gears for 1st, 2nd, 3rd, 4th, 5th, reverse, park, and the final drive. The final drive gear is integral with the countershaft. The countershaft 4th gear and the countershaft reverse gear can be locked to the countershaft providing 4th or reverse gear, depending on which way the selector is moved. The secondary shaft includes the 1st, 2nd, and 3rd clutches, and gears for 1st, 2nd, 3rd, and idler. The idler gear shaft is located between the mainshaft and the secondary shaft, and the idler gear transmits power between the mainshaft and the secondary shaft. The gears on the mainshaft and the secondary shaft are in constant mesh with those on the countershaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, then to the secondary shaft to the countershaft, or through the mainshaft to the countershaft to provide drive.

Electronic Control
The electronic control system consists of the powertrain control module (PCM), sensors, and shift solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located in the engine compartment.

Hydraulic Control
The valve bodies include the main valve body, the regulator valve body, and the servo body. They are bolted to the torque converter housing. The main valve body contains the manual valve, shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the torque converter check valve, the lock-up shift valve, and the 1st and 3rd accumulators. The servo body contains the servo valve, shift valve D, the accumulators for 2nd, 4th, and 5th, and shift solenoid valves A, B, C, D, and E. Fluid from the regulator passes through the manual valve to the various control valves. The 1st, 3rd, and 5th clutches receive fluid from their respective feed pipes, and the 2nd and 4th clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism
To shift gears, the PCM controls shift solenoid valves A, B, C, D, and E, and A/T clutch pressure control solenoid valves A, B, and C, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port leading hydraulic pressure to the clutch. A/T clutch pressure control solenoid valves A, B, and C regulate their respective pressure, and pressurize the clutches to engage them and their corresponding gears. The pressure of the A/T clutch pressure control solenoid valves also applies to the shift valves to switch the port.

Lock-up Mechanism
The lock-up mechanism operates in D (2nd, 3rd, 4th, and 5th gears). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve on and off. A/T clutch pressure control solenoid valve A and the lock-up control valve control the degree of lock-up.

Gear Selection
The shift lever has five positions; P: PARK, R: REVERSE, N: NEUTRAL, D: DRIVE 1st through 5th gear ranges with D-position automatic shift mode and D-paddle shift mode, S: DRIVE 1st through 5th gear ranges with S-position automatic shift mode and sequential sportshift mode.

Position		Description
P: PARK		Front wheels locked; the park pawl engaged with the park gear on the countershaft. All clutches are released.
R: REVERSE		Reverse; the reverse selector engaged with the countershaft reverse gear and the 5th clutch engaged.
N: NEUTRAL		All clutches are released.
D: DRIVE (1st through 5th)		General driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th gear, depending on the vehicle speed and throttle position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears.
S: DRIVE (1st through 5th)	S-position automatic shift mode	For rapid acceleration at highway speeds and general driving; starts off in 1st, shifts automatically to 2nd, 3rd, 4th, then 5th gear, depending on vehicle speed and throttle position. Downshifts through 4th, 3rd, 2nd, and 1st gear on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears.
	Sequential sportshift mode	Manual gear shift driving; vehicle can starts off in 1st and 2nd gears, and does not upshift automatically.

NOTE: D-paddle shift mode has been added for '08-09 models.

Starting the engine is possible only in P and N because of a slide-type neutral-safety switch.

Automatic Transmission Gear Position Indicator
The A/T gear position indicator in the gauge control module (tach) shows which shift lever position has been selected without having to look down at the console.

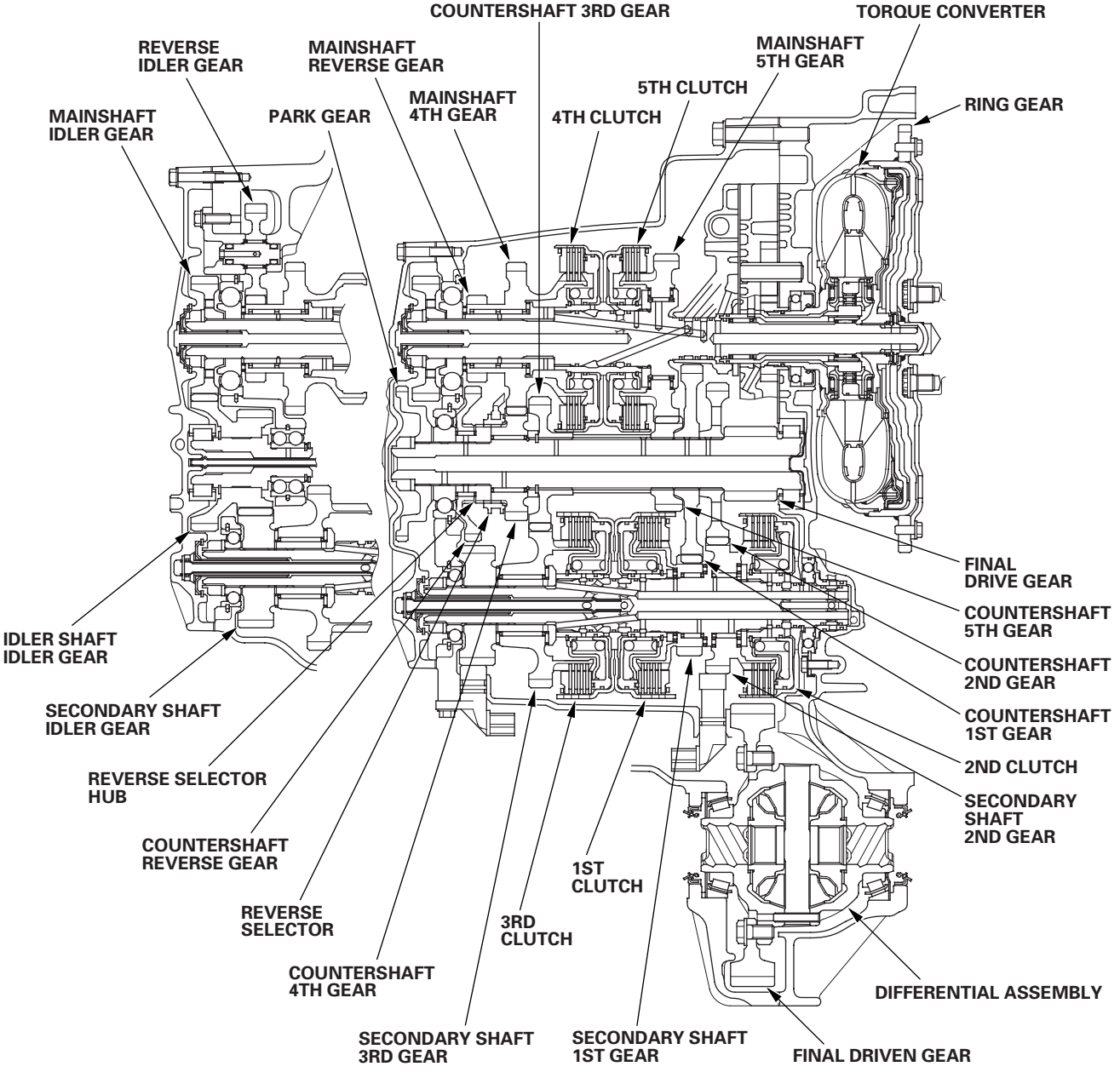
Shift Indicator and M Indicator
When the transmission is switched into the sequential sportshift mode, the shift indicator in the gauge control module (tach) displays the gear selected, and the M indicator next to the shift indicator comes on. The shift indicator also displays the gear selected in the D-paddle shift mode, but the M indicator does not come on.

NOTE: D-paddle shift mode has been added for '08-09 models.

System Description (cont'd)

Clutches and Gears

The five-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and the steel plates together, locking them so they do not slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and the steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.



1st Clutch
The 1st clutch engages/disengages 1st gear, and is located at the middle of the secondary shaft. The 1st clutch is joined back-to-back to the 3rd clutch. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

2nd Clutch
The 2nd clutch engages/disengages 2nd gear, and is located at the end of the secondary shaft, opposite the end cover. The 2nd clutch is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

3rd Clutch
The 3rd clutch engages/disengages 3rd gear, and is located at the middle of the secondary shaft. The 3rd clutch is joined back-to-back to the 1st clutch. The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

4th Clutch
The 4th clutch engages/disengages 4th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

5th Clutch
The 5th clutch engages/disengages 5th gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

Gear operation
Gears on the mainshaft:
- 4th gear engages/disengages with the mainshaft by the 4th clutch.
- 5th gear engages/disengages with the mainshaft by the 5th clutch.
- Reverse gear engages/disengages with the mainshaft by the 4th clutch.
- Idler gear is splined with the mainshaft, and rotates with the mainshaft.

Gears on the countershaft:
- Final drive gear is integral with the countershaft.
- 1st, 2nd, 3rd, 5th, and park gears are splined with the countershaft, and rotate with the countershaft.
- 4th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 4th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so that 4th gear and the reverse gear engage with the countershaft.

Gears on the secondary shaft:
- 1st gear engages/disengages with the secondary shaft by the 1st clutch.
- 2nd gear engages/disengages with the secondary shaft by the 2nd clutch.
- 3rd gear engages/disengages with the secondary shaft by the 3rd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.

The idler gear on the idler shaft transmits power between the mainshaft and the secondary shaft.
The reverse idler gear transmits power from the mainshaft reverse gear to the countershaft reverse gear, and changes rotational direction of the countershaft to reverse.

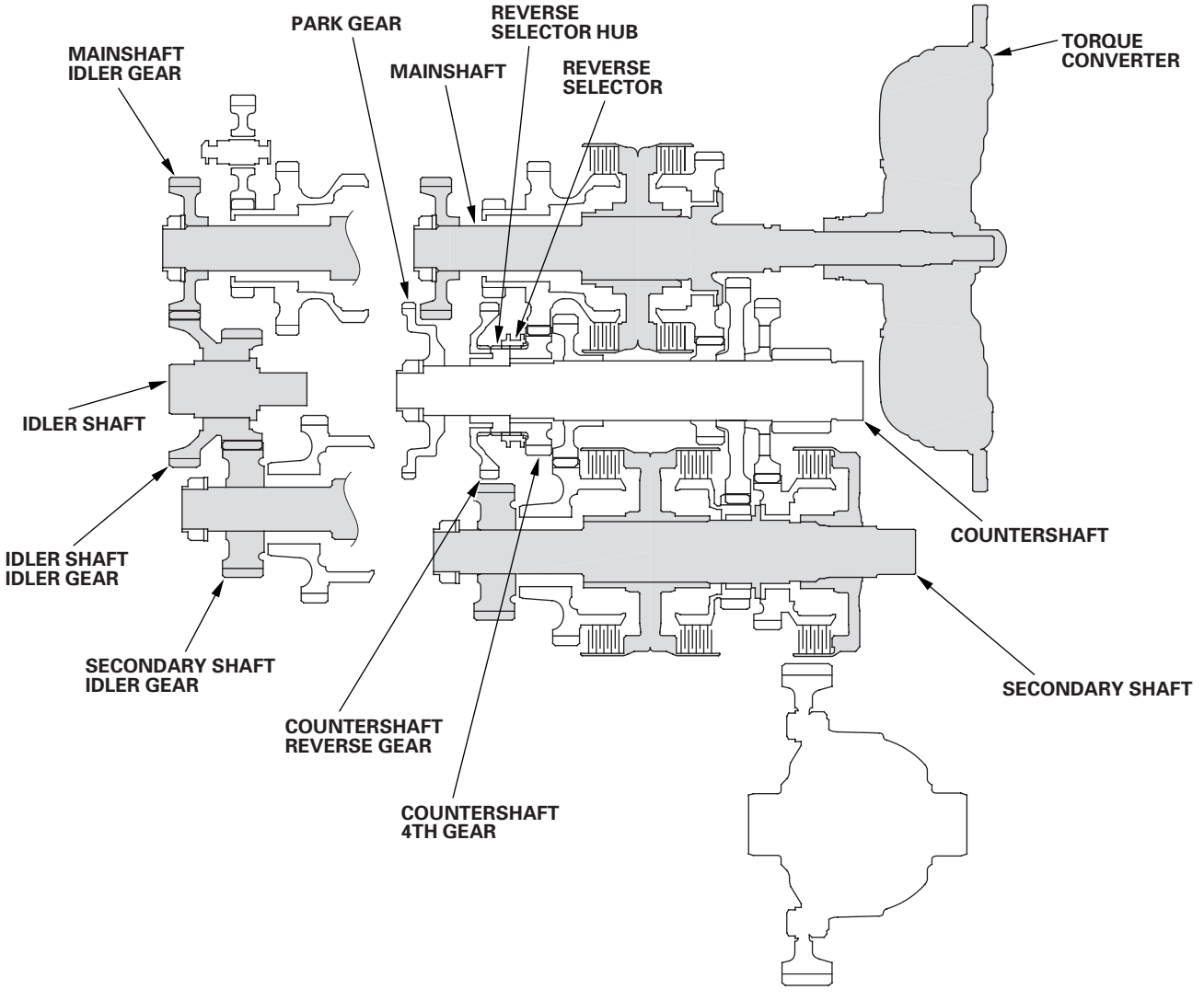
System Description (cont'd)

Power Flow

P Position
Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

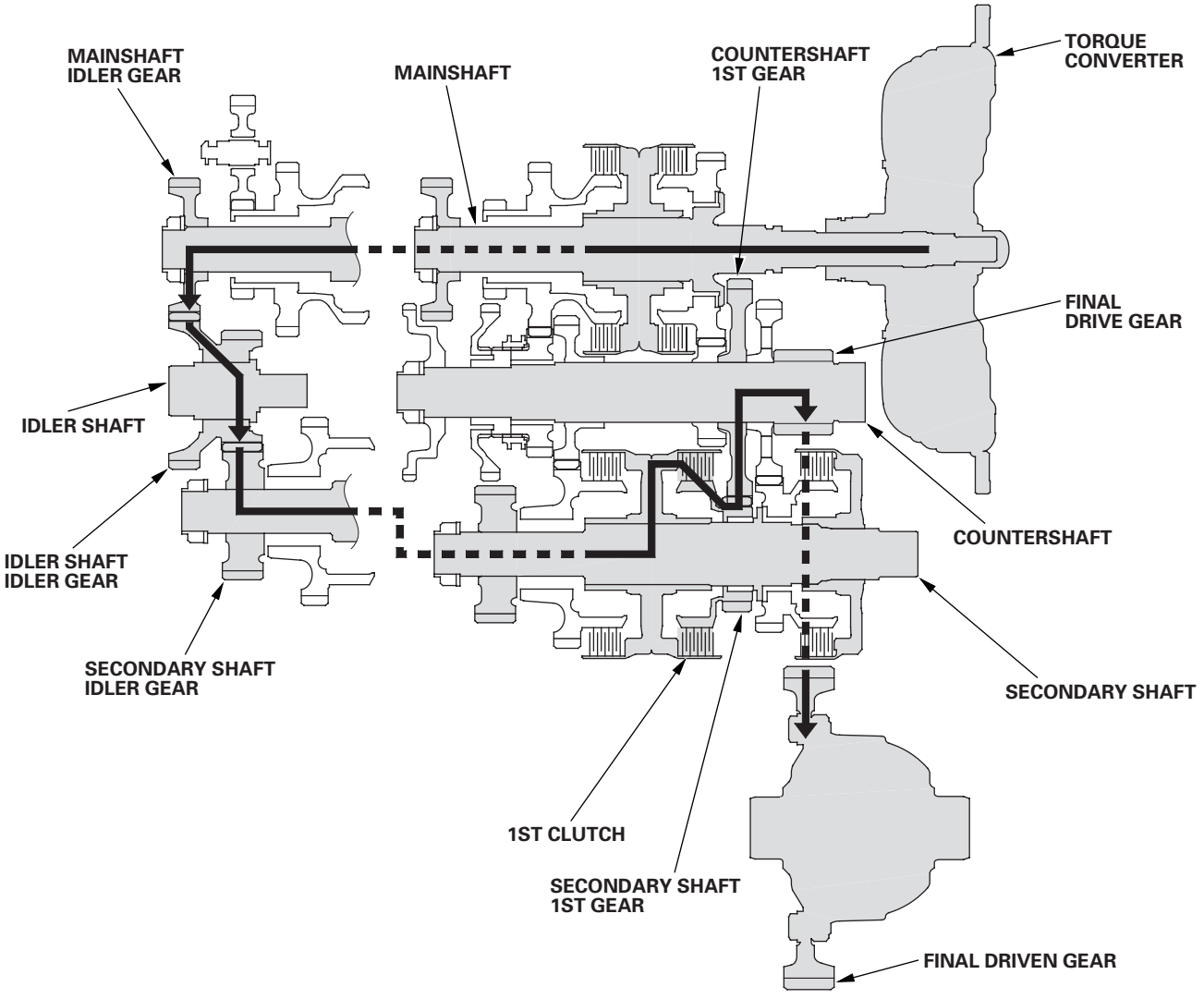
N Position
Engine power transmitted from the torque converter drives the mainshaft idler gear, the idler shaft idler gear, and the secondary shaft idler gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft.
In this position, the position of the reverse selector differs according to whether the shift lever shifted from D or R:

- When shifted from D, the reverse selector engages with the countershaft 4th gear and the reverse selector hub, and 4th gear engages with the countershaft.
- When shifted from R, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and reverse gear engages with the countershaft.



In 1st Gear

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



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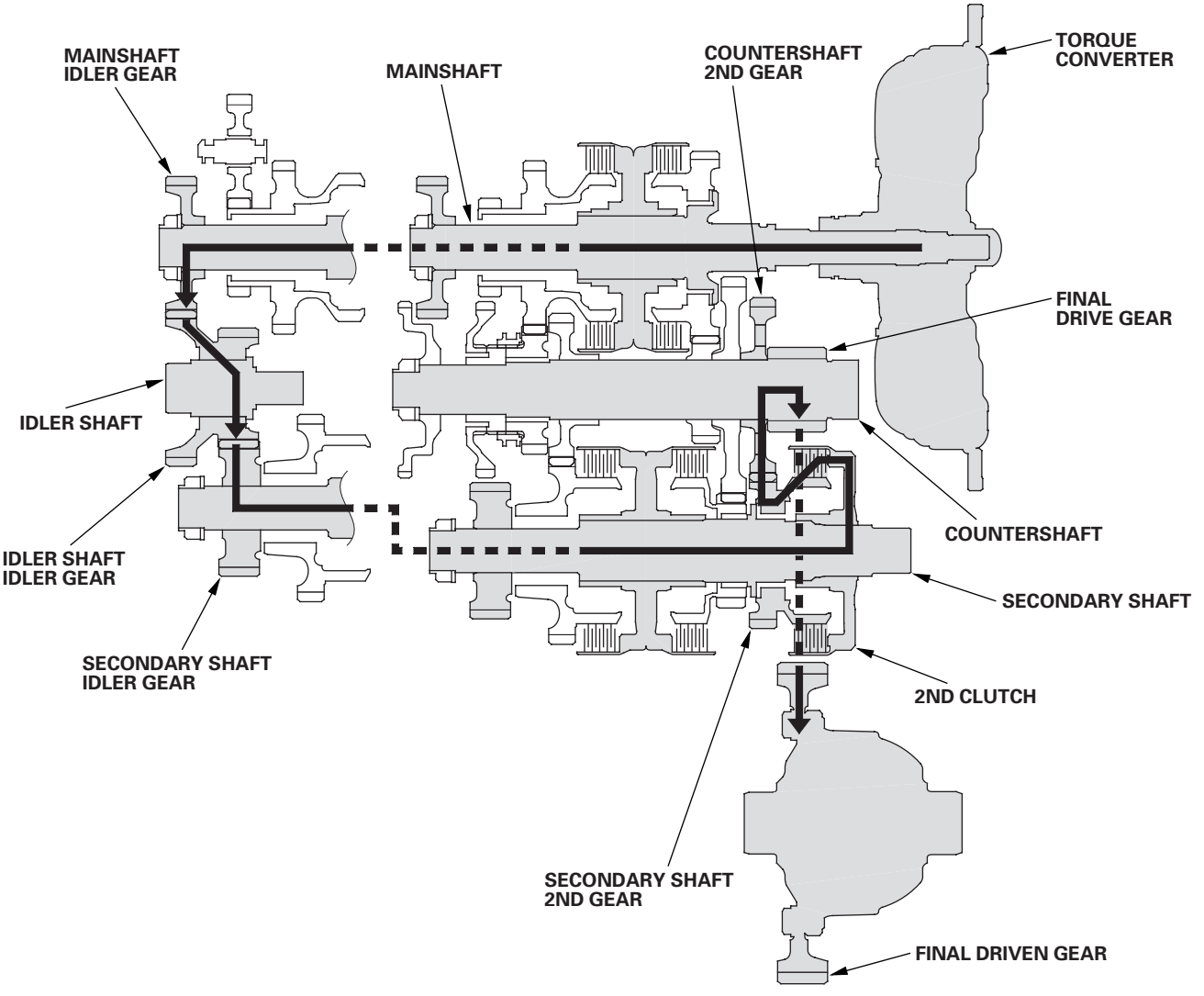
System Description (cont'd)

Power Flow (cont'd)

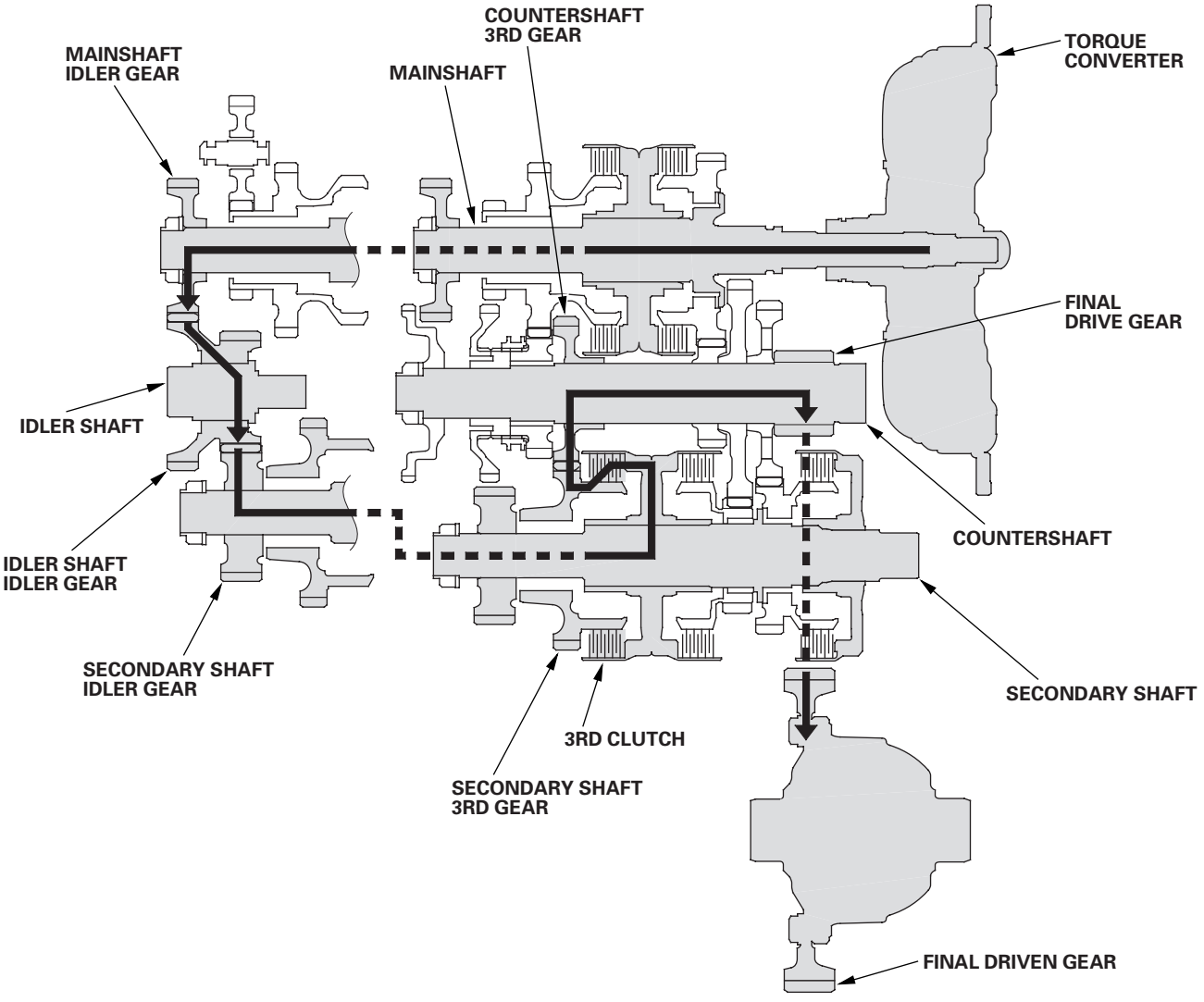
In 2nd Gear

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



In 3rd Gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the secondary shaft 3rd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 3rd gear drives the countershaft 3rd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



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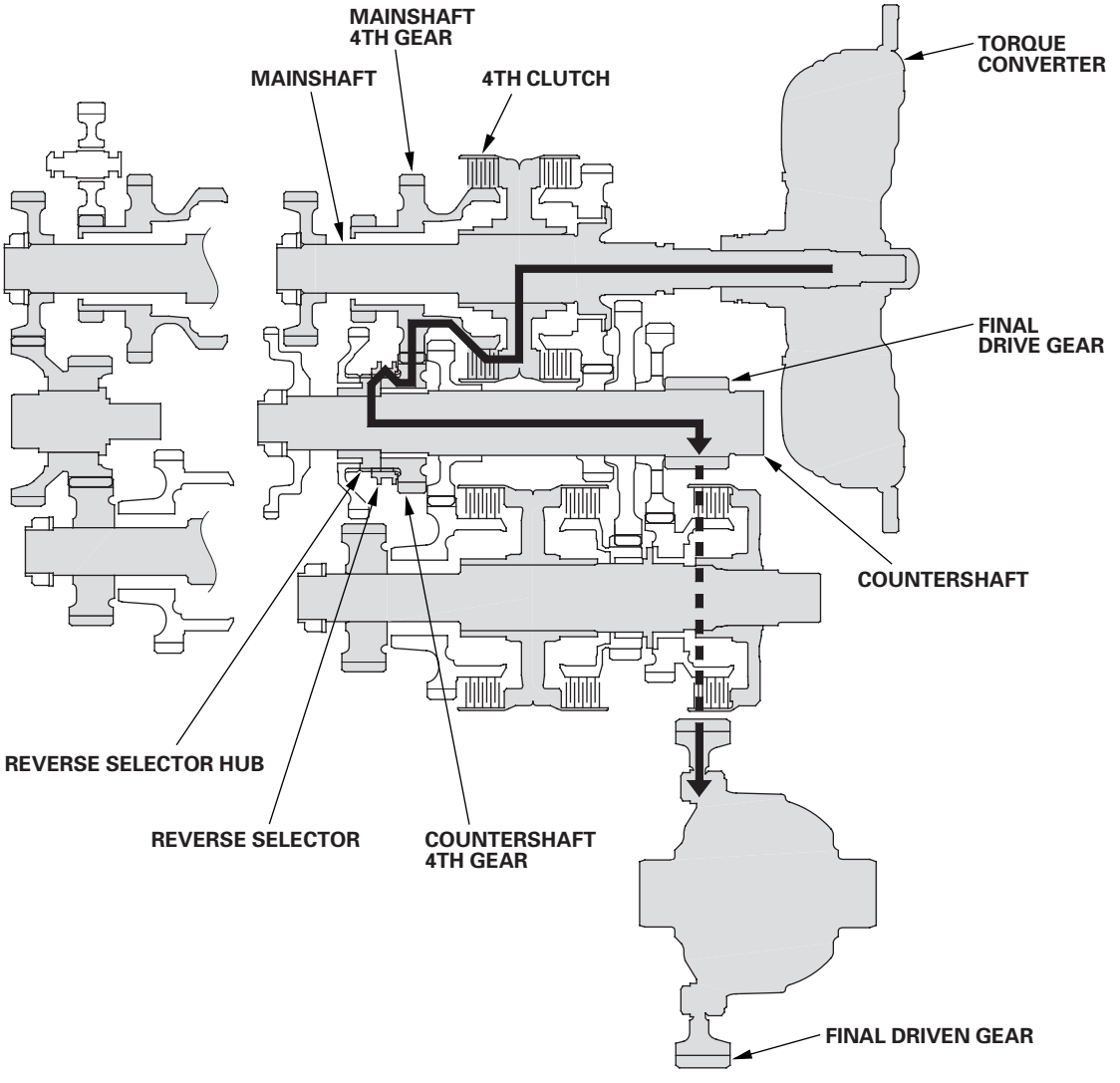
System Description (cont'd)

Power Flow (cont'd)

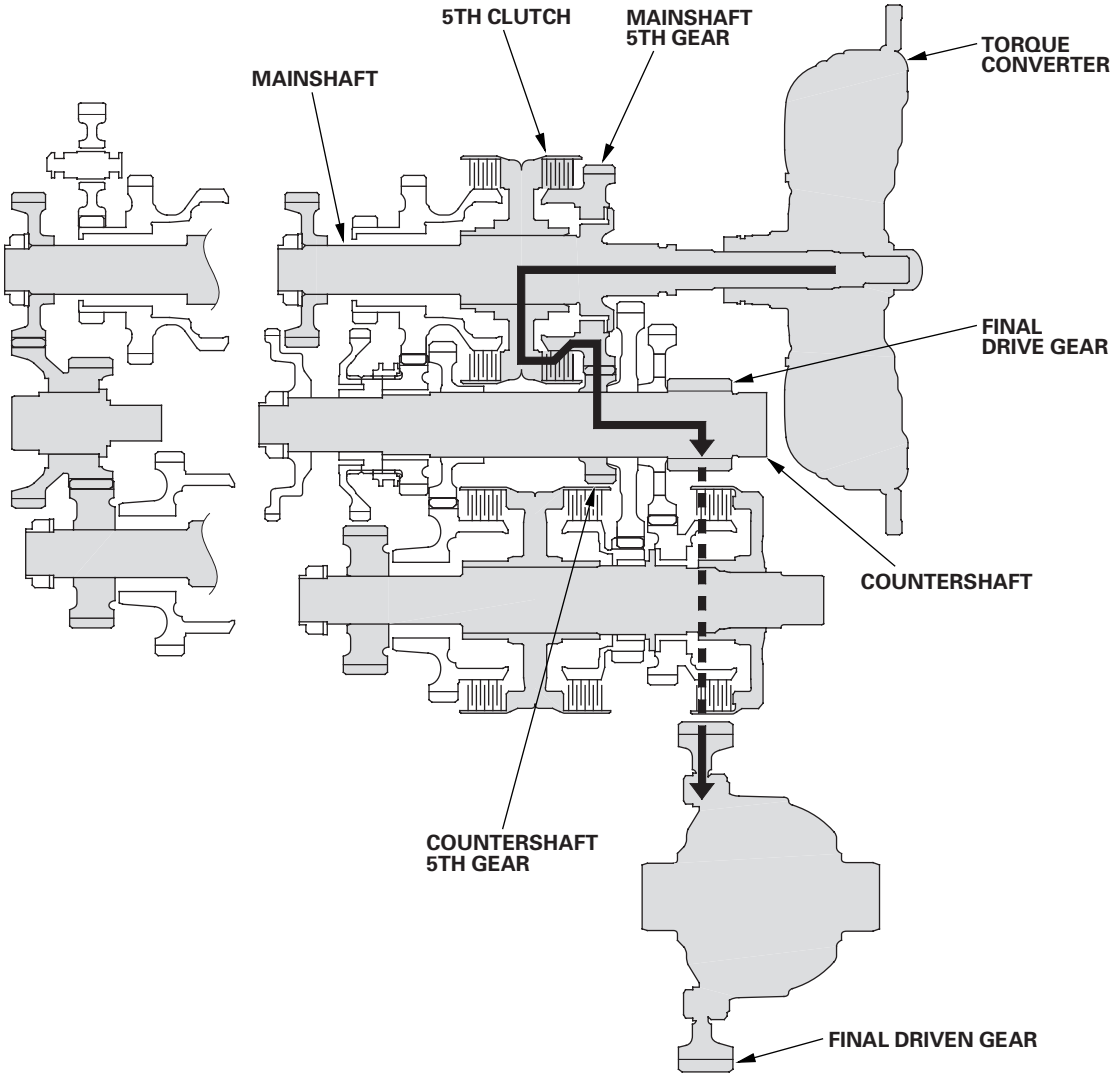
In 4th Gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th gear and the reverse selector hub while the shift lever is in forward range (D and S).
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



In 5th Gear

- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 5th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



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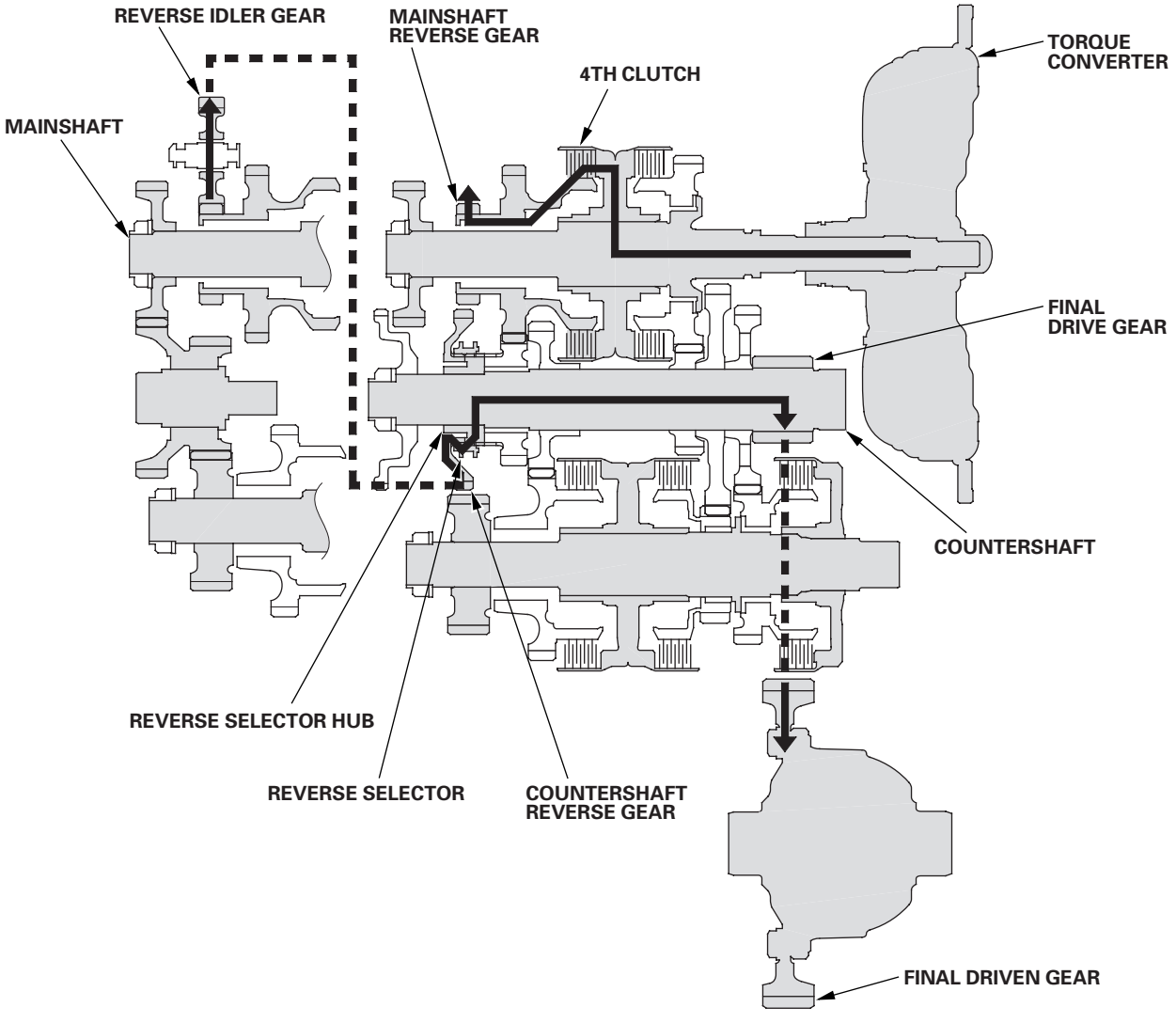
System Description (cont'd)

Power Flow (cont'd)

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear and the reverse selector hub while the shift lever is in R.
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The rotational direction of the countershaft reverse gear is changed by the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector, which drives the reverse selector hub.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.

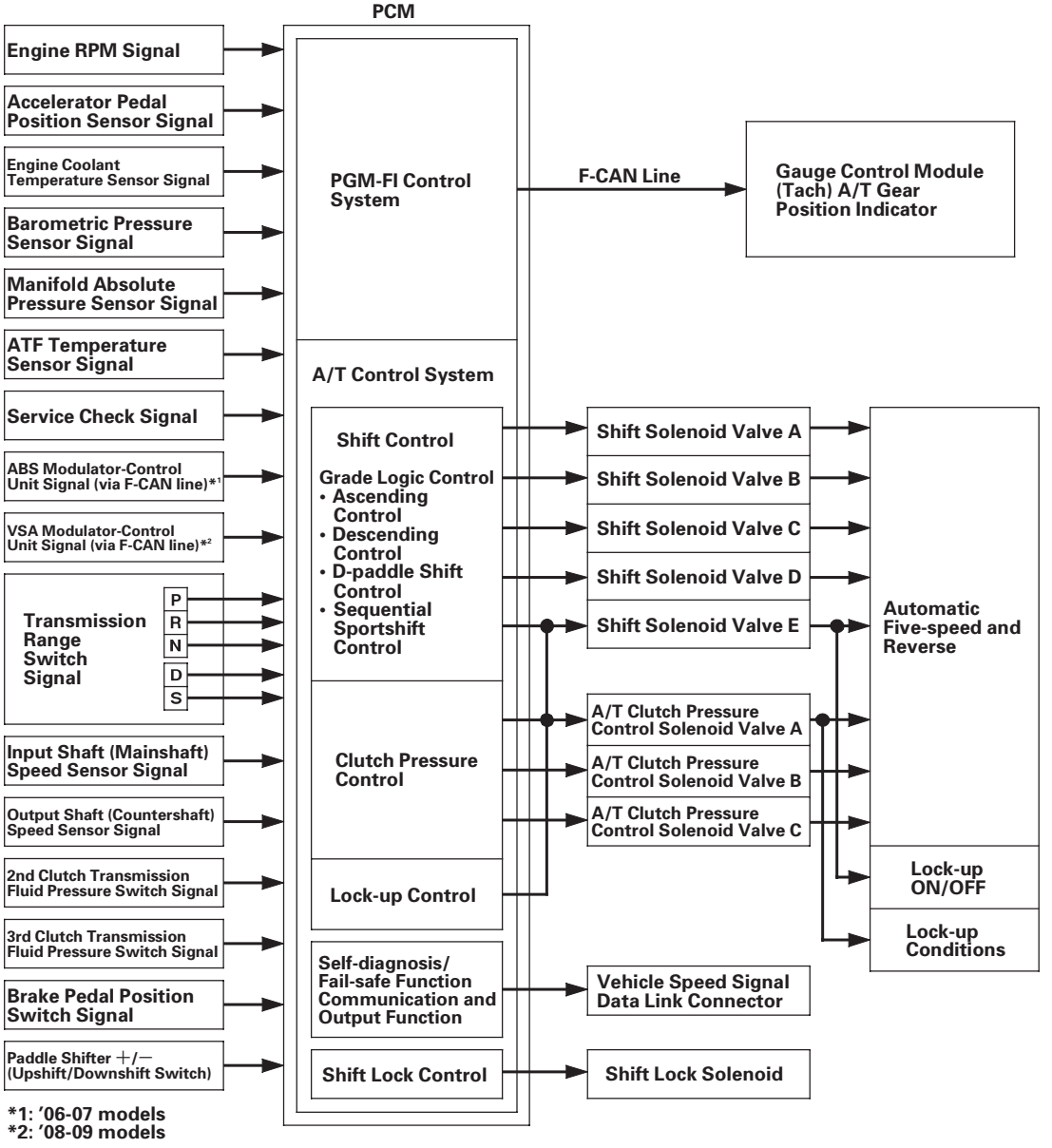


Electronic Control System

Functional Diagram

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM receives input signals from sensors, switches, and other control units, processes data, and outputs signals for the engine control system and the A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control.
The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves ON and OFF to control gear selection and torque converter clutch lock-up.



(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

Shift Control
The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates shift solenoid valves A, B, C, D, and E to control gear selection.

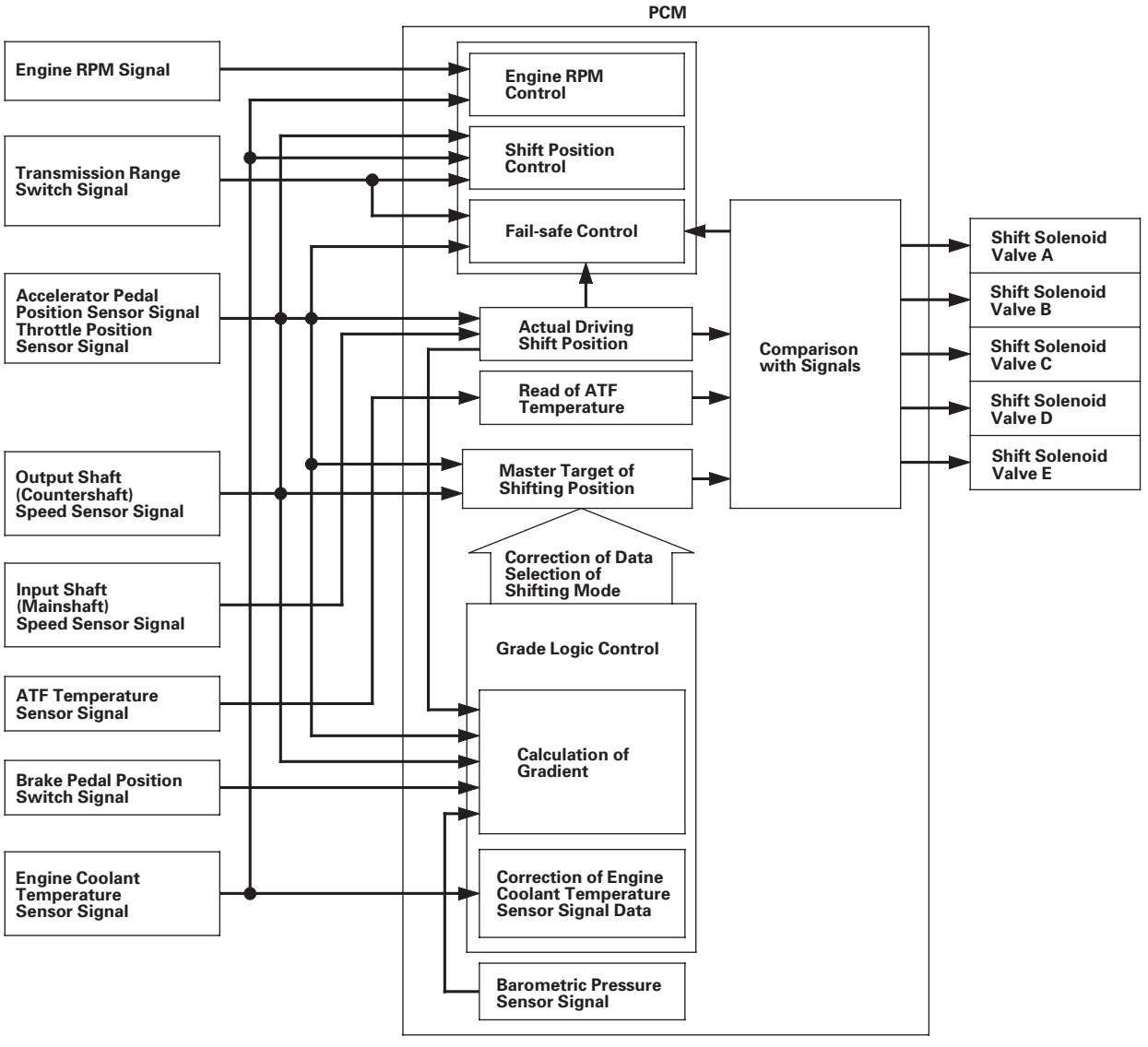
Shift solenoid valves are a normally closed type. Shift solenoid valve opens the port of shift solenoid valve pressure leading to shift valves while shift solenoid valve is turned ON by the PCM, and closes the port when shift solenoid valve is OFF.

The combination of driving signals to shift solenoid valves A, B, C, D, and E are shown in the table.

Position	Gear Position	Shift Solenoid Valve				
		A	B	C	D	E
D and S	Shifting from N	OFF	ON	ON	OFF	OFF
	Stays in 1st	ON	ON	ON	OFF	OFF
	Shifting gears between 1st and 2nd	OFF	ON	ON	OFF	OFF
	Stays in 2nd	OFF	ON	OFF	ON	OFF or ON
	Shifting gears between 2nd and 3rd	OFF	ON	ON	ON	OFF or ON
	Stays in 3rd	OFF	OFF	ON	OFF	OFF or ON
	Shifting gears between 3rd and 4th	OFF	OFF	OFF	OFF	OFF or ON
	Stays in 4th	ON	OFF	OFF	OFF	OFF or ON
	Shifting gears between 4th and 5th	ON	OFF	OFF	ON	OFF or ON
	Stays in 5th	ON	OFF	ON	ON	OFF or ON
N	Neutral	OFF	ON	ON	OFF	OFF
R	Shifting from P and N	OFF	ON	OFF	OFF	ON
	Stays in reverse	ON	ON	OFF	OFF	ON
	Reverse inhibit control	OFF	OFF	ON	OFF	OFF
P	Park	OFF	ON	OFF	OFF	ON

Shift Control - Grade Logic Control

A grade logic control system has been adopted to control shifting in D, and in S with automatic shift mode. The PCM compares actual driving conditions with programmed driving conditions, based on the input from the accelerator pedal position sensor, the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, the output shaft (countershaft) speed sensor signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.



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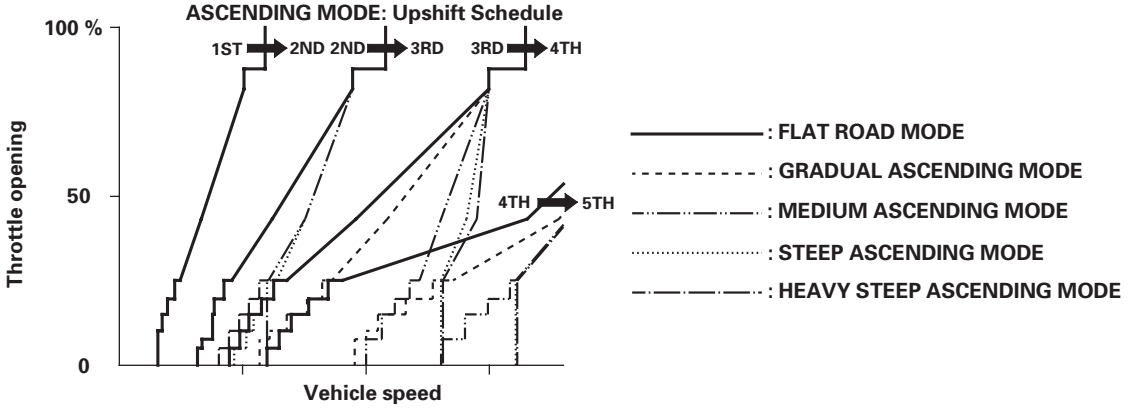
System Description (cont'd)

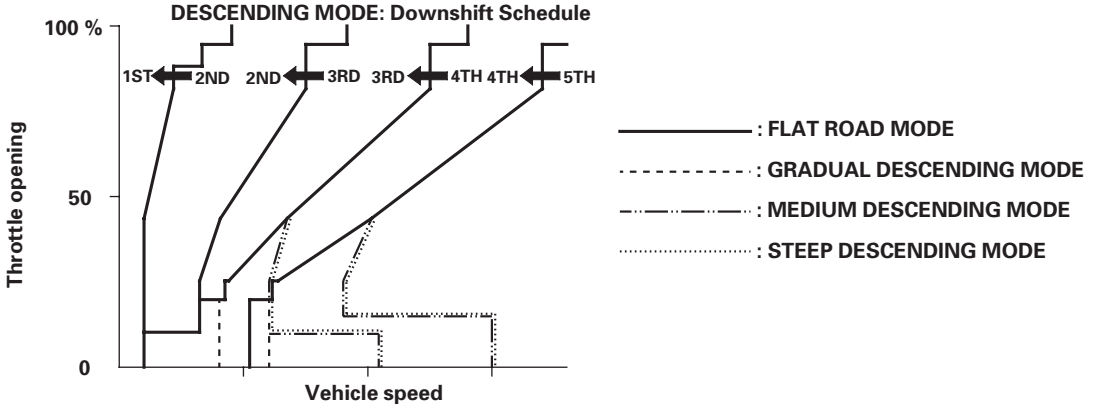
Electronic Control System (cont'd)

Grade Logic Control: Ascending Control
When the PCM determines that the vehicle is climbing a hill in D, and S with automatic shift mode, the system extends the engagement area of 2nd, 3rd, and 4th gears to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears. Then PCM does this so the vehicle can run smoothly and have more power when needed.

NOTE: Shift commands stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable it to automatically select the most suitable gear according to the magnitude of a gradient.



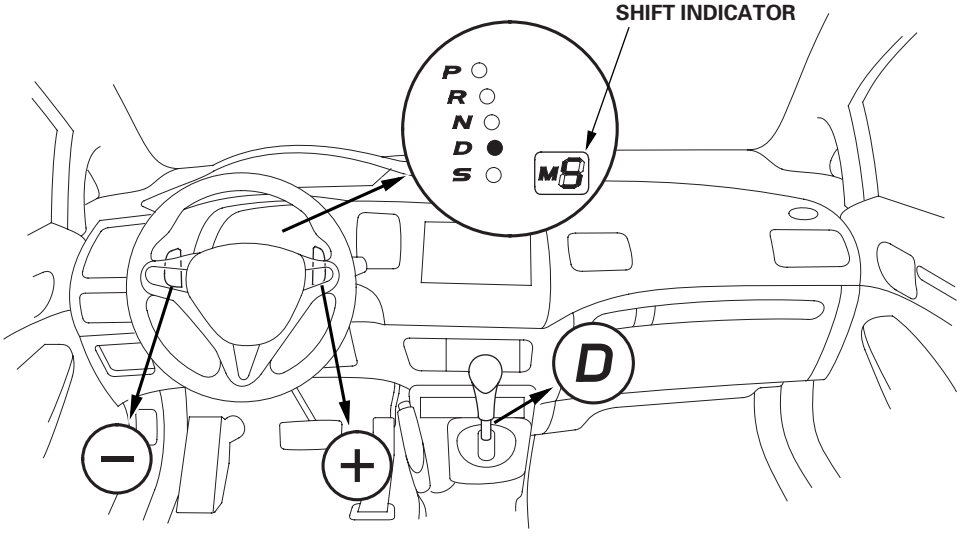
Grade Logic Control: Descending Control
When the PCM determines that the vehicle is going down a hill in D, and S with automatic shift mode, the upshift speed from 4th to 5th gear, from the 3rd to 4th gear, and from 2nd to 3rd gear (when the throttle is closed) becomes higher than the set speed for flat road driving to extend 4th gear, 3rd gear, and 2nd gear driving area. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas, and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th gear or 4th gear, and you are decelerating when you are applying the brakes on a steep hill, the transmission will downshift to lower gear. When you accelerate, the transmission will then return to a higher gear.



Shift Control - Manual Shift Mode
The transmission is provided with a D-paddle shift mode in D, and with a sequential sportshift mode in S. Both modes are entered by pressing the paddle shifter + (upshift switch) or the paddle shifter — (downshift switch) while driving.

D-Paddle Shift Mode
When the transmission is switched into the D-paddle shift mode by pressing the paddle shifters while driving in D, the transmission can shift into a lower gear by pressing the paddle shifter — (downshift switch), and it can shift into a higher gear by pressing the paddle shifter + (upshift switch). When the transmission shifts into a lower gear or a higher gear by pressing the paddle shifters, the shift indicator in the gauge control module (tach) displays the number of current gear selected. This number of the gear goes off when the transmission downshifts automatically, or when the transmission upshifts automatically while coasting.
The transmission stays in 5th gear if the paddle shifter + (upshift switch) is pressed when driving in 5th gear, and the shift indicator displays ''5'' for 2 seconds, then goes off. The transmission stays in 1st gear if the paddle shifter — is pressed when driving in 1st gear, and the shift indicator displays ''1'' for 2 seconds, then goes off.
The transmission stays in the current gear and does not upshift to the next higher gear if the paddle shifter + is pressed while driving below the minimum allowable speed, and the shift indicator blinks the number of the next higher gear several times, then returns to the number of the current gear.

NOTE: D-paddle shift mode has been added for '08-09 models.



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System Description (cont'd)

Electronic Control System (cont'd)

S Position Automatic Shift Mode and Sequential Sportshift Mode

The S position has two shifting modes; the automatic shift mode and the sequential sportshift mode. In the S position automatic shift mode, the transmission upshifts and downshifts automatically from 1st through 4th gear, and the paddle shifters are ready to be activated to switch to the sequential sportshift mode. In the automatic shift mode, the shift indicator and the M indicator in the gauge control module (tach) do not come on.

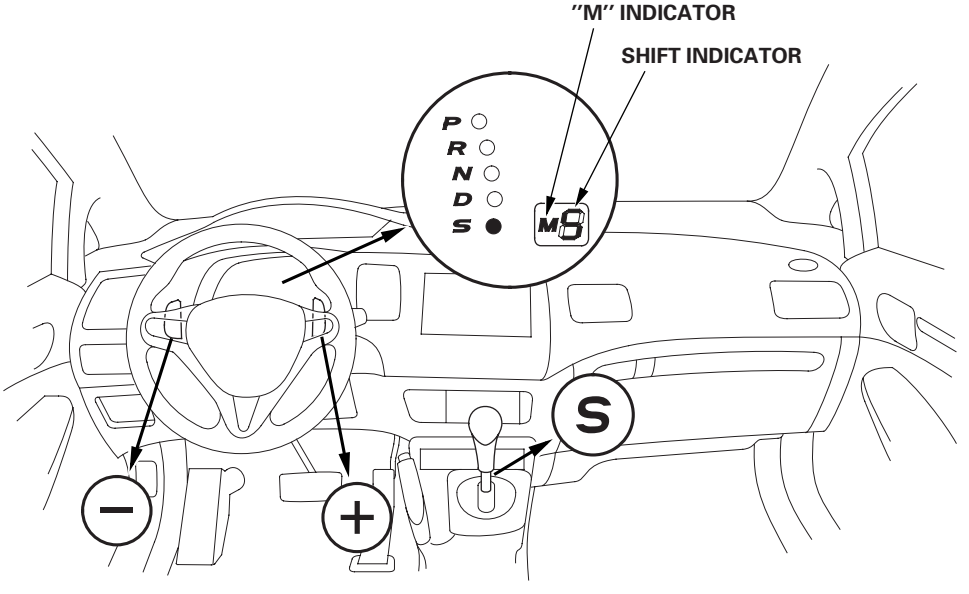
When the paddle shifter + (upshift switch) or the paddle shifter − (downshift switch) is pressed, the automatic shift mode is canceled and the sequential sportshift mode comes into operation. The shift indicator displays the number of the selected gear, and the M indicator comes on. In the sequential sportshift mode, the driver can shift up and down manually from 1st through 5th gear by using the paddle shifters, much like a manual transmission. The paddle shifters are installed on the back of the steering wheel, and the driver can shift gears by pressing the paddle shifters without taking either hand off the steering wheel.

In the sequential sportshift mode, the transmission must be shifted up and down by pressing the paddle shifters. However, the transmission cannot downshift and stays in the current gear if the paddle shifter − is pressed while the vehicle is coasting at a speed that would cause the engine to over-rev by downshifting the transmission, and the shift indicator blinks the number of the selected gear several times, then returns to the number of the current gear. If the vehicle speed reaches an appropriate speed while the shift indicator is blinking the number of the selected gear, the transmission downshifts and the shift indicator displays the selected gear. The transmission also cannot upshift and stays in the current gear if the paddle shifter + is pressed while driving below an appropriate upshifting speed, the shift indicator blinks the number of the selected gear several times, then returns to the number of the current gear. If the vehicle speed reaches an appropriate upshift speed while the shift indicator is blinking the number of the selected gear, the transmission upshifts and the shift indicator displays the selected gear.

This mode has automatic downshifting areas so the vehicle can run smoothly with more power to cope with upcoming acceleration. When coasting in 5th gear or 4th gear, the transmission downshifts to the next lower gear if the vehicle slows down to the programmed speed, or by pressing the brake pedal.

When the transmission decelerates to a stop, the transmission shifts to 1st gear automatically. The transmission can be shifted to 2nd gear by pressing the paddle shifter + while the vehicle is stopped, and the vehicle can start off in 2nd gear.

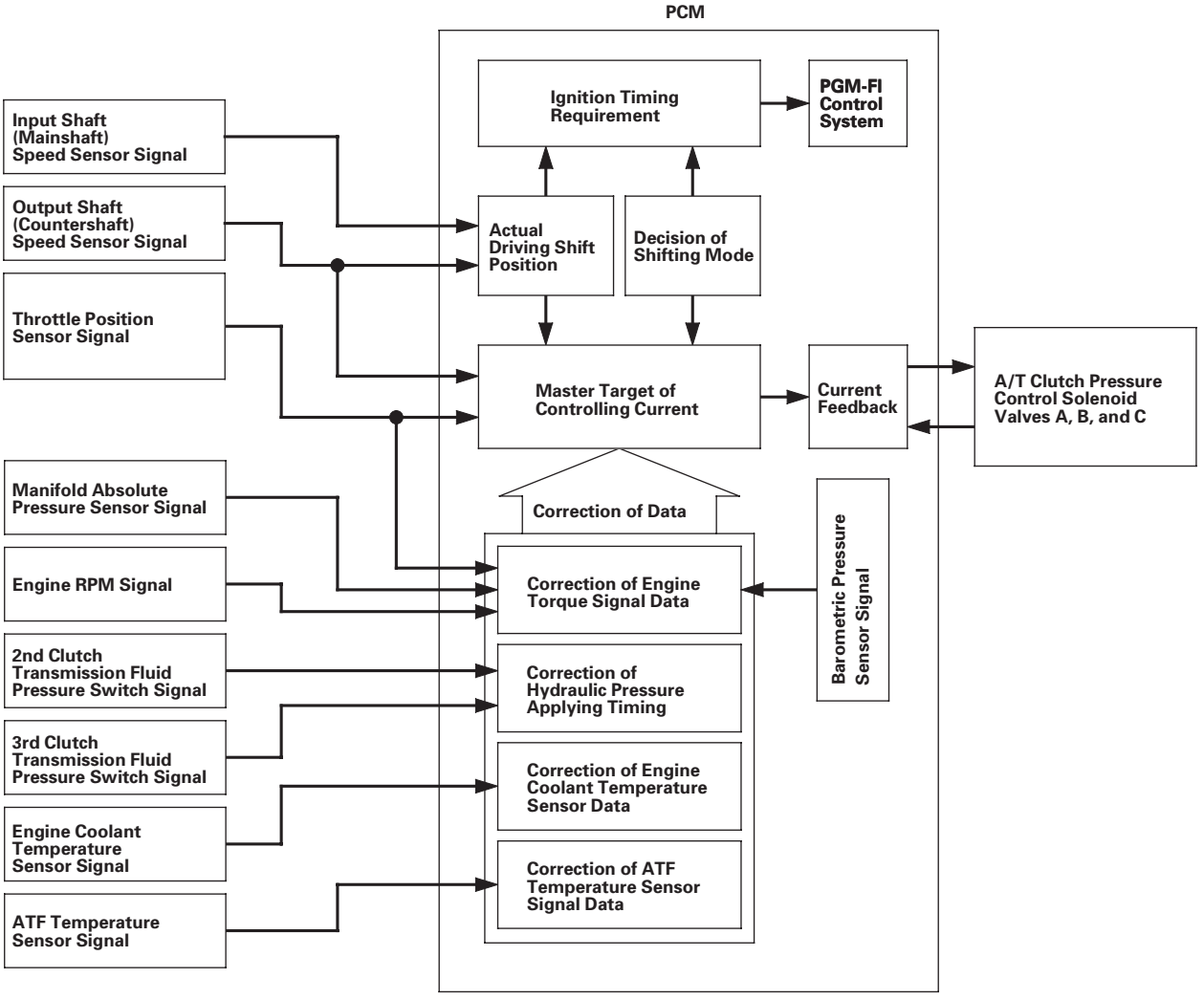
The sequential sportshift mode is canceled when moving the shift lever to any position other than S.



Clutch Pressure Control

The PCM actuates A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between lower and higher gears, the clutch pressure regulated by A/T clutch pressure control solenoid valves A, B, and C engages and disengages the clutch smoothly.

The PCM receives input signals from the various sensors and the switches, processes data, and outputs current to A/T clutch pressure control solenoid valves A, B, and C.



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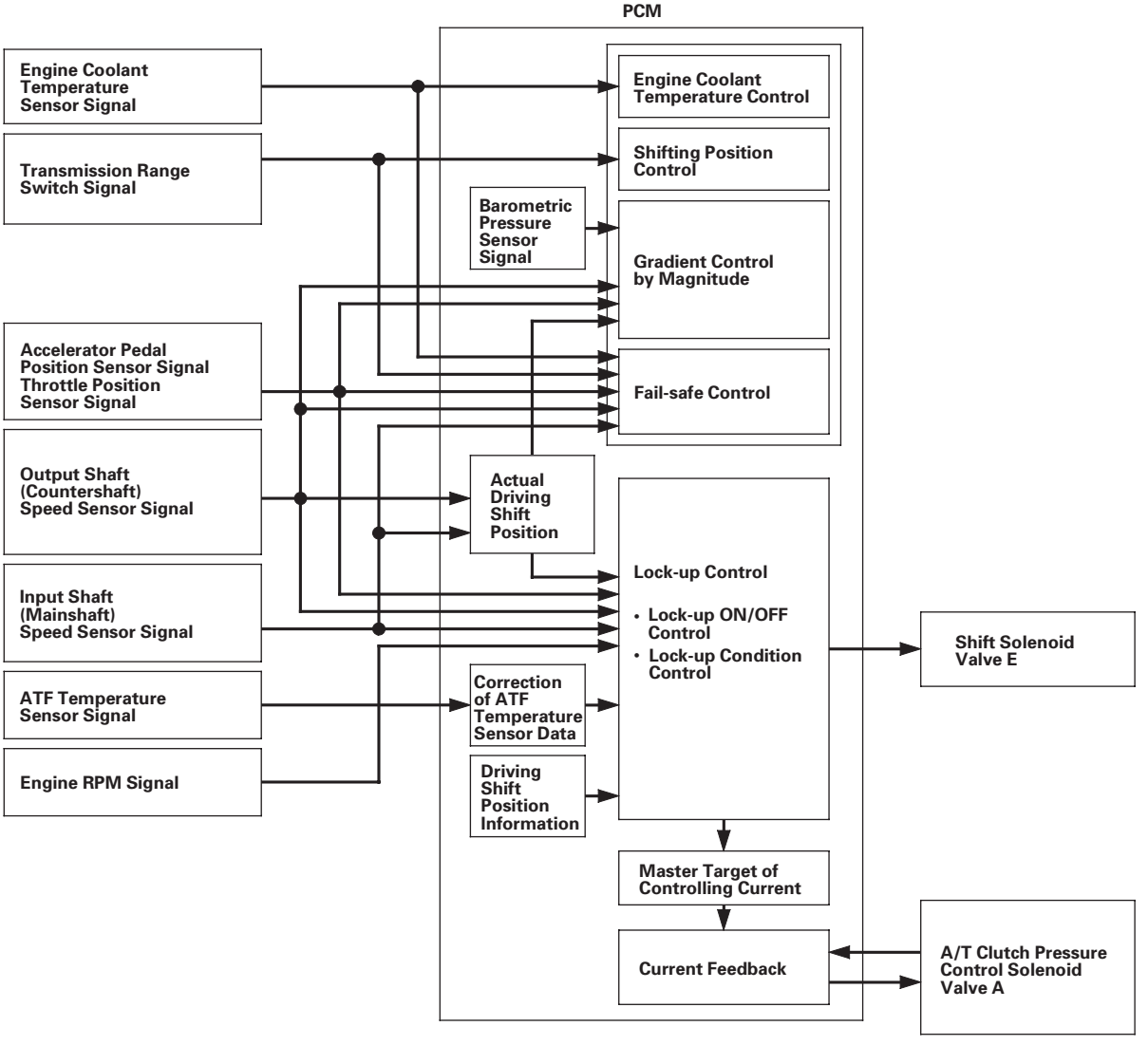
System Description (cont'd)

Electronic Control System (cont'd)

Lock-up Control

Shift solenoid valve E controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. When the PCM actuates shift solenoid valve E and A/T clutch pressure control solenoid valve A to start lock-up. A/T clutch pressure control solenoid valve A regulates and applies hydraulic pressure to the lock-up control valve to control the amount of lock-up. The lock-up mechanism operates in D and S (2nd, 3rd, 4th, and 5th gears).



Self-diagnosis
If the PCM detects the failure of a signal from a sensor, a switch, a solenoid valve, or from another control unit it stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle. When a DTC is stored, the PCM blinks the D indicator and/or turns on the malfunction indicator lamp (MIL) by a signal sent to the gauge control module via F-CAN.

- **One Drive Cycle Detection Method:**
  When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit, the PCM stores a DTC for the failure and blinks the D indicator and/or turns on the MIL immediately.

- **Two Drive Cycle Detection Method:**
  When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit in the first drive cycle, the PCM stores a Temporary DTC. The D indicator and the MIL do not turns on at this time. If the failure continues in the second drive cycle, the PCM stores a DTC and blinks the D indicator and/or turns on the MIL.

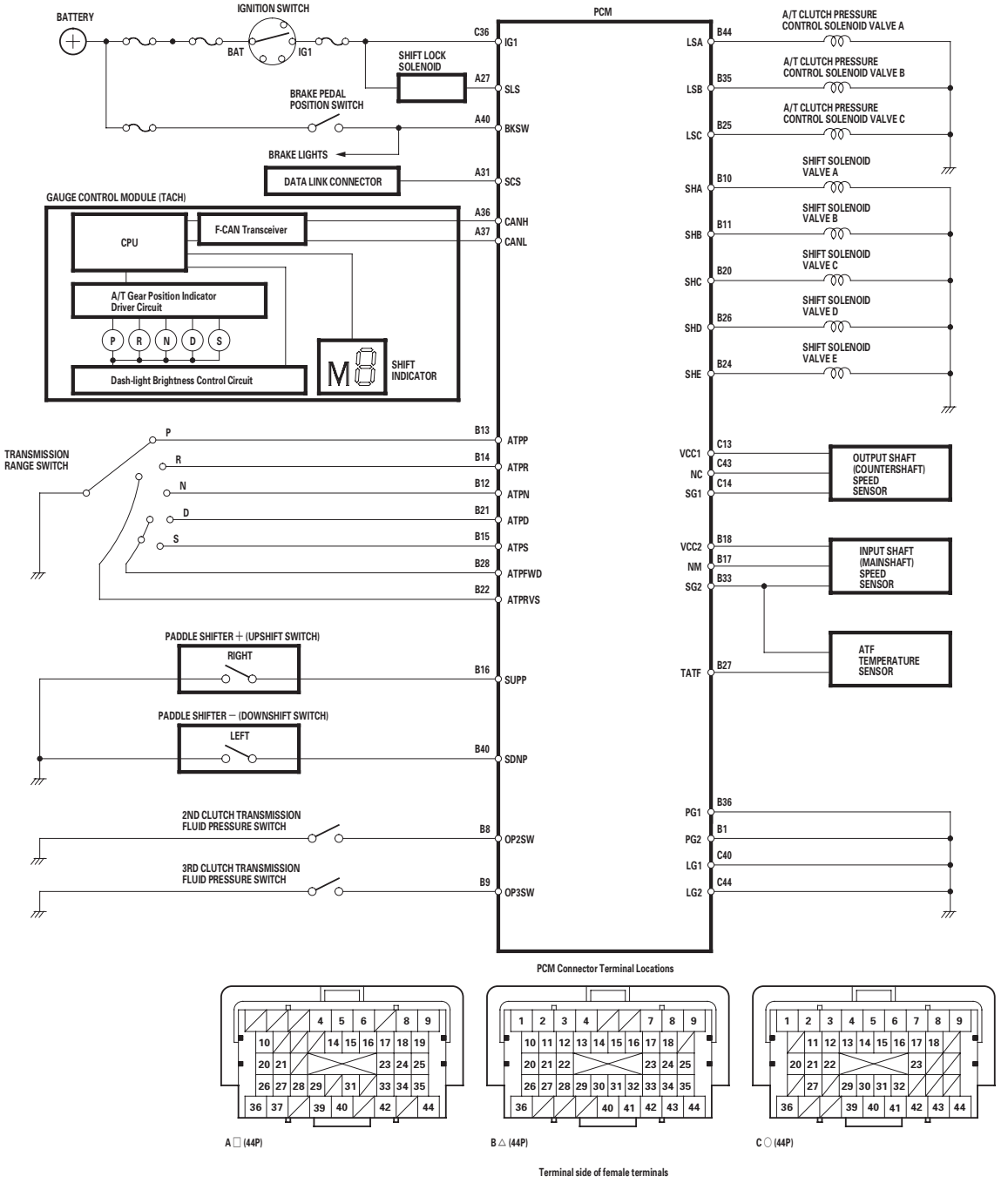
Fail-safe Function
When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit, the PCM ignores that signal and substitutes a pre-programmed value for them that allow the automatic transmission to continue driving. This causes a DTC to be stored and the D indicator to blink and/or the MIL to come on.

(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Electrical Connections



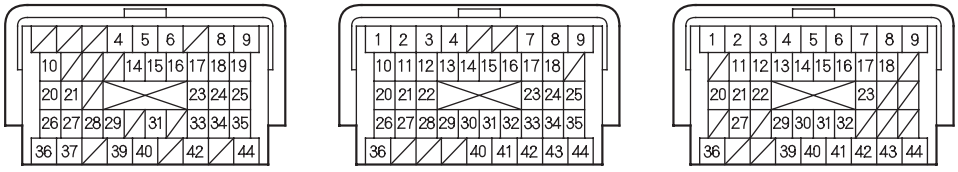
PCM Connector Terminal Locations

A □ (44P) B △ (44P) C ○ (44P)

Terminal side of female terminals

PCM A/T Control System Inputs and Outputs

PCM Connector Terminal Locations



A □ (44P) **B △ (44P)** **C ○ (44P)**

Terminal side of female terminals

PCM CONNECTOR A □ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
A27	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P, brake pedal pressed, and accelerator released: about battery voltage
A31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using HDS: about 0 V With service check signal opened: about 5.0 V
A36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends and receives communication signal	With ignition switch ON (II): about 2.5 V (pulses)
A37	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends and receives communication signal	With ignition switch ON (II): about 2.5 V (pulses)
A40	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal pressed: about battery voltage With Brake pedal released: about 0 V

NOTE: Standard battery voltage is about 12 V.

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B1	BLK/RED*1 BLK*2	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B8	BLU/RED	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 2nd clutch pressure: about 5.0 V • With 2nd clutch pressure: about 0 V

NOTE: Standard battery voltage is about 12 V.
*1: '06 model
*2: '07-09 models

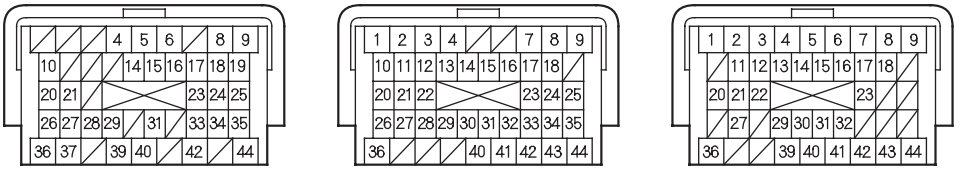
(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs (cont'd)

PCM Connector Terminal Locations



A □ (44P) B △ (44P) C ○ (44P)

Terminal side of female terminals

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B9	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch signal	With ignition switch ON (II): • Without 3rd clutch pressure: about 5.0 V • With 3rd clutch pressure: about 0 V
B10	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R, D and S (in 1st, 4th, and 5th gears): about battery voltage With engine running in P, N, D and S (in 2nd and 3rd gears): about 0 V
B11	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D and S (in 1st and 2nd gears): about battery voltage With engine running in D and S (in 3rd, 4th, and 5th gears): about 0 V
B12	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL)	Detects transmission range switch N position signal	In N: about 0 V In any position other than N: more than 5.0 V
B13	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH PARK)	Detects transmission range switch P position signal	In P: about 0 V In any position other than P: more than 5.0 V
B14	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: more than 5.0 V
B15	RED	ATPS (TRANSMISSION RANGE SWITCH S)	Detects transmission range switch S position signal	In S: about 0 V In any position other than S: about battery voltage
B16	BLU/YEL	SUPP (PADDLE SHIFTER + (UPSHIFT SWITCH))	Detects paddle shifter + (upshift switch) signal	In S: • With paddle shifter + (upshift switch) pressed: about 0 V • With paddle shifter + (upshift switch) released: about battery voltage
B17	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V With engine idling in N: about 2.5 V
B18	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
B20	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in N, D and S (in 1st, 3rd, and 5th gears): about battery voltage With engine running in P, R, D and S (in 2nd and 4th gears): about 0 V

NOTE: Standard battery voltage is about 12 V.

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B21	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal	In D: about 0 V In any position other than D: about battery voltage
B22	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: about battery voltage
B24	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in P and R: about battery voltage With engine running in N, D and S (in 1st gear): about 0 V
B25	BLU/YEL	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): current controlled
B26	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in D and S (in 2nd and 5th gears): about battery voltage With engine running in P, R, N, D and S (in 1st, 3rd, and 4th gears): about 0 V
B27	RED/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With igniting switch ON (II): about 0.2—4.8 V depending on ATF temperature (about 1.8 V at operating temperature)
B28	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch D and S positions signal	In D and S: about 0 V In any position other than D and S: about battery voltage
B33	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times

NOTE: Standard battery voltage is about 12 V.

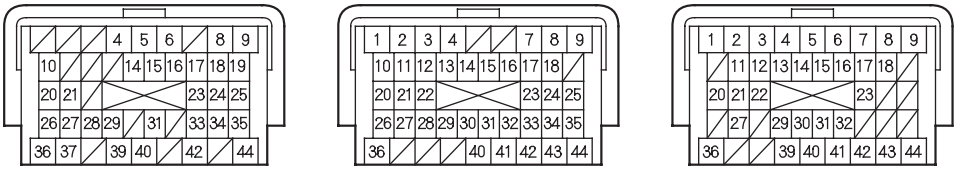
(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs (cont'd)

PCM Connector Terminal Locations



A □ (44P) **B △ (44P)** **C ○ (44P)**

Terminal side of female terminals

PCM CONNECTOR B △ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B35	BRN	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): current controlled
B36	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B40	BRN	SDNP (PADDLE SHIFTER — (DOWNSHIFT SWITCH))	Detects paddle shifter — (downshift switch) signal	In S: • With paddle shifter — (downshift switch) pressed: about 0 V • With paddle shifter — (downshift switch) released: about 5.0 V
B44	RED/BLK	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): current controlled

NOTE: Standard battery voltage is about 12 V.

PCM CONNECTOR C ○ (44P)

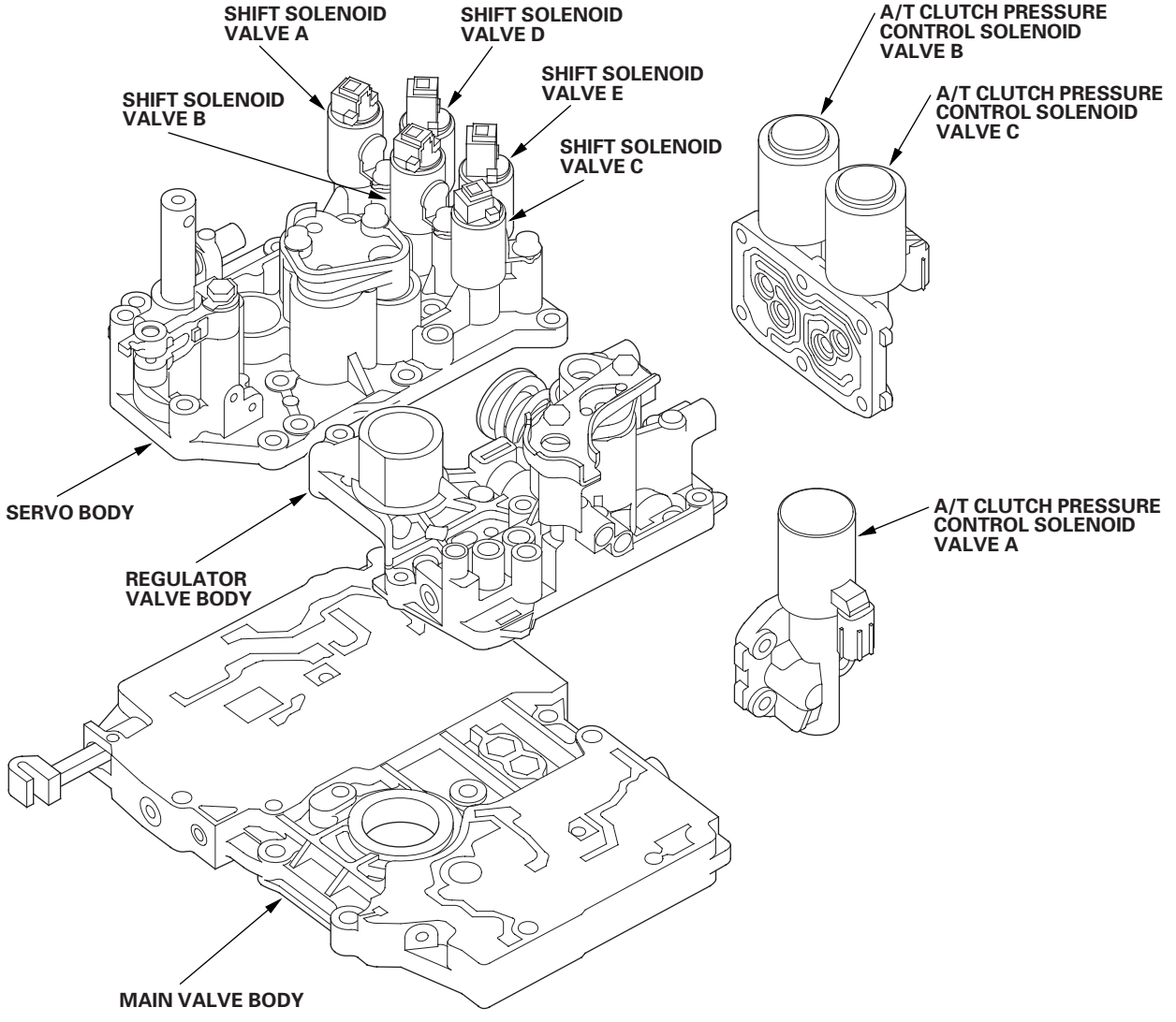
Terminal Number	Wire Color	Terminal Name	Description	Signal
C13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
C14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
C36	BLK/GRN	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): about battery voltage
C40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
C43	BLK/WHT	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II): pulses With vehicle moving: about 5.0 V (pulses)
C44	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times

NOTE: Standard battery voltage is about 12 V.

Hydraulic Controls

Valve Bodies

The valve body includes the main valve body, the regulator valve body, and the servo body. The ATF pump is driven by splines on the end of the torque converter which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to the shift valves and to each of the clutches via the shift solenoid valves. Shift solenoid valves A, B, C, D, and E are bolted on the servo body. A/T clutch pressure control solenoid valves A, B, and C are mounted on the outside of the transmission housing.



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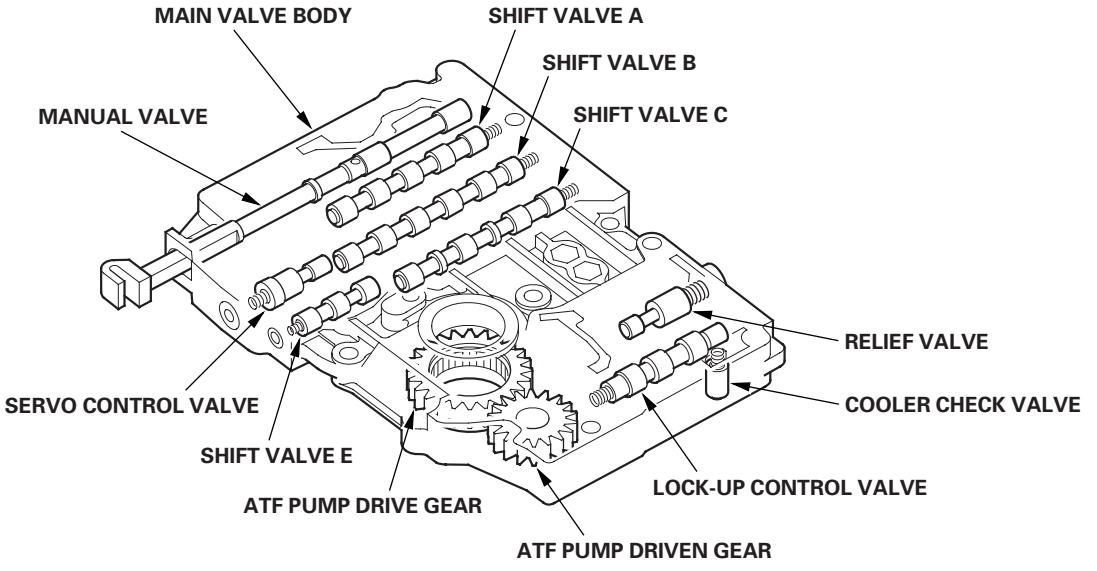
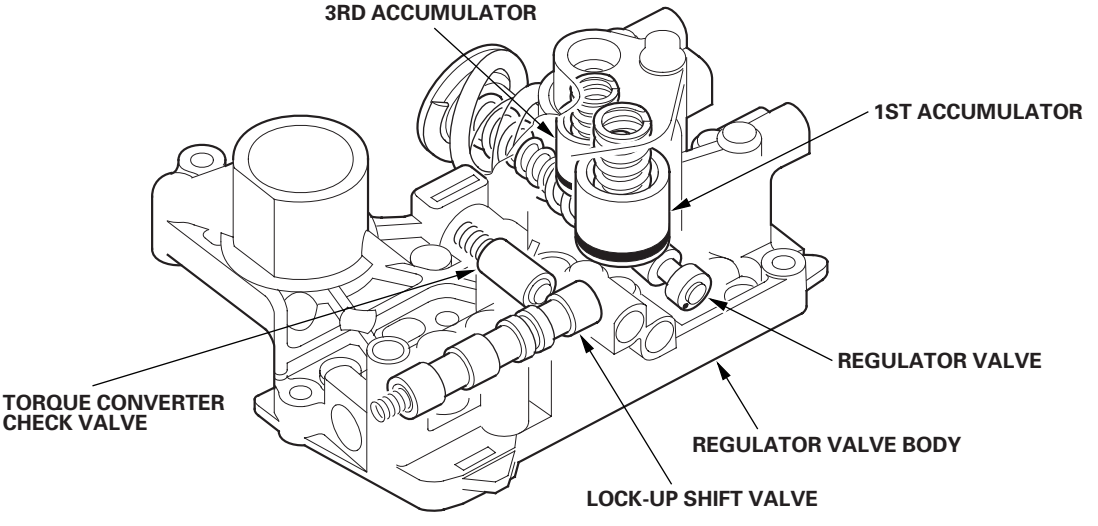
System Description (cont'd)

Hydraulic Controls (cont'd)

Main Valve Body
The main valve body contains the manual valve, shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, the ATF pump drive gear, and the ATF pump driven gear. The primary function of the main valve body is to switch fluid pressure on and off and to control hydraulic pressure going to the hydraulic control system.

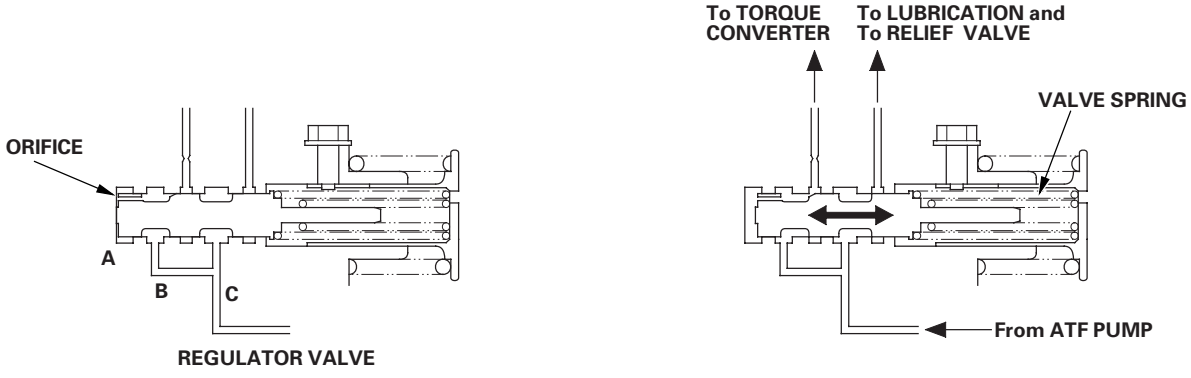


Regulator Valve Body
The regulator valve body contains the regulator valve, the torque converter check valve, the lock-up shift valve, and the 1st and 3rd accumulators.

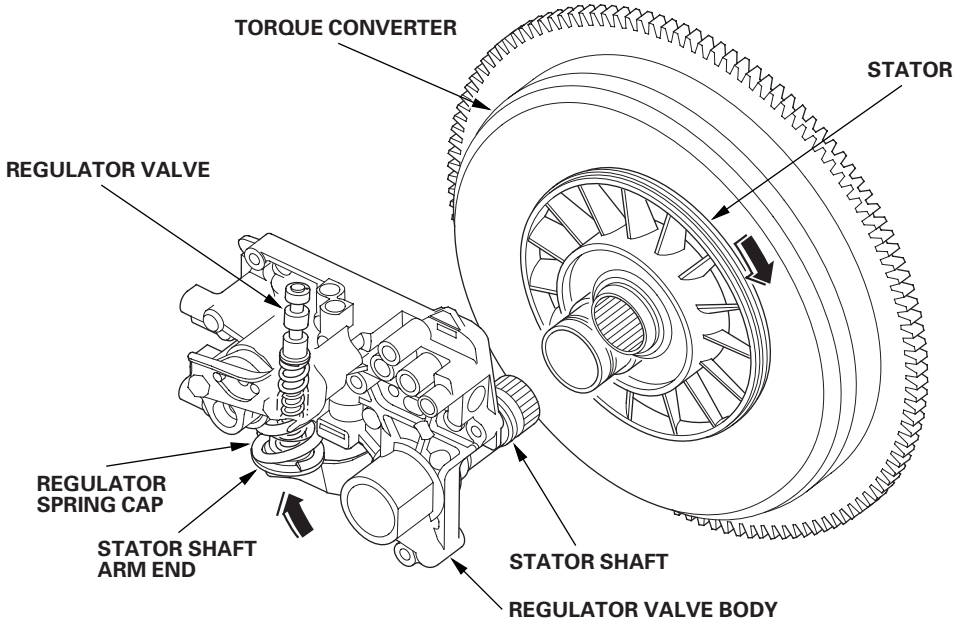


Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also providing fluid to the lubrication system and the torque converter. The fluid from the ATF pump flows through B and C. Fluid entering from B flows through the valve orifice to the A cavity. This pressure in the A cavity pushes the regulator valve toward the valve spring side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from C through torque converter also changes. This operation is continuous, maintaining the line pressure.



Increases in hydraulic pressure according to torque are regulated by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter, and the stator shaft arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (torque converter range), stator torque reaction acts on the stator shaft, and the stator shaft arm end pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.



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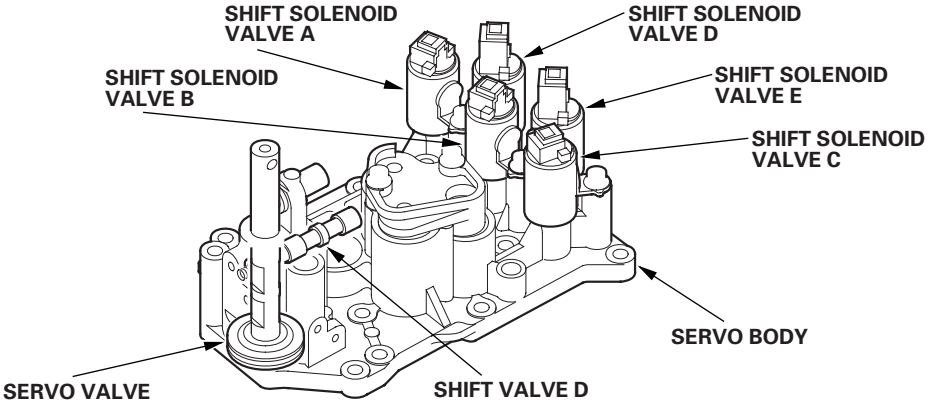
System Description (cont'd)

Hydraulic Controls (cont'd)

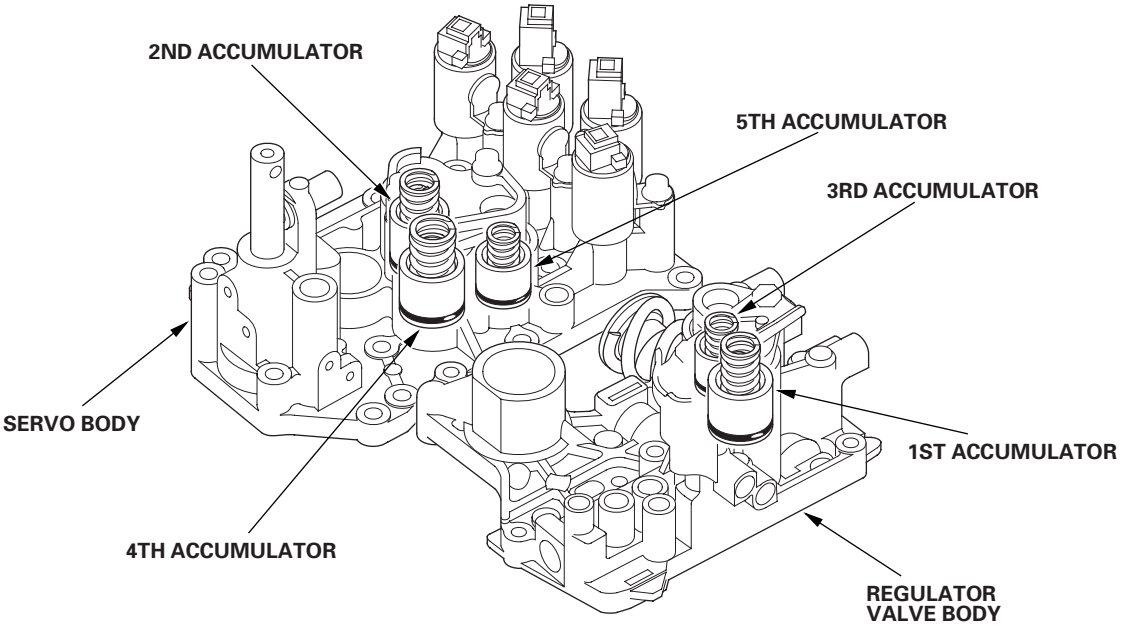
Servo Body

The servo body contains the servo valve, shift valve D, the accumulators for 2nd, 4th, and 5th, and shift solenoid valves A, B, C, D, and E.



Accumulator

The accumulators are located in the regulator valve body and the servo body. The regulator valve body contains the 1st and 3rd accumulators, and the servo body contains the 2nd, 4th, and 5th accumulators.



Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that is regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve, and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM switches shift solenoid valves ON and OFF. The shift solenoid valve intercepts line pressure from the ATF pump via the manual valve when the shift solenoid valve is OFF. When the shift solenoid valve is turned ON by the PCM, line pressure changes to shift solenoid valve pressure at the shift solenoid valve, then the shift solenoid valve pressure flows to the shift valve. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of the hydraulic circuit. The PCM also controls A/T clutch pressure control solenoid valves A, B, and C. The A/T clutch pressure control solenoid valves regulate hydraulic pressure, and applies pressure to the clutches to engage smoothly. The clutches receive optimum clutch pressure which is regulated by the A/T clutch pressure control solenoid valves for comfortable driving and shifting under all conditions.

Hydraulic Pressure at the Port for use in the hydraulic circuit

Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure
1	Line	SB	Shift solenoid valve B
3	Line	SC	Shift solenoid valve C
3′	Line	SD	Shift solenoid valve D
4	Line	SE	Shift solenoid valve E
4′	Line	10	1st clutch
4′′	Line	20	2nd clutch
7	Line	30	3rd clutch
1A	Line or A/T clutch pressure control solenoid valve A	40	4th clutch
1B	Line or A/T clutch pressure control solenoid valve A	50	5th clutch
3A	Line or A/T clutch pressure control solenoid valve A	55	A/T clutch pressure control solenoid valve A
3B	Line or A/T clutch pressure control solenoid valve A	55′	A/T clutch pressure control solenoid valve A
3C	Line or A/T clutch pressure control solenoid valve A	56	A/T clutch pressure control solenoid valve B
5A	Line or A/T clutch pressure control solenoid valve A	57	A/T clutch pressure control solenoid valve C
5B	Line or A/T clutch pressure control solenoid valve A	90	Torque converter
5C	Line or A/T clutch pressure control solenoid valve A	91	Torque converter
5D	Line or A/T clutch pressure control solenoid valve A	92	Torque converter
5E	Line or A/T clutch pressure control solenoid valve B	93	ATF cooler
5F	Line or A/T clutch pressure control solenoid valve A or B	94	Torque converter
5G	A/T clutch pressure control solenoid valve B	95	Lubrication
5H	A/T clutch pressure control solenoid valve C	96	Torque converter
5J	A/T clutch pressure control solenoid valve C	97	Torque converter
5K	A/T clutch pressure control solenoid valve C	99	Suction
5L	A/T clutch pressure control solenoid valve C	X	Drain
5N	A/T clutch pressure control solenoid valve C	HX	High position drain
SA	Shift solenoid valve A	AX	Air drain

(cont'd)

System Description (cont'd)

Hydraulic Flow (cont'd)

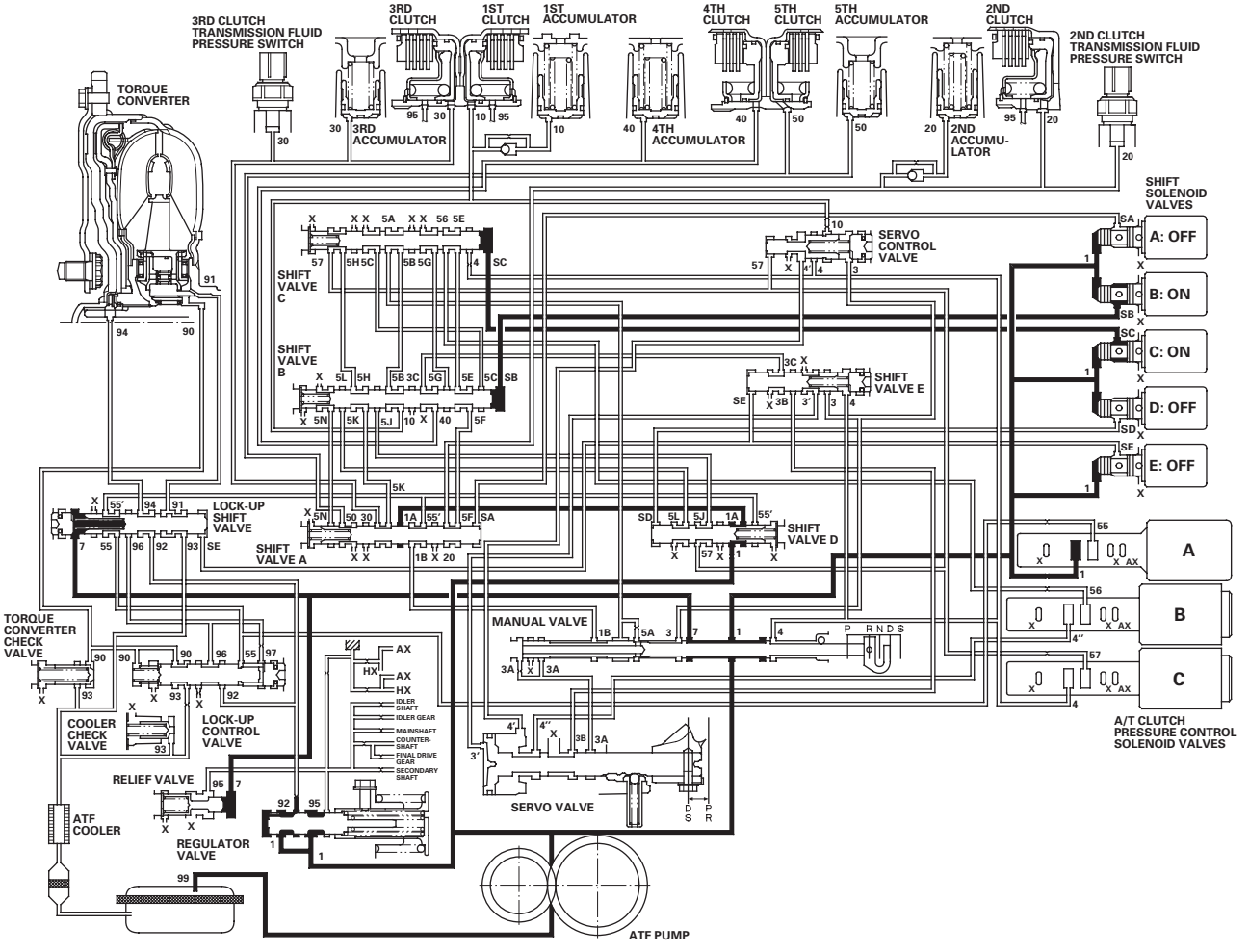
N Position

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valves are as follows:

- Shift solenoid valve A: OFF, and shift valve A remains on the right side
- Shift solenoid valve B: ON, and shift valve B moves to the left side
- Shift solenoid valve C: ON, and shift valve C moves to the left side
- Shift solenoid valve D: OFF, and shift valve D remains on the left side
- Shift solenoid valve E: OFF, and shift valve E remains on the left side

Line pressure (1) flows to the shift solenoid valves and A/T clutch pressure control solenoid valve A. Under this condition, hydraulic pressure is not applied to the clutches.

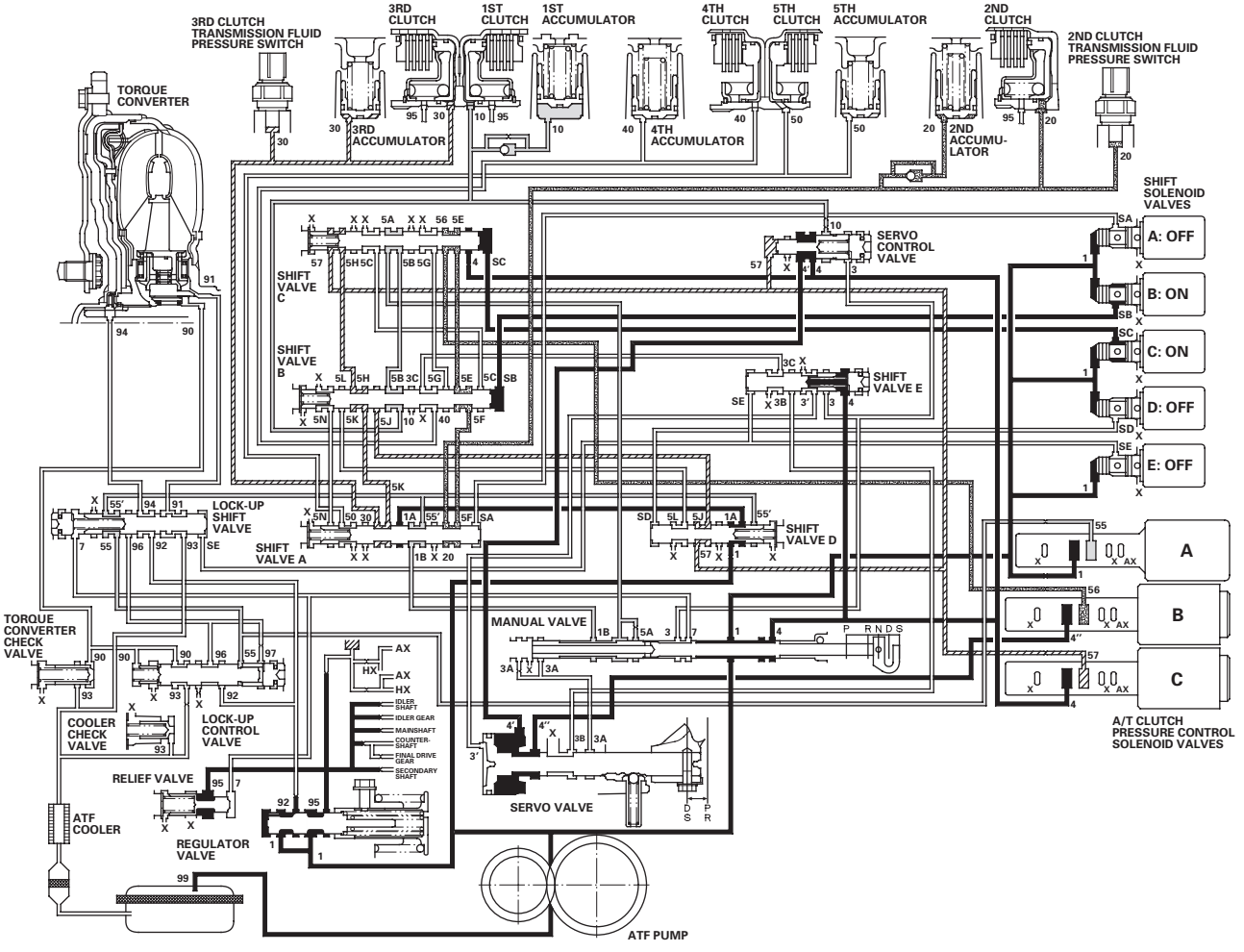
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



1st gear shifting from N position

The shift solenoid valves remain the same as in N when shifting to D from N. The manual valve is moved to the D position, and uncovers line pressure port (4) leading to A/T clutch pressure control solenoid valve C. Hydraulic pressure to the 1st clutch from A/T clutch pressure control solenoid valve A is created as shift solenoid valve A OFF, and B and C remain ON. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at shift valve B, and flows to the 1st clutch. The 1st clutch is engaged gently when shifting to D from N.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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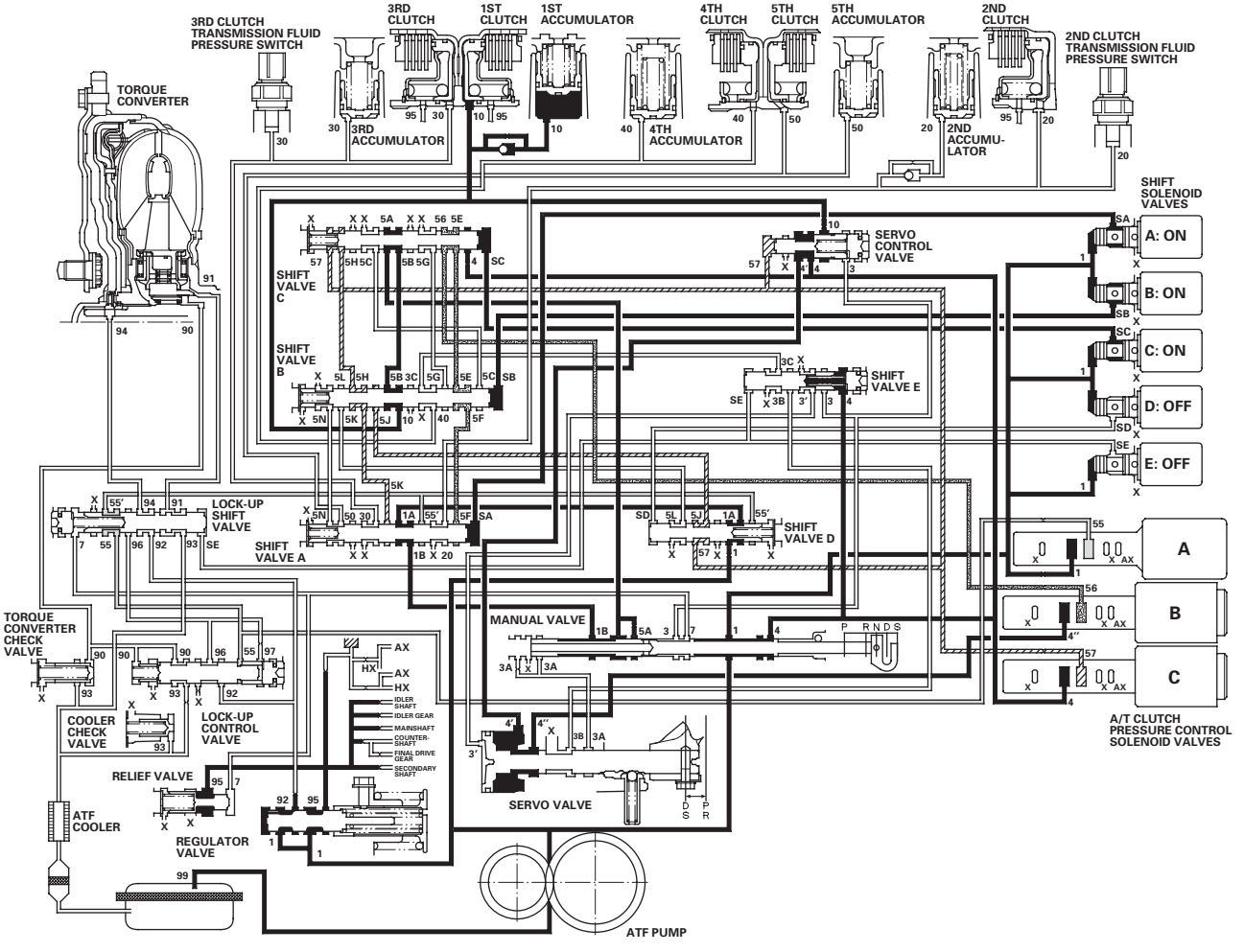
System Description (cont'd)

Hydraulic Flow (cont'd)

Driving in 1st gear in D and S with automatic shift mode
The PCM turns shift solenoid valve A ON, B and C remain ON, and D and E remain OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to uncover the line pressure port leading to the 1st clutch, and to cover the A/T clutch pressure control solenoid valve pressure port.

Fluid flows to the 1st clutch by way of:
Line pressure (1) → Shift valve D—Line pressure (1A) → Shift valve A—Line pressure (1B) → Manual valve—Line pressure (5A) → Shift valve C—Line pressure (5B) → Shift valve B—1st clutch pressure (10) → 1st clutch
The 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged securely.

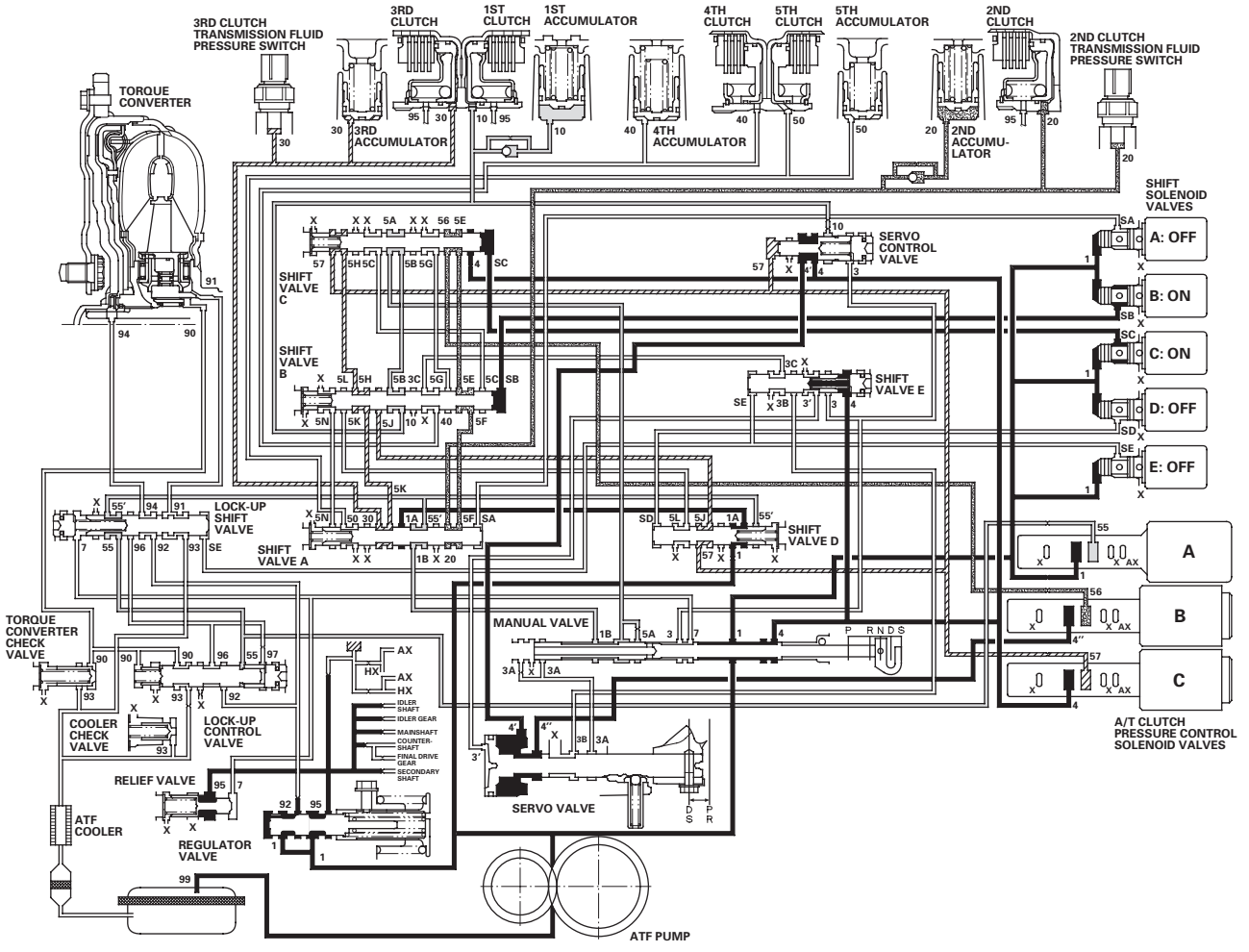
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Shifting between 1st gear and 2nd gear in D and S with automatic shift mode

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A OFF, B and C remain ON, and D and E remain OFF. Shift solenoid valve A pressure (SA) in the right side of shift valve A is released. Shift valve A is moved to the right side uncovering the A/T clutch pressure control solenoid valve A and B pressure port leading to the 1st and 2nd clutches. The PCM actuates the A/T clutch pressure control solenoid valve to regulate hydraulic pressure. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at shift valve B. A/T clutch pressure control solenoid valve B pressure (56) changes to (5E) at shift valve C and to (5F) at shift valve B, and becomes 2nd clutch pressure (20) at shift valve A. The 1st and 2nd clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

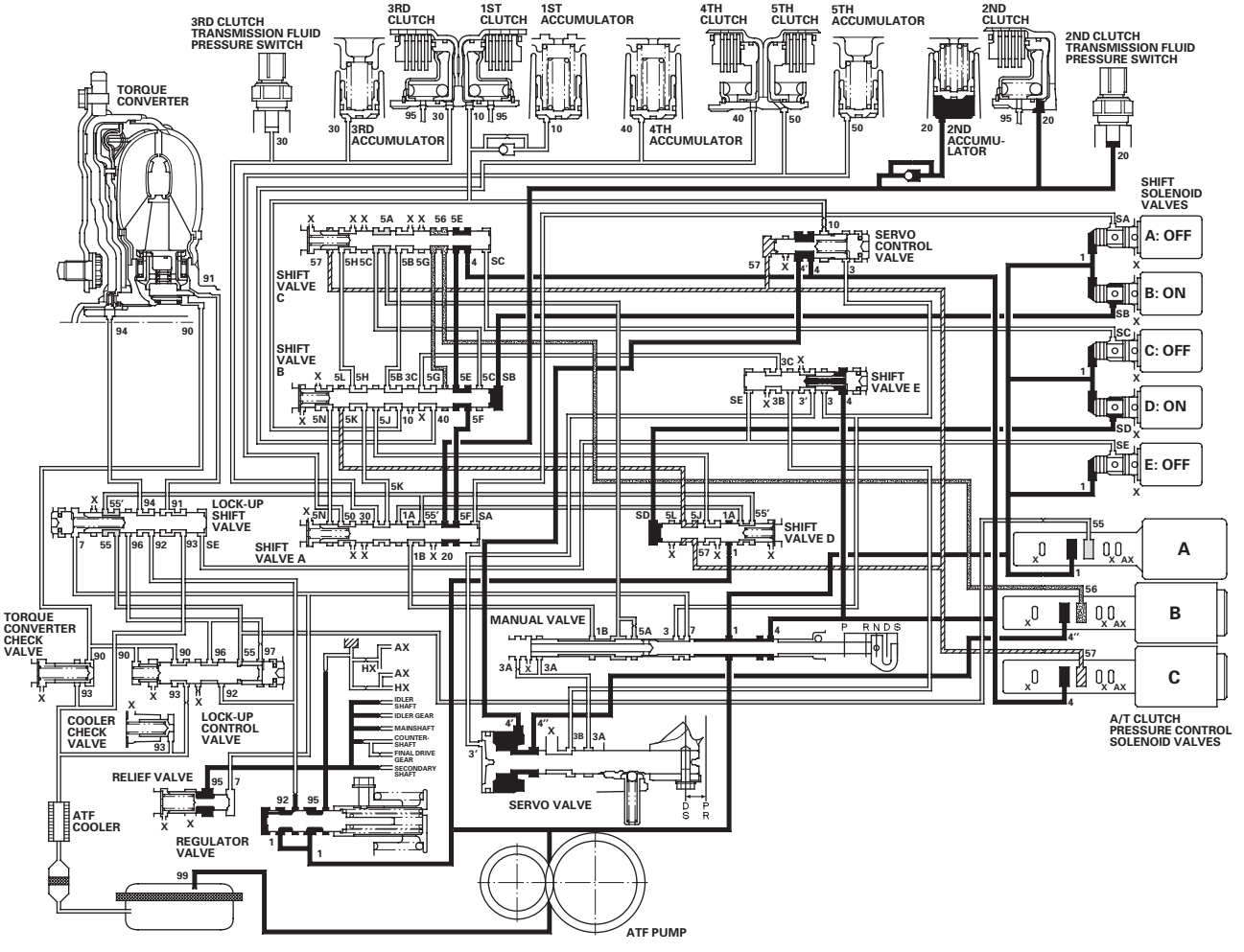
System Description (cont'd)

Hydraulic Flow (cont'd)

Driving in 2nd gear in D and S with automatic shift mode
The PCM turns shift solenoid valve C OFF, D ON, A and E remain OFF, and B remains ON. Shift solenoid valve C pressure (SC) in the right side of shift valve C is released. Shift valve C moves to the right side to switch the ports. This movement covers the ports to block A/T clutch pressure control solenoid valve pressure at shift valves C and A, and uncover the line pressure port leading to the 2nd clutch.

Fluid flows to 2nd clutch by way of:
Line pressure (1) → Manual valve—Line pressure (4) → Shift valve C—Line pressure (5E) → Shift valve B—Line pressure (5F) → Shift valve A—2nd clutch pressure (20) → 2nd clutch
The 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged securely.

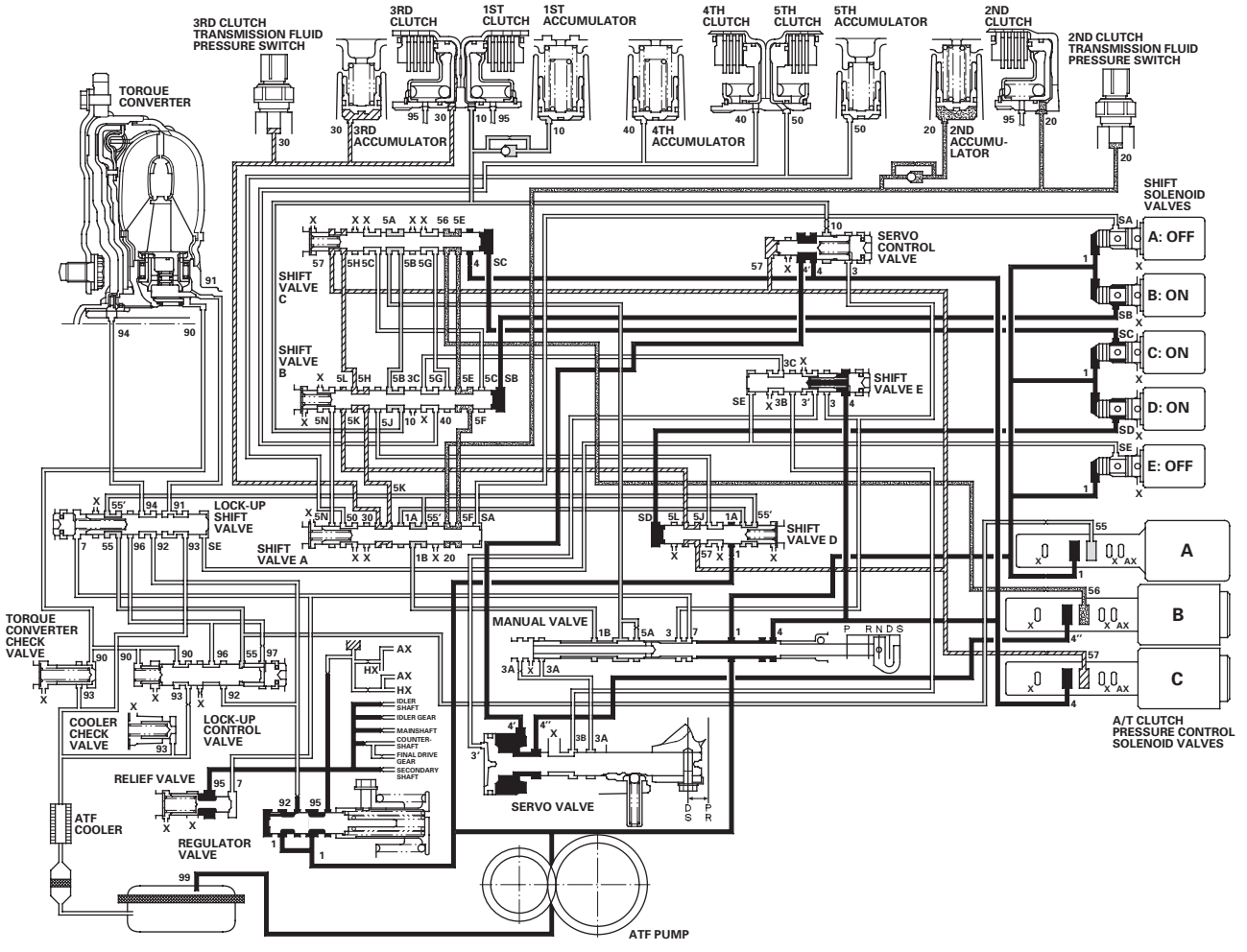
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Shifting between 2nd gear and 3rd gear in D and S with automatic shift mode

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C ON, A and E remain OFF, and B and D remain ON. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C is moved to the left side uncovering the A/T clutch pressure control solenoid valve B and C pressure ports leading to the 2nd and 3rd clutches. The PCM actuates the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at shift valve A. A/T clutch pressure control solenoid valve C pressure (57) changes to (5H) at shift valve C and to (5K) at shift valve B, and becomes 3rd clutch pressure (30) at shift valve A. The 2nd and 3rd clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

System Description (cont'd)

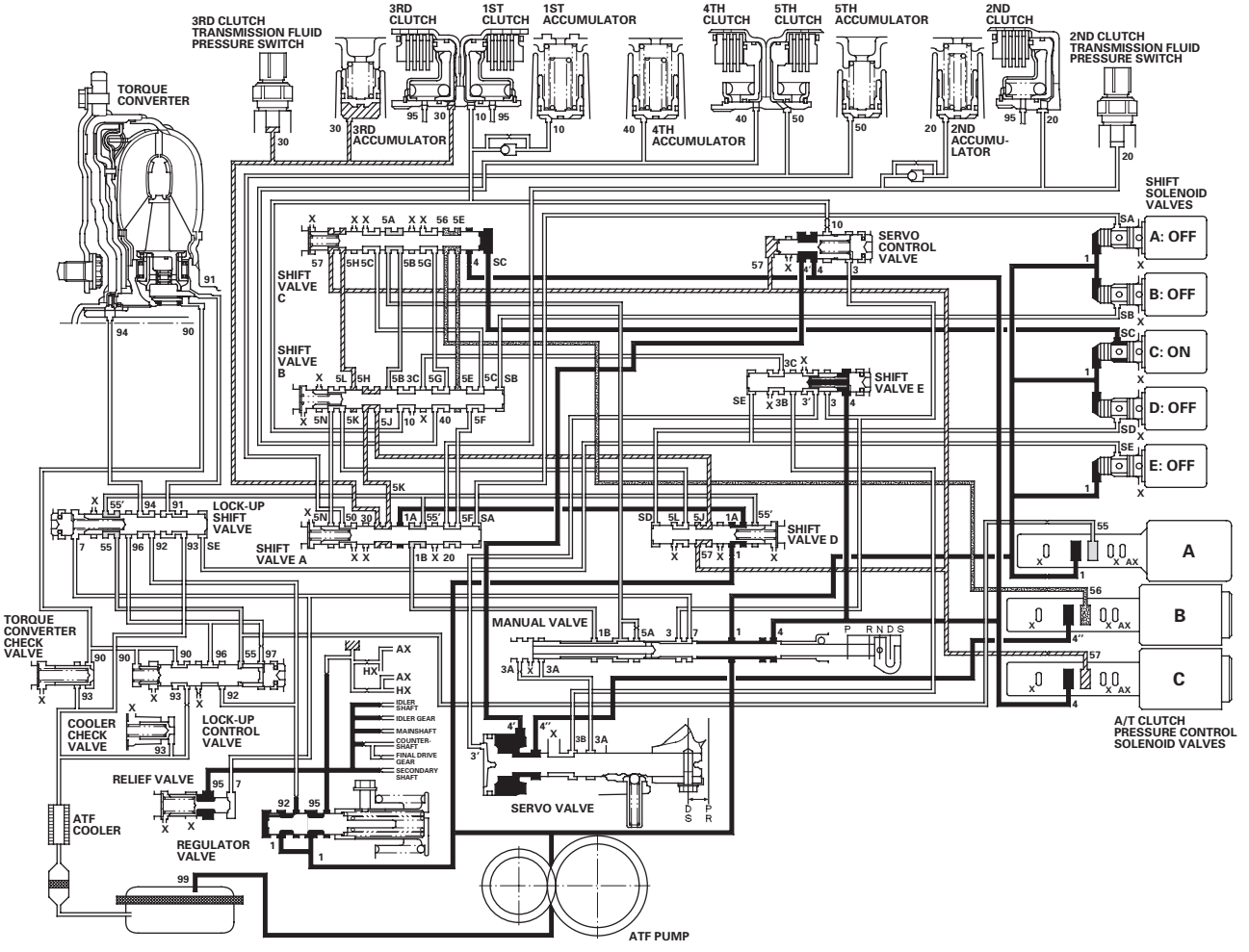
Hydraulic Flow (cont'd)

Driving in 3rd gear in D and S with automatic shift mode

The PCM turns shift solenoid valves B and D OFF, A and E remain OFF, and C remains ON. Shift solenoid valve B pressure (SB) in the right side of shift valve B is released, and shift valve B is moved to the right side. Shift solenoid valve D pressure (SD) in the left side of shift valve D is released, and shift valve D is moved to the left side. This valve movement causes A/T clutch pressure control solenoid valve C pressure port leading to the 3rd clutch.

A/T clutch pressure control solenoid valve C pressure (57) changes to (5J) to be directed to shift solenoid valve D and to (5K) at shift valve B, and becomes 3rd clutch pressure (30) at shift valve A. 3rd clutch pressure (30) is applied to the 3rd clutch, and the 3rd clutch is engaged securely.

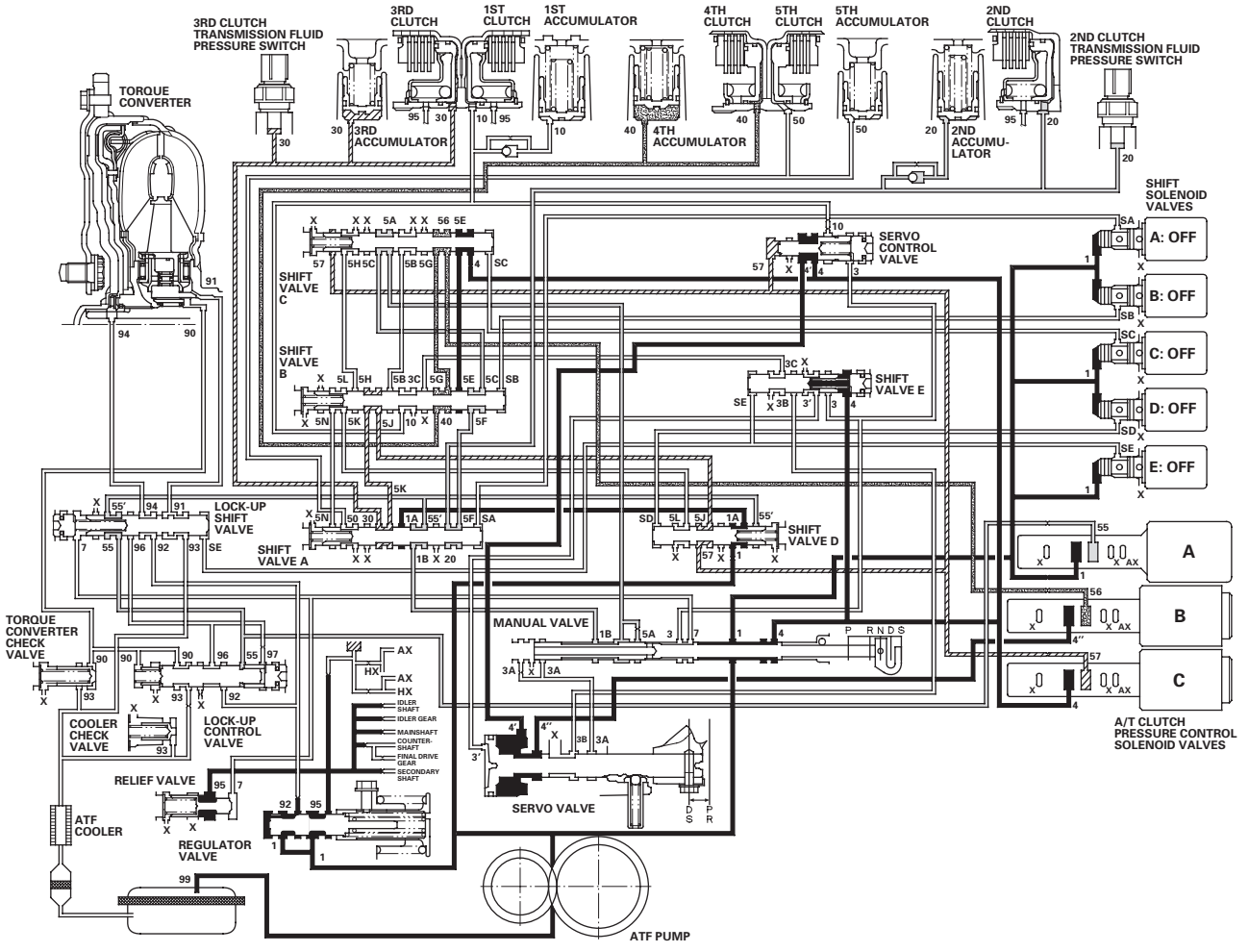
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Shifting between 3rd gear and 4th gear in D and S with automatic shift mode

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C OFF, and A, B, D, and E remain OFF. Shift solenoid valve C pressure (SC) in the right side of shift valve C is released. Shift valve C is moved to the right side uncovering the A/T clutch pressure control solenoid valve B and C pressure ports leading to the 3rd and 4th clutches. The PCM actuates the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve C pressure (57) changes to 3rd clutch pressure (30) at shift valve A. A/T clutch pressure control solenoid valve B pressure (56) changes to (5G) at shift valve C, and becomes 4th clutch pressure (40) at shift valve B. The 3rd and 4th clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



(cont'd)

System Description (cont'd)

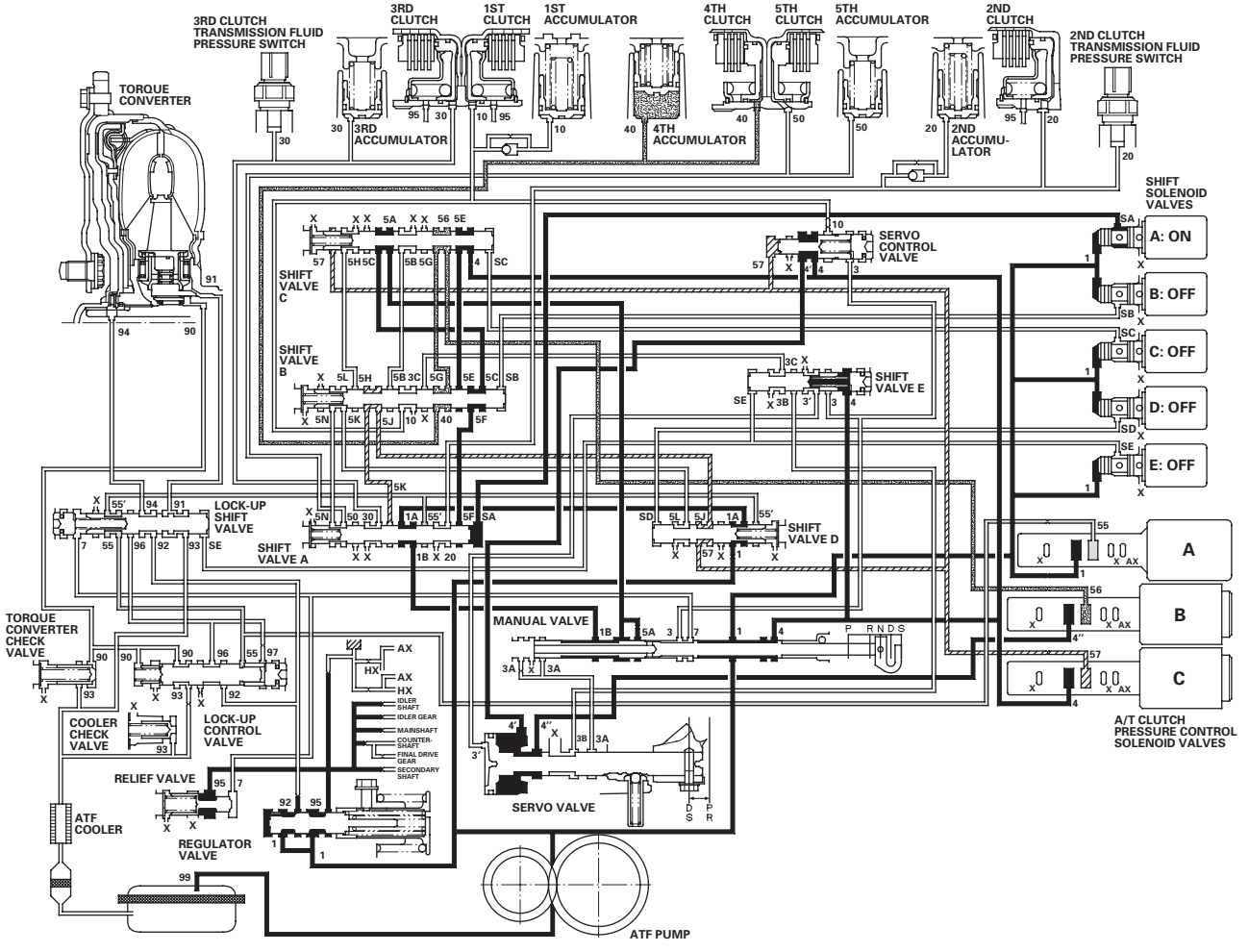
Hydraulic Flow (cont'd)

Driving in 4th gear in D and S with automatic shift mode

The PCM turns shift solenoid valve A ON, and B, C, D, and E remain OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to cover the A/T clutch pressure control solenoid valve A and C pressure ports leading to the 2nd and 3rd clutches.

A/T clutch pressure control solenoid valve B pressure (56) changes to (5G) at shift valve C, and becomes 4th clutch pressure (40) at shift valve B. 4th clutch pressure (40) is held high by A/T clutch pressure control solenoid valve B, and the 4th clutch is engaged securely.

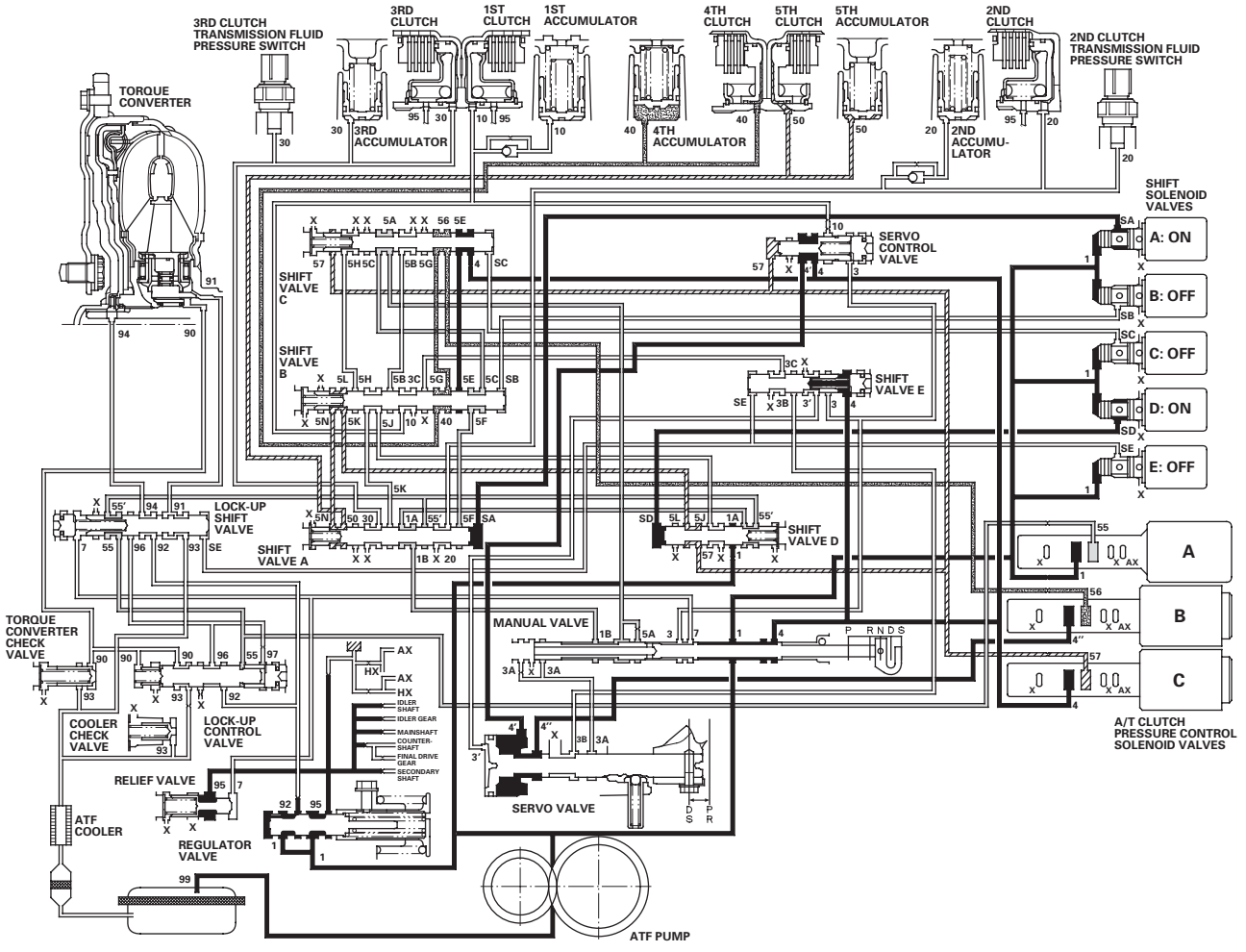
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve D ON, A remains ON, and B, C, and E remain OFF. Shift solenoid valve D pressure (SD) is applied to the left side of shift valve D. Shift valve D is moved to the right side uncovering the A/T clutch pressure control solenoid valve C pressure port leading to the 5th clutch. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at shift valve B. A/T clutch pressure control solenoid valve C pressure (57) changes to (5L) at shift valve D and to (5N) at shift valve B, and becomes 5th clutch pressure (50) at shift valve A. The 4th and 5th clutches are engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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System Description (cont'd)

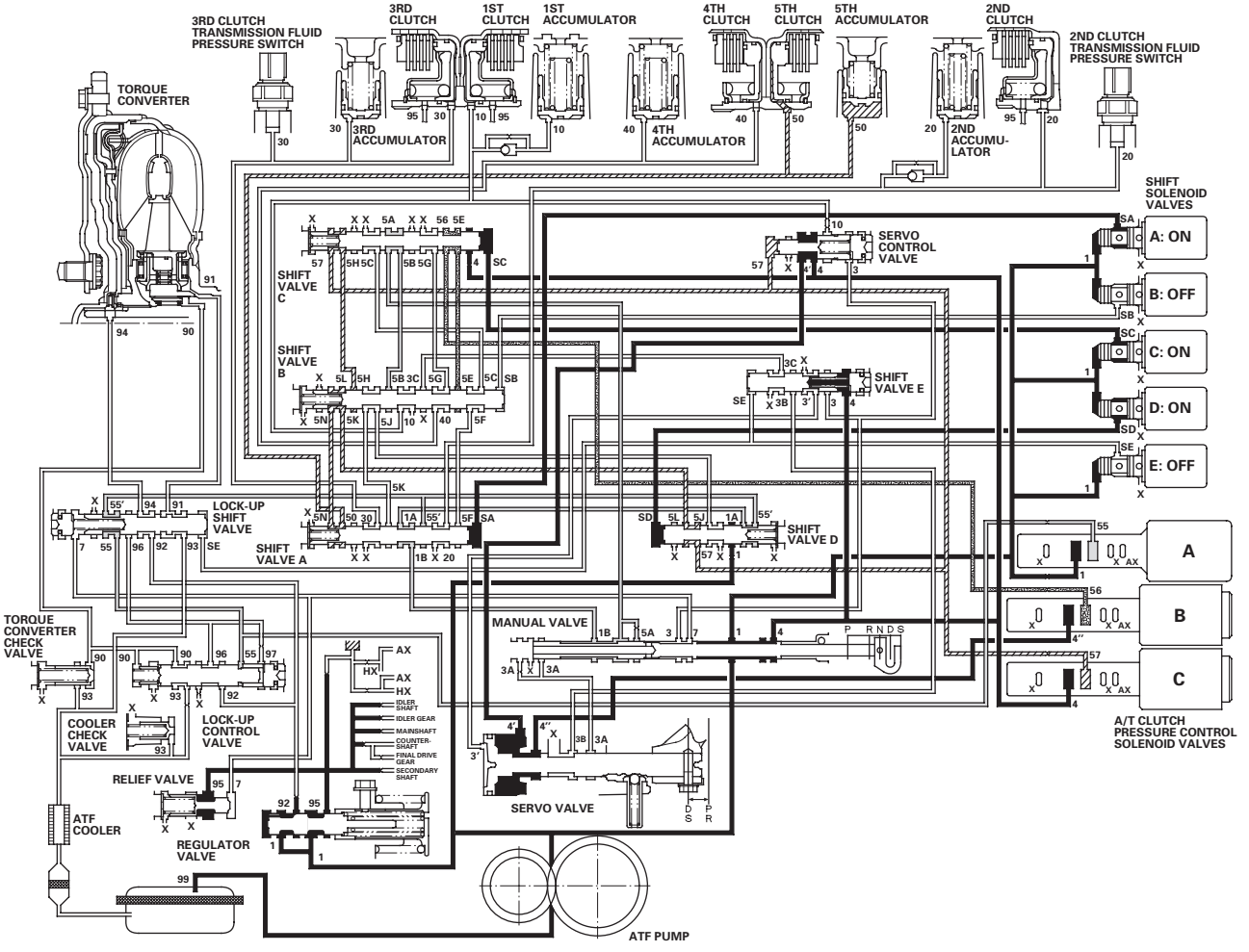
Hydraulic Flow (cont'd)

Driving in 5th gear

The PCM turns shift solenoid valve C ON, and A and D remain ON, and B and E remain OFF. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C is moved to the left side. The directs A/T clutch pressure control solenoid valve B pressure to shift valve B where it is blocked. The pressure in the 4th clutch is released through shift valve C.

A/T clutch pressure control solenoid valve C pressure (57) changes to (5L) at shift valve D and to (5N) at shift valve B. 5th clutch pressure (50) is held high by A/T clutch pressure control solenoid valve C, and the 5th clutch is engaged securely.

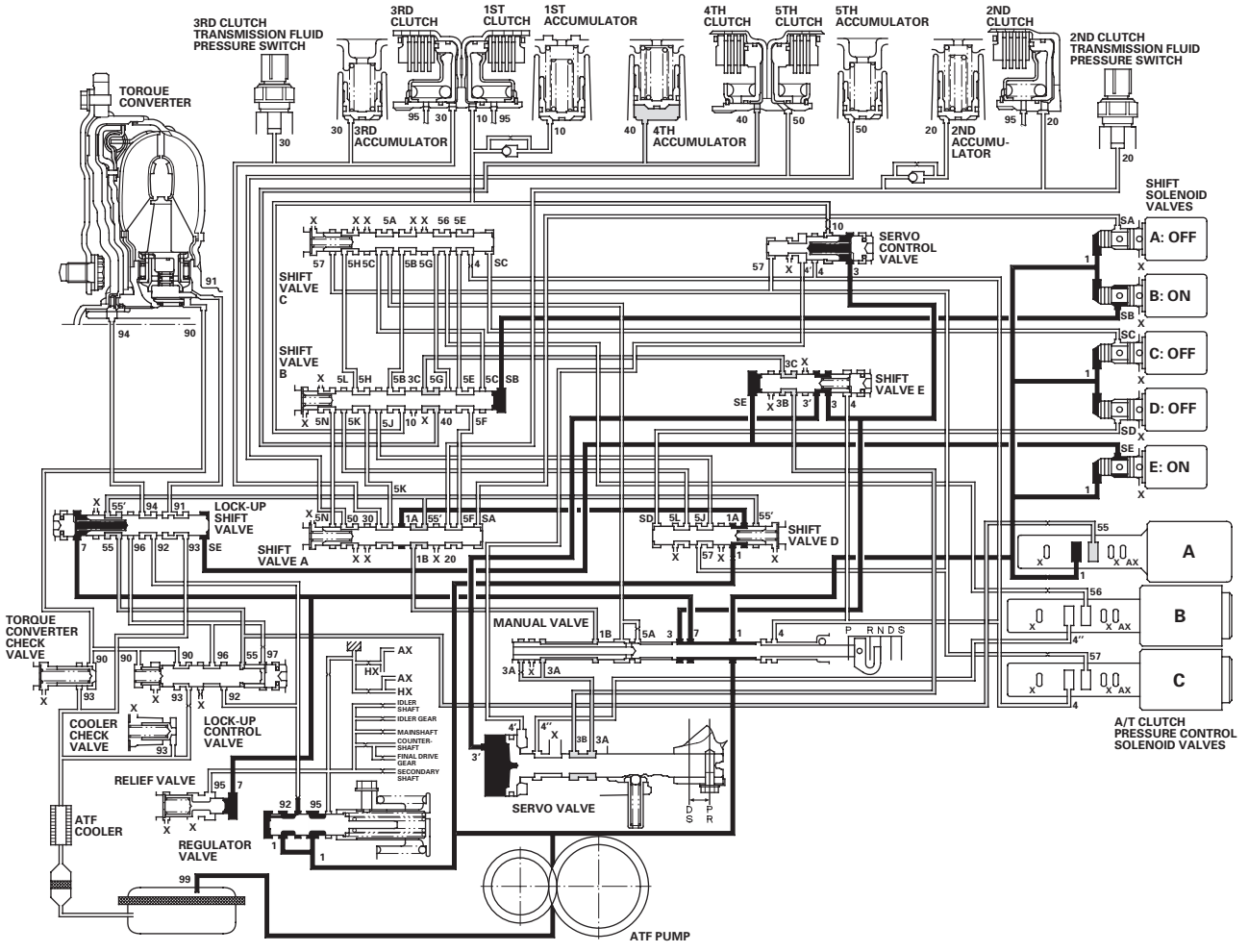
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



R Position: Shifting to R position from P or N position

When shifting to R, the PCM turns shift solenoid valves B and E ON, and A, C, and D are turned OFF. Shift solenoid valve B pressure (SB) is applied to the right side of shift valve B, and shift valve B is moved to the left side. Shift solenoid valve E pressure (SE) is applied to the left side of shift valve E, and shift valve E is moved to the right side. Line pressure (1) changes to (3) at the manual valve, and flows to the servo valve via shift valve E. The servo valve is moved to the reverse range position. Movement of shift valves B and E, and the servo valve creates 4th clutch pressure line between the 4th clutch and A/T clutch pressure control solenoid valve A. 4th clutch pressure (40) is applied to the 4th clutch, and the 4th clutch is engaged gently.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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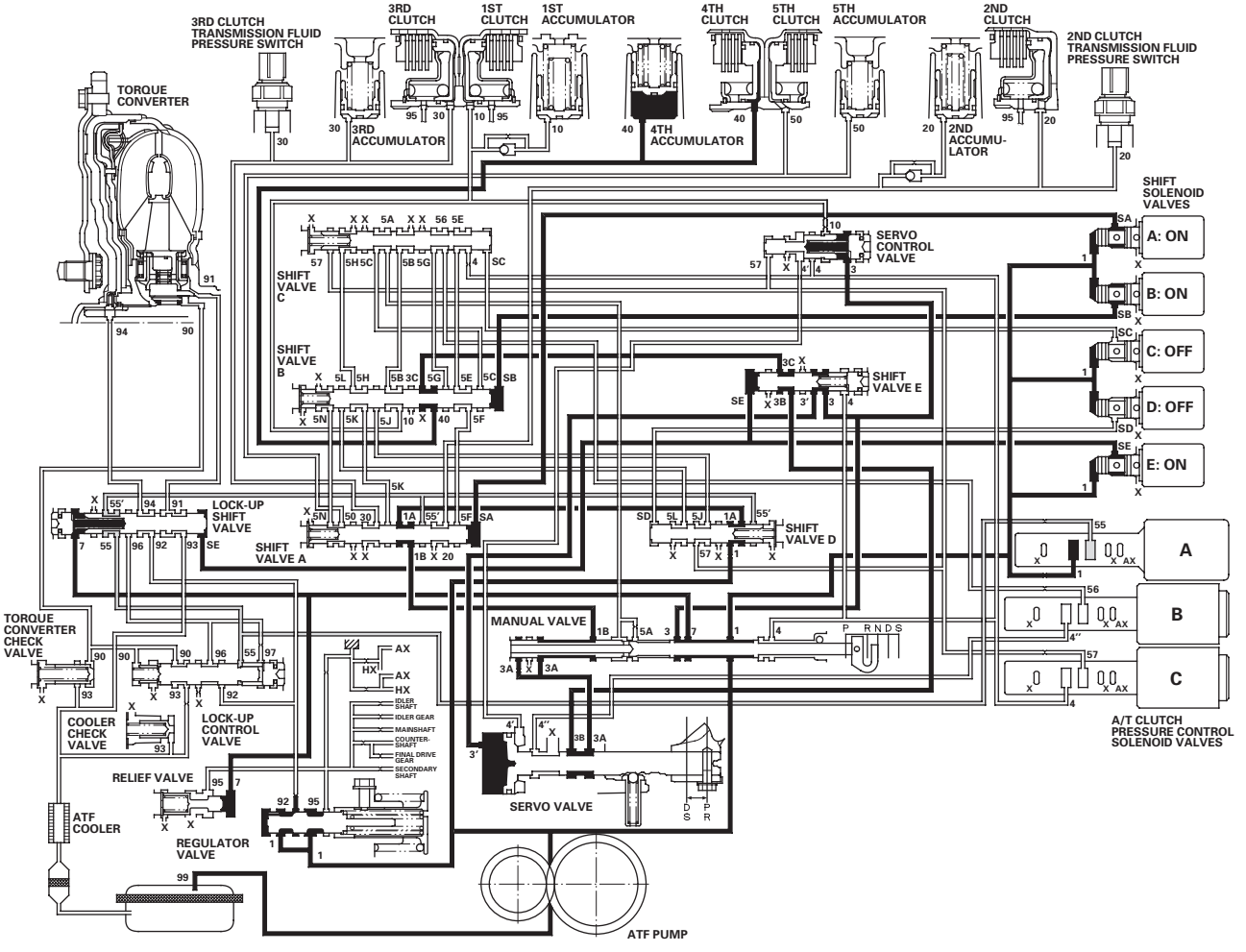
System Description (cont'd)

Hydraulic Flow (cont'd)

R Position: Driving in reverse gear
After starting off in reverse gear, the PCM turns shift solenoid valve A ON, B and E remain ON, and C and D remain OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A to cover the A/T clutch pressure control solenoid valve A pressure port, and to uncover the line pressure port leading to the 4th clutch creating full line pressure. The 4th clutch is engaged securely with line pressure.

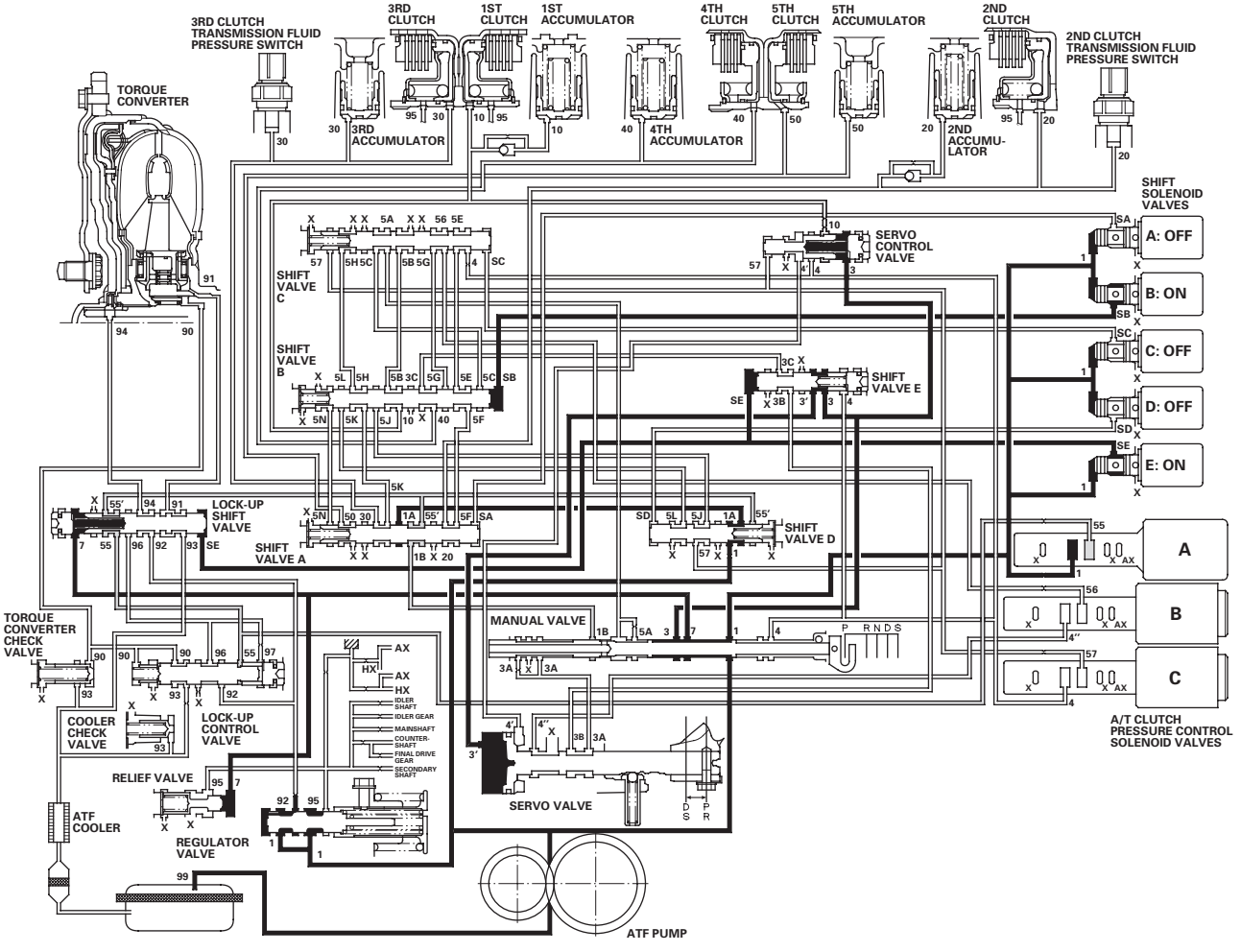
Reverse Inhibitor Control
When R is selected while the vehicle is moving forward, the PCM commands shift solenoid valve A to turn OFF, and E to remain OFF. Shift solenoid valve A pressure (SA) is not applied to shift valve A so that line pressure (3A) is not applied to the servo valve. Also shift solenoid valve E pressure (SE) is not applied to shift valve E so that line pressure (3') is not applied to the servo valve. The servo valve cannot be shifted to the reverse position, and hydraulic pressure is not applied to the 4th clutch from the servo valve for reverse; as a result, power is not transmitted to the reverse direction.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



P Position

The PCM turns shift solenoid valves B and E ON, and A, C, and D OFF. Line pressure (1) flows to the shift solenoid valves and A/T clutch pressure control solenoid valve A. Line pressure (3) changes to (3') at shift valve E, and flows to the servo valve. The servo valve is moved to the reverse/park position. Hydraulic pressure is not applied to the clutches.



System Description (cont'd)

Lock-up System

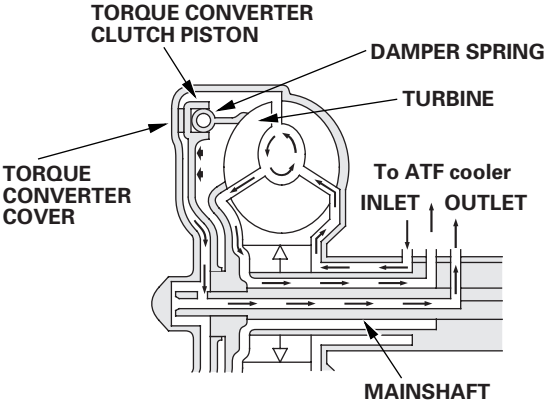
The lock-up mechanism of the torque converter clutch operates in D and S (2nd, 3rd, 4th, and 5th gears). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine. Together with the hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve on. A/T clutch pressure control solenoid valve A and the lock-up control valve control the degree of lock-up.

Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)
Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entering from the chamber between the pump and the stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; the torque converter clutch lock-up is ON, and the mainshaft rotates at the same speed as the engine.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft

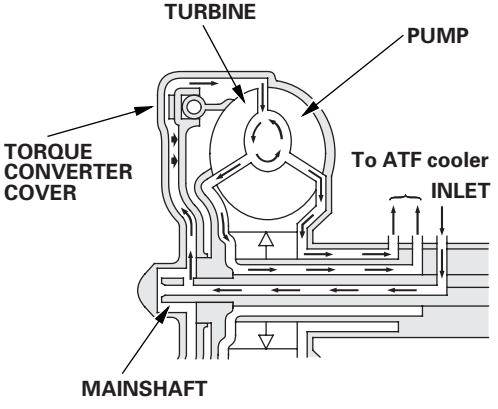


Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)
Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out through the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter lock-up clutch is released; the torque converter clutch lock-up is OFF.

Power flow

The power flows by way of:

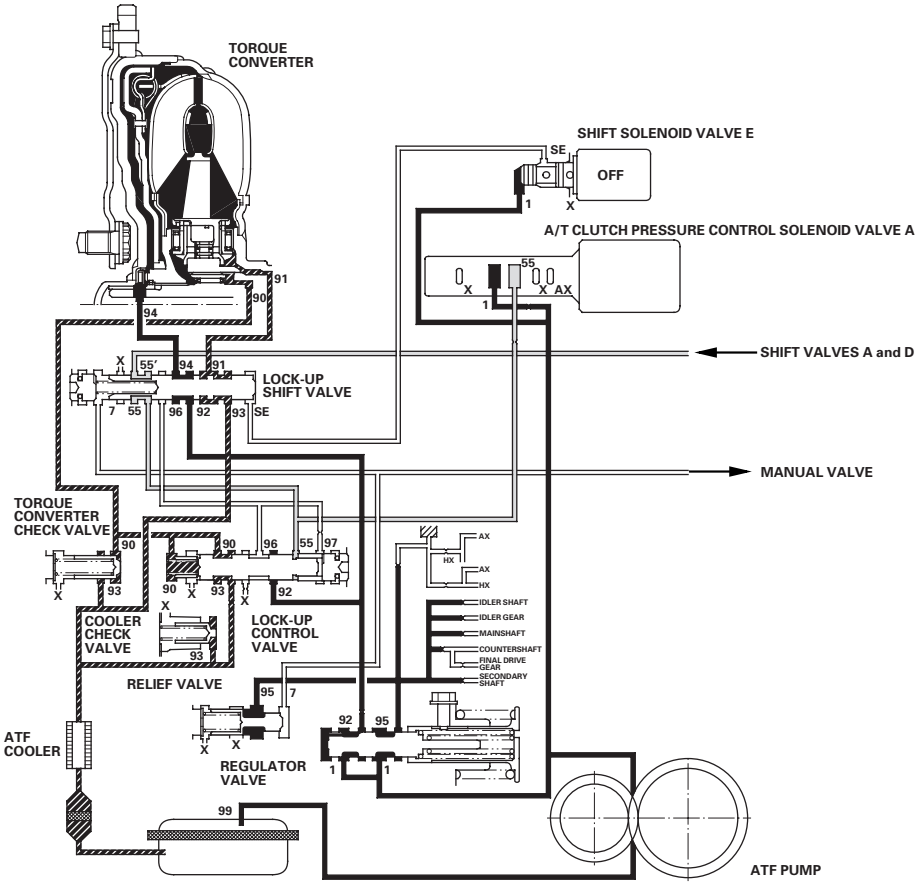
Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



No Lock-up

The PCM turns shift solenoid valve E OFF, and shift solenoid valve E pressure (SE) is not applied to the lock-up shift valve. The lock-up shift valve remains to the right uncover the torque converter pressure ports leading to the left side of the torque converter and releasing pressure from the right side of the torque converter. Torque converter pressure (92) changes to (94) at the lock-up shift valve, and enters into the left side of the torque converter to disengage the torque converter clutch. This keeps the torque converter clutch piston keeps away from the torque converter cover and the torque converter clutch lock-up is OFF.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



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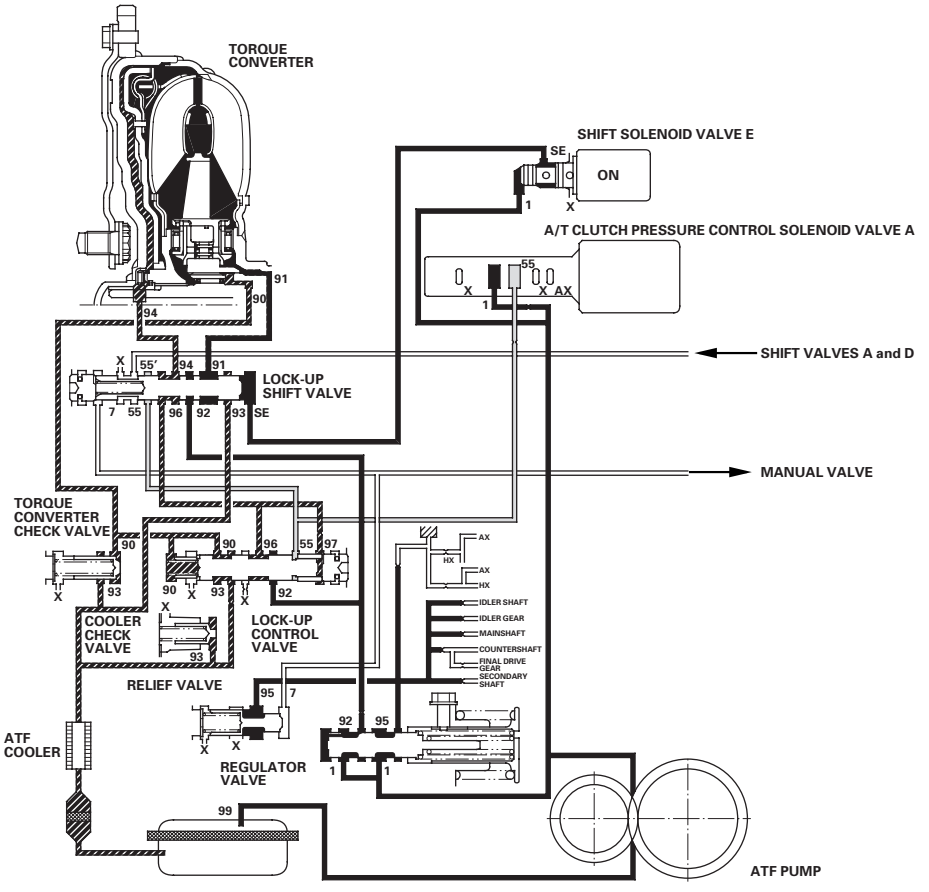
System Description (cont'd)

Lock-up System (cont'd)

Partial Lock-up

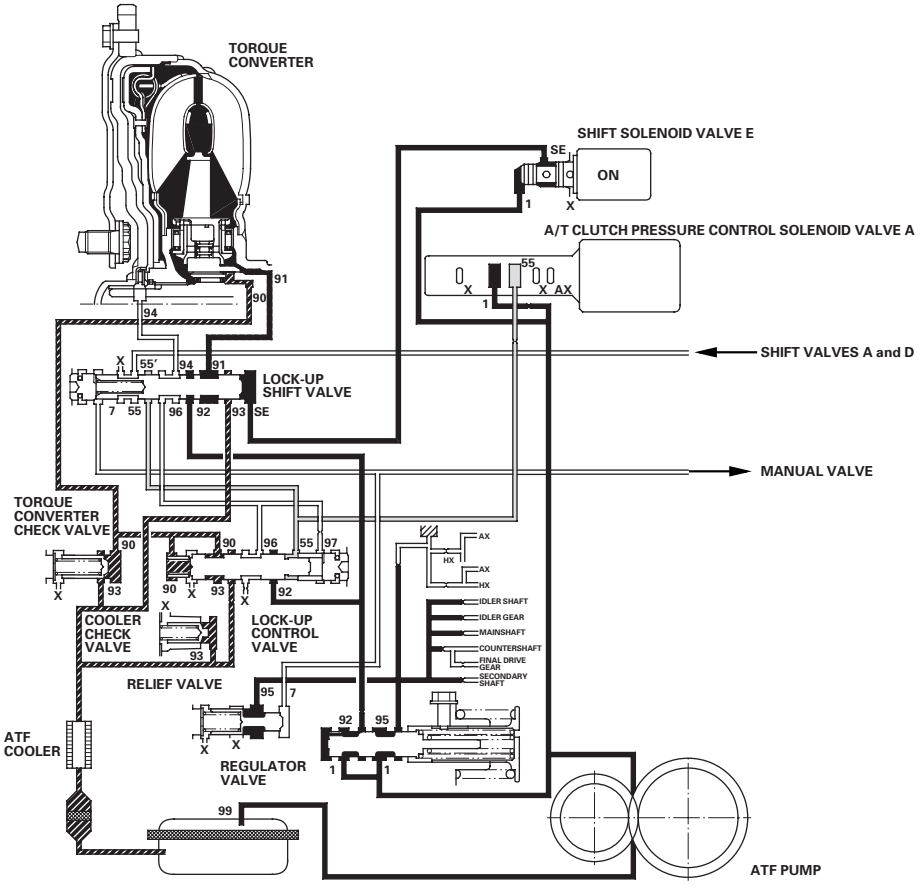
As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve E ON, and shift solenoid valve E pressure (SE) is applied to the right side of the lock-up shift valve. The lock-up shift valve is moved to the left side to switch the torque converter pressure port (91), which goes to the right side of the torque converter, and torque converter pressure port (94) is released from the left side of the torque converter. Torque converter pressure (91) flows to the right side of the torque converter to engage the torque converter clutch. The PCM also controls A/T clutch pressure control solenoid valve A to regulate A/T clutch pressure control solenoid valve A pressure. A/T clutch pressure solenoid valve A (55) is applied to the lock-up shift valve and the lock-up control valve. The position of the lock-up control valve depends on A/T clutch pressure control solenoid valve A pressure (55) and torque converter pressure released from the torque converter. The lock-up control valve controls the amount of torque converter clutch lock-up until fluid between the clutch piston and the torque converter cover is fully released; the torque converter clutch is in partial lock-up.

NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



Full Lock-up
When the vehicle speed increases, the PCM sends a signal to A/T clutch pressure control solenoid valve A to increase A/T clutch pressure control solenoid valve A pressure (55), and the lock-up control valve is moved to the left by the increased pressure. Then torque converter pressure (94) from the left side of the torque converter is completely released at the lock-up control valve, and torque converter pressure (91) engages the torque converter clutch securely; the torque converter clutch is in full lock-up.

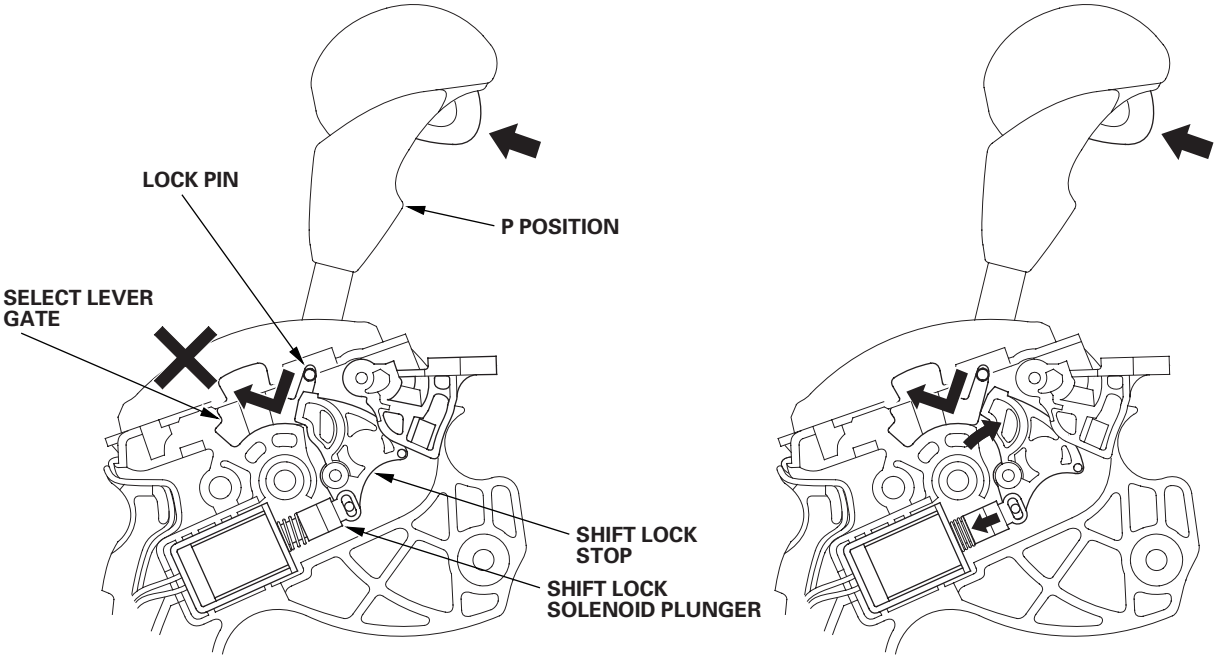
NOTE: When used, ''left'' or ''right'' indicates direction on the hydraulic circuit.



System Description (cont'd)

Shift Lock System

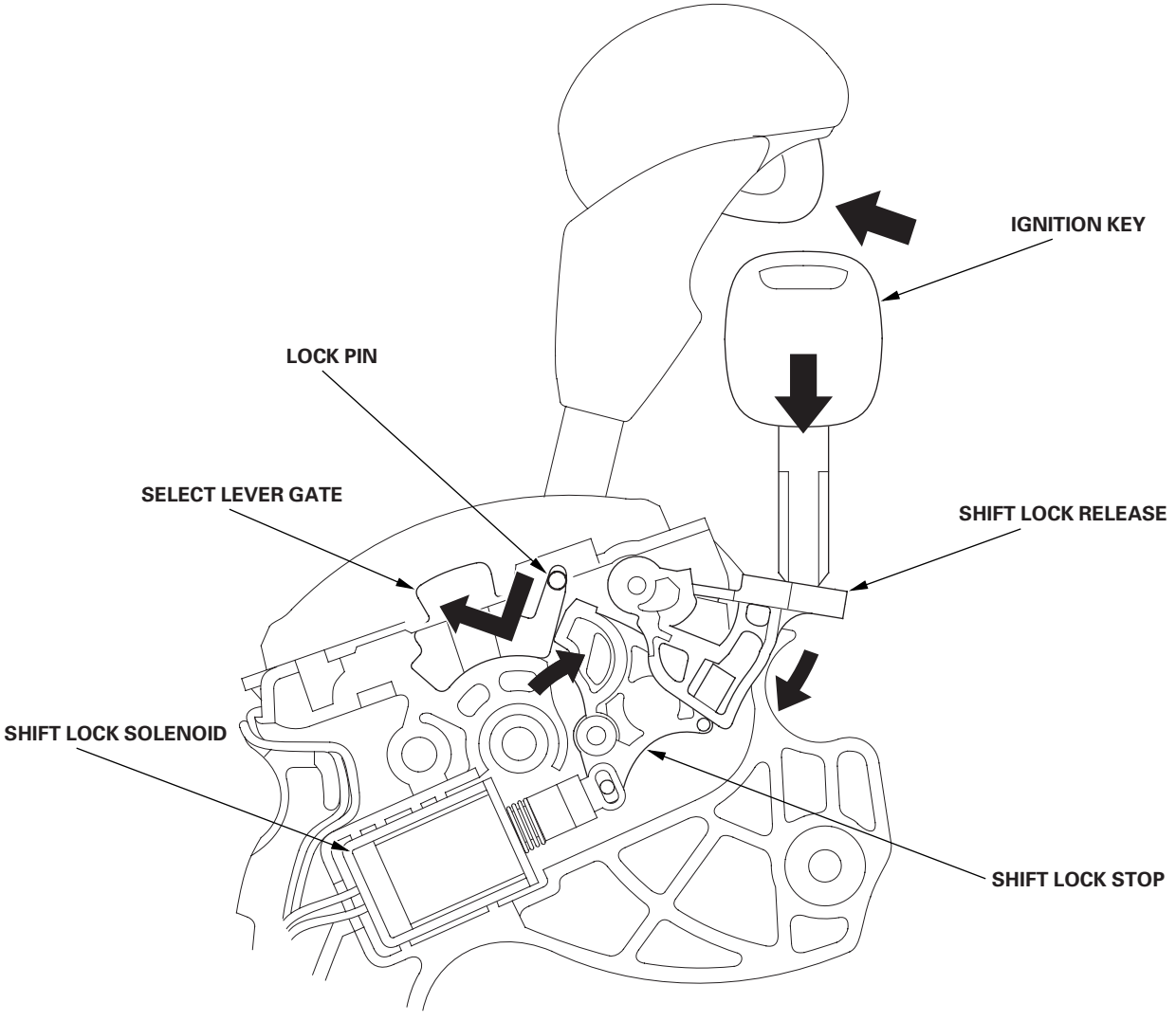
The shift lock system prevents the shift lever from mis-shifting. The shift lock solenoid is usually OFF. After starting the engine in P, the shift lever cannot move to any other position from P because the shift lock stop stops the lock pin unless the brake pedal is pressed. When the brake pedal is pressed and the accelerator pedal is not pressed, the shift lock solenoid is ON; the shift lock solenoid plunger in the shift lock solenoid pulls the shift lock stop to release the lock pin. Pressing the shift lever button, allows the shift lever to move to any other position. When the brake pedal and the accelerator pedal are pressed at the same time, the shift lock system is not unlocked.



SHIFT LOCK SOLENOID: OFF

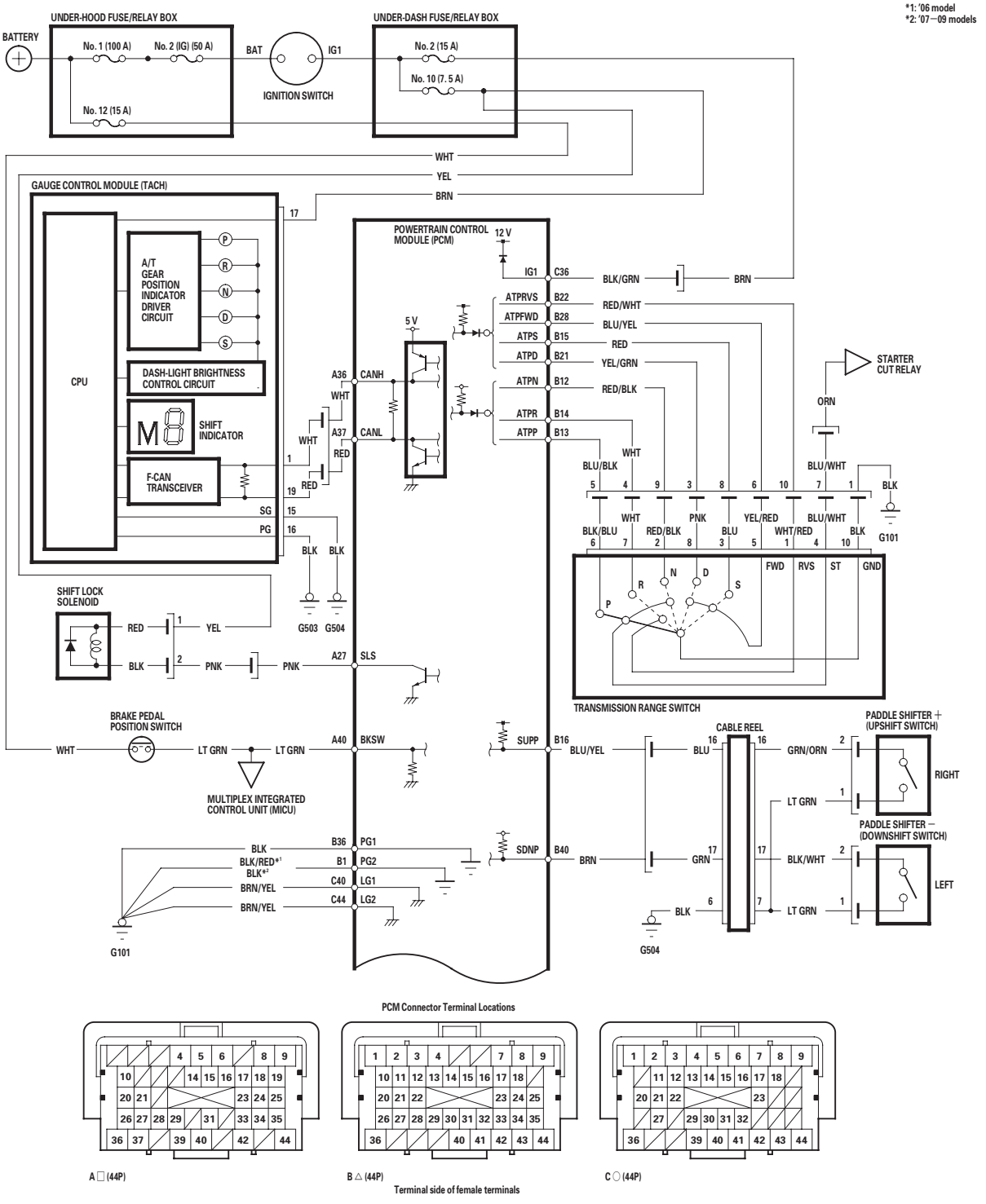
SHIFT LOCK SOLENOID: ON

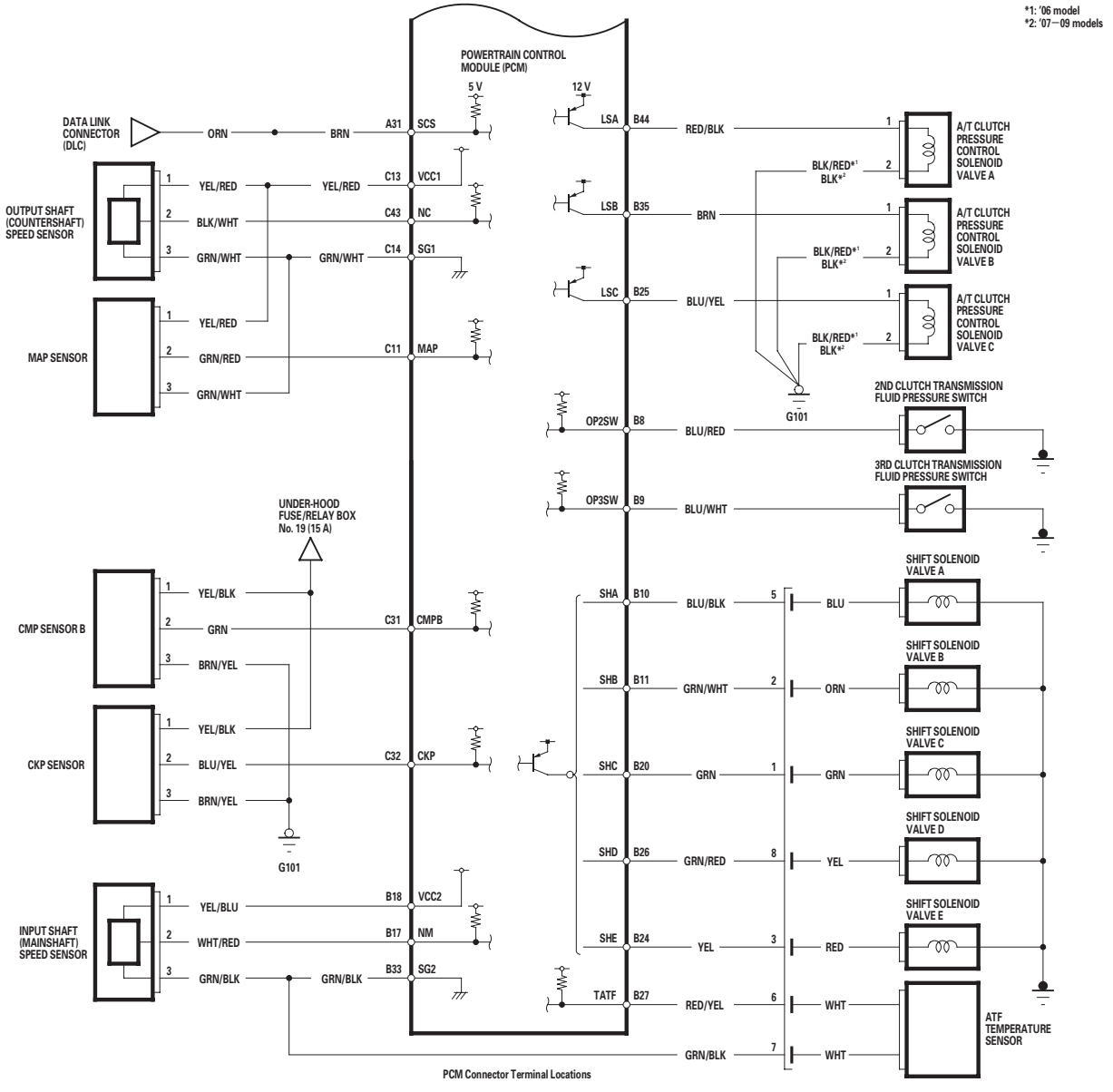
When the shift lock system does not operate due to a mechanical or electrical trouble, you can unlock the shift lock temporarily by inserting the ignition key into the shift lock release hole and pressing the shift lock release. When the shift lock release is pressed, the shift lock stop releases the lock pin, and the shift lever can move to any other position.



System Description (cont'd)

Circuit Diagram - PCM A/T Control System





DTC Troubleshooting

DTC P0107: Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage Input

DTC P0108: Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the PGM-FI SYSTEM?

   YES—Go to the indicated DTC's troubleshooting in the PGM-FI system. ■

   - P0107 (see page 11-80)
   - P0108 (see page 11-82)

   NO—Go to step 5.
5. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the A/T SYSTEM?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
6. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
7. Start the engine, and wait for at least 2 minutes.
8. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0107 or P0108 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1.

   NO—Go to step 9.
9. Monitor the OBD STATUS for P0107 or P0108 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 8, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DTC P0335: Crankshaft Position (CKP) Sensor No Signal

DTC P0339: Crankshaft Position (CKP) Sensor Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0335 or P0339 indicated in the PGM-FI SYSTEM?

   YES—Go to the indicated DTC's troubleshooting in the PGM-FI system. ■

   - P0335 (see page 11-128)
   - P0339 (see page 11-131)

   NO—Go to step 5.
5. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0335 or P0339 indicated in the A/T SYSTEM?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
6. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
7. Start the engine, and wait for at least 2 minutes.
8. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0335 or P0339 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1.

   NO—Go to step 9.
9. Monitor the OBD STATUS for P0335 or P0339 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 8, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DTC Troubleshooting (cont'd)

DTC P0365: Camshaft Position (CMP) Sensor B No Signal

DTC P0369: Camshaft Position (CMP) Sensor B Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0365 or P0369 indicated in the PGM-FI SYSTEM?

   YES—Go to the indicated DTC's troubleshooting in the PGM-FI system. ■

   - P0365 (see page 11-132)
   - P0369 (see page 11-134)

   NO—Go to step 5.
5. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0365 or P0369 indicated in the A/T SYSTEM?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
6. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
7. Start the engine, and wait for at least 2 minutes.
8. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0365 or P0369 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1.

   NO—Go to step 9.
9. Monitor the OBD STATUS for P0365 or P0369 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 8, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 7. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 7.

DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.
5. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 6.

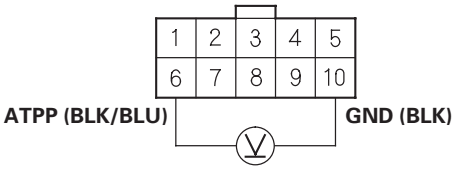
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.
6. Turn the ignition switch to LOCK (0).
7. Inspect the transmission range switch (see page 14-265).

   Is the switch OK?

   YES—With the switch connector disconnected, go to step 8.

   NO—Replace the transmission range switch (see page 14-267), then go to step 45.
8. Turn the ignition switch to ON (II).
9. Measure the voltage between transmission range switch connector terminals No. 6 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there more than 5 V?

YES—Go to step 15.

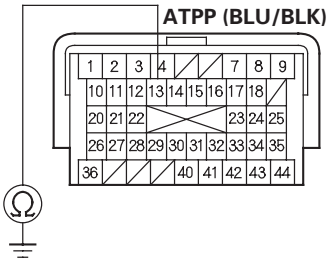
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Check for continuity between PCM connector terminal B13 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

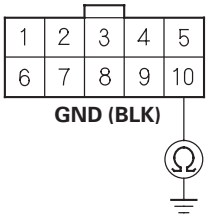
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B13 and the transmission range switch, then go to step 45.

NO—Go to step 14.

14. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

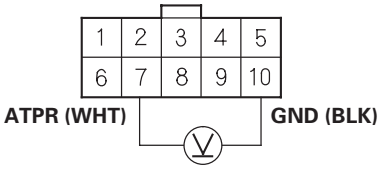
Is there continuity?

YES—Go to step 52.

NO—Repair open in the wire between transmission range switch connector terminal No. 10 and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 45.

15. Measure the voltage between transmission range switch connector terminals No. 7 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there more than 5 V?

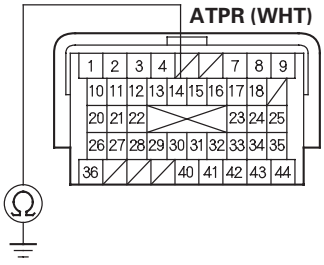
YES—Go to step 20.

NO—Go to step 16.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector B (44P).

19. Check for continuity between PCM connector terminal B14 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

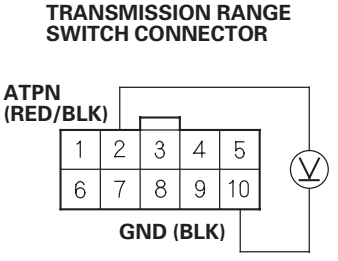
YES—Repair short to body ground in the wire between PCM connector terminal B14 and the transmission range switch, then go to step 45.

NO—Go to step 52.

(cont'd)

DTC Troubleshooting (cont'd)

20. Measure the voltage between transmission range switch connector terminals No. 2 and No. 10.



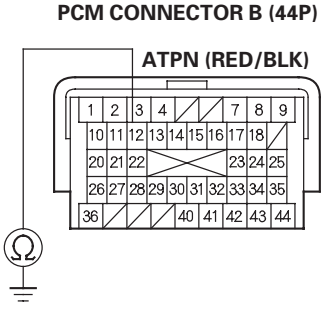
Wire side of female terminals

Is there more than 5 V?

YES—Go to step 25.

NO—Go to step 21.

21. Turn the ignition switch to LOCK (0).
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector B (44P).
24. Check for continuity between PCM connector terminal B12 and body ground.



Terminal side of female terminals

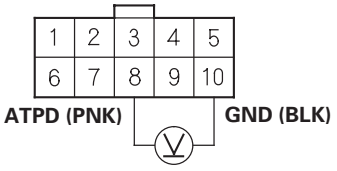
Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B12 and the transmission range switch, then go to step 45.

NO—Go to step 52.

25. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there about battery voltage?

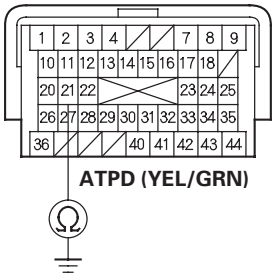
YES—Go to step 30.

NO—Go to step 26.

26. Turn the ignition switch to LOCK (0).
27. Jump the SCS line with the HDS.
28. Disconnect PCM connector B (44P).

29. Check for continuity between PCM connector terminal B21 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

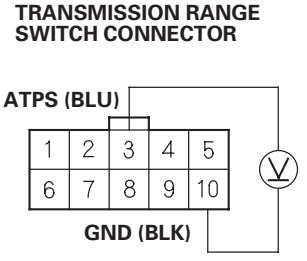
YES—Repair short to body ground in the wire between PCM connector terminal B21 and the transmission range switch, then go to step 45.

NO—Go to step 52.

(cont'd)

DTC Troubleshooting (cont'd)

30. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.



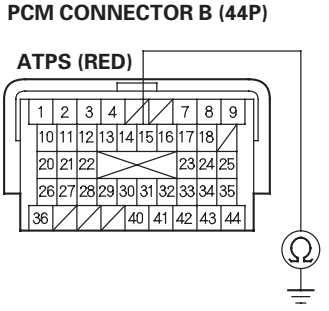
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 35.

NO—Go to step 31.

31. Turn the ignition switch to LOCK (0).
32. Jump the SCS line with the HDS.
33. Disconnect PCM connector B (44P).
34. Check for continuity between PCM connector terminal B15 and body ground.



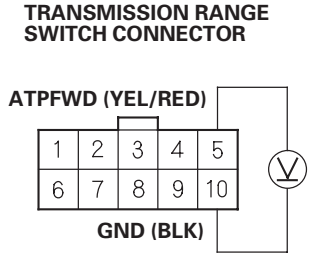
Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B15 and the transmission range switch, then go to step 45.

NO—Go to step 52.

35. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.



Wire side of female terminals

Is there about battery voltage?

YES—Go to step 40.

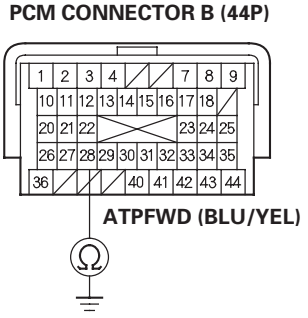
NO—Go to step 36.

36. Turn the ignition switch to LOCK (0).

37. Jump the SCS line with the HDS.

38. Disconnect PCM connector B (44P).

39. Check for continuity between PCM connector terminal B28 and body ground.



Terminal side of female terminals

Is there continuity?

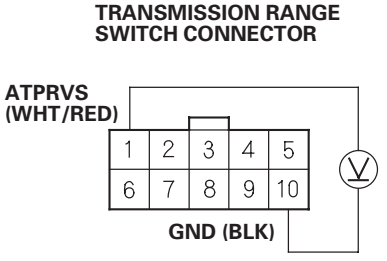
YES—Repair short to body ground in the wire between PCM connector terminal B28 and the transmission range switch, then go to step 45.

NO—Go to step 52.

(cont'd)

DTC Troubleshooting (cont'd)

40. Measure the voltage between transmission range switch connector terminals No. 1 and No. 10.



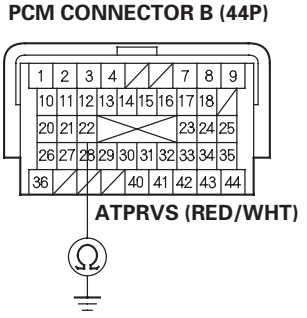
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 52.

NO—Go to step 41.

41. Turn the ignition switch to LOCK (0).
42. Jump the SCS line with the HDS.
43. Disconnect PCM connector B (44P).
44. Check for continuity between PCM connector terminal B22 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B22 and the transmission range switch, then go to step 45.

NO—Go to step 52.

45. Reconnect all connectors.

46. Turn the ignition switch to ON (II).

47. Clear the DTC with the HDS.

48. Start the engine.

49. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

50. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0705 indicated?

    YES—Check for intermittent short to body ground in the wires between the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 51.

51. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 50, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wires between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 48.

52. Reconnect all connectors.

53. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

54. Start the engine.

55. With the brake pedal pressed, move the shift lever through all positions. Stop for at least 1 second in each position.

56. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0705 indicated?

    YES—Check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 54. If the PCM was substituted, go to step 1.

    NO—Go to step 57.

57. Monitor the OBD STATUS for P0705 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 56, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wires between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 54. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 54.

DTC Troubleshooting (cont'd)

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.
4. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 40 km/h (25 mph), then slow down and stop the wheels.
5. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 6.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.
6. Turn the ignition switch to LOCK (0).
7. Inspect the transmission range switch (see page 14-265).

   Is the switch OK?

   YES—Go to step 8.

   NO—Replace the transmission range switch (see page 14-267), then go to step 25.
8. Adjust the shift cable (see page 14-259).
9. Turn the ignition switch to ON (II).
10. Clear the DTC with the HDS.
11. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 40 km/h (25 mph), then slow down and stop the wheels.
12. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Go to step 13.

    NO—If the HDS indicates PASSED, troubleshooting is complete. If the HDS indicates NOT COMPLETED, go to step 11.
13. Shift to D, and check the Forward Switch (ATPFWD) and A/T D Switch in the DATA LIST with the HDS.

    Are Forward Switch (ATPFWD) and A/T D Switch ON?

    YES—Go to step 14.

    NO—Go to step 18.
14. Shift to S, and check the Forward Switch (ATPFWD) and A/T S Switch in the DATA LIST with the HDS.

    Are Forward Switch (ATPFWD) and A/T S Switch ON?

    YES—Go to step 15.

    NO—Go to step 18.

15. Clear the DTC with the HDS.

16. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 40 km/h (25 mph), then slow down and stop the wheels.

17. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Go to step 18.

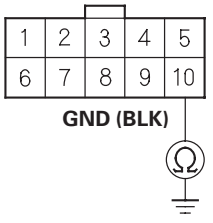
    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission range switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 16.

18. Turn the ignition switch to LOCK (0).

19. Disconnect the transmission range switch connector.

20. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 21.

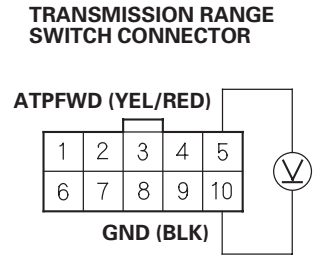
NO—Repair open in the wire between the transmission range switch and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 25.

21. Turn the ignition switch to ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

22. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.



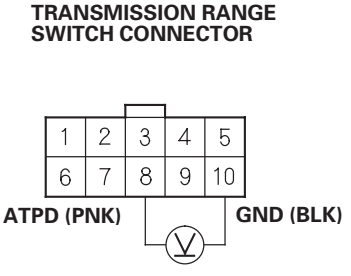
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 23.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal B28, then go to step 25.

23. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.



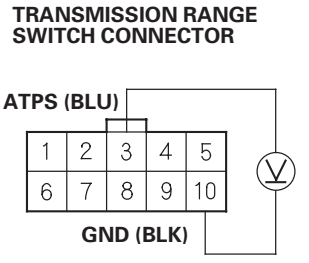
Wire side of female terminals

Is there about battery voltage?

YES—Go to step 24.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal B21, then go to step 25.

24. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.



Wire side of female terminals

Is there about battery voltage?

YES—Go to step 31.

NO—Repair open in the wire between the transmission range switch and PCM connector terminal B15, then go to step 25.

25. Reconnect all connectors.

26. Turn the ignition switch to ON (II).

27. Clear the DTC with the HDS.

28. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 48 km/h (30 mph), then slow down and stop the wheels.

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 30.

30. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 28.

31. Reconnect all connectors.

32. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

33. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D until the vehicle speed reaches 48 km/h (30 mph), then slow down and stop the wheels.

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0706 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 33. If the PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for P0706 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 33. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 33.

DTC Troubleshooting (cont'd)

DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Check the ATF Temp Sensor in the Data List with the HDS.

   Does the ATF temperature exceed the outside air temperature?

   YES—Record the ATF temperature. Leave the engine off for at least 30 minutes, then go to step 3.

   NO—Record the ATF temperature. Test the stall speed RPM (see page 14-210) three times, then go to step 3.
3. Check the ATF Temp Sensor in the Data List with the HDS.

   Did the ATF temperature change?

   YES—Leave the engine off for at least 30 minutes, then go to step 4.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 6.
4. Check the ECT Sensor in the Data List with the HDS.

   Does the ECT Sensor read about the same as the outside air temperature?

   YES—Go to step 5.

   NO—Leave the engine off until ECT Sensor reads the same as the outside air temperature, then go to step 5.
5. Check the ATF Temp Sensor in the Data List with the HDS.

   Does the ATF temperature read about the same as ECT Sensor?

   YES—Go to step 13.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 6.
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
9. Allow the engine coolant temperature to cool to the outside air temperature.
10. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on), and wait for at least 20 seconds, then drive the vehicle at speeds over 31 km/h (19 mph) for at least 5 minutes.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0711 indicated?

    YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

    NO—Go to step 12.

12. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 8.

13. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

14. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

15. Allow the engine coolant temperature to cool to the outside air temperature.

16. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on), and wait for at least 20 seconds, then drive the vehicle at speeds over 31 km/h (19 mph) for at least 5 minutes.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0711 indicated?

    YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 14. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 14. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Is the ATF Temp Sensor voltage 0.07 V or less?

   YES—Go to step 3.

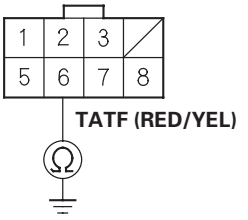
   NO—Intermittent failure, the system is OK at this time. Check for an intermittent short to body ground in the TATF wire between the ATF temperature sensor and the PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the shift solenoid wire harness connector.
5. Turn the ignition switch to ON (II).
6. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Is the ATF Temp Sensor voltage 0.07 V or less?

   YES—Go to step 7.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 14.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector B (44P).
10. Check for continuity between shift solenoid wire harness connector terminal No. 6 and body ground.

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B27 and shift solenoid wire harness connector terminal No. 6, then go to step 11.

NO—Go to step 17.

11. Reconnect all connectors.

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Start the engine with the shift lever in P, and wait for at least 20 seconds.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0712 indicated?

    YES—Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 14.

17. Reconnect all connectors.

18. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

19. Start the engine with the shift lever in P, and wait for at least 20 seconds.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0712 indicated?

    YES—Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 19. If the PCM was substituted, go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 19. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DTC Troubleshooting (cont'd)

DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

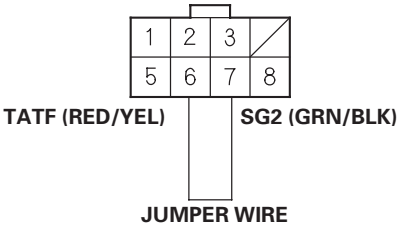
1. Turn the ignition switch to ON (II).
2. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Does the ATF Temp Sensor voltage exceed 4.93 V?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the shift solenoid wire harness connector.
5. Connect shift solenoid wire harness connector terminals No. 6 and No. 7 with a jumper wire.

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

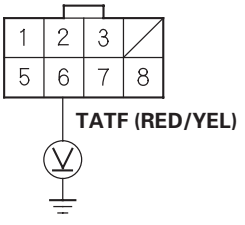
6. Turn the ignition switch to ON (II).
7. Check the ATF Temp Sensor voltage in the Data List with the HDS.

   Does the ATF Temp Sensor voltage exceed 4.93 V?

   YES—Go to step 8.

   NO—Replace the ATF temperature sensor (see page 14-229), then go to step 21.
8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from the shift solenoid wire harness connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between shift solenoid wire harness connector terminal No. 6 and body ground.

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

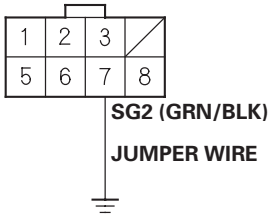
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 17.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Connect shift solenoid wire harness connector terminal No. 7 and body ground with a jumper wire.

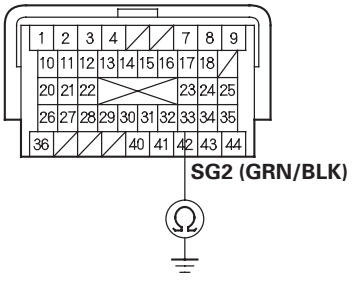
SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

16. Check for continuity between PCM connector terminal B33 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

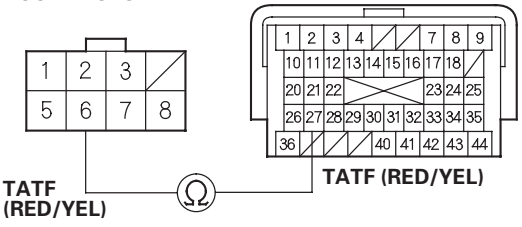
YES—Go to step 27.

NO—Repair open in the wire between PCM connector terminal B33 and the ATF temperature sensor, then go to step 21.

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector B (44P).
20. Check for continuity between PCM connector terminal B27 and shift solenoid wire harness connector terminal No. 6.

SHIFT SOLENOID WIRE HARNESS CONNECTOR

PCM CONNECTOR B (44P)



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between PCM connector terminal B27 and the ATF temperature sensor, then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine with the shift lever in P, and wait for at least 20 seconds.
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0713 indicated?

YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

NO—Go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

26. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

29. Start the engine with the shift lever in P, and wait for at least 20 seconds.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0713 indicated?

    YES—Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit

DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check for proper input shaft (mainshaft) speed sensor installation (see page 14-227).

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.

5. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

6. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 7.

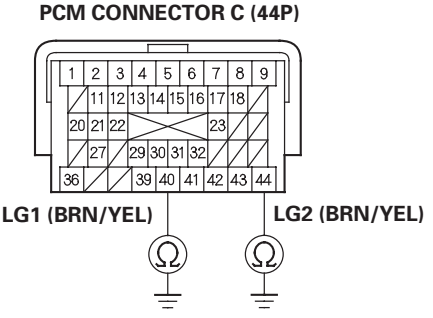
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector C (44P).

10. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

Is there continuity?

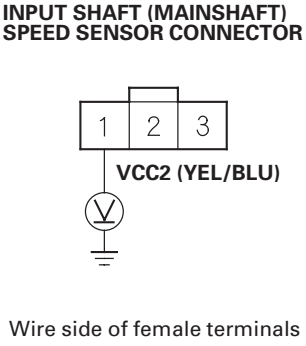
YES—Go to step 11.

NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

11. Connect PCM connector C (44P).
12. Disconnect the input shaft (mainshaft) speed sensor connector.
13. Turn the ignition switch to ON (II).
14. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

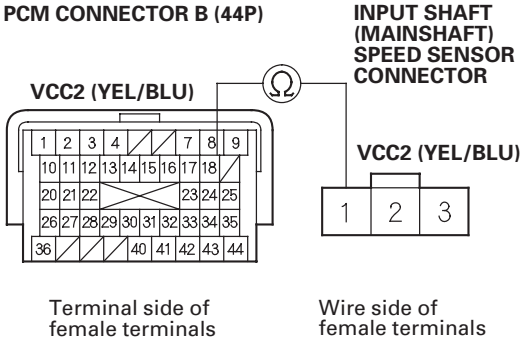


Is there about 5 V?

YES—Go to step 19.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector B (44P).
18. Check for continuity between PCM connector terminal B18 and input shaft (mainshaft) speed sensor connector terminal No. 1.

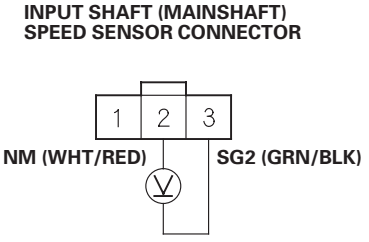


Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal B18 and the input shaft (mainshaft) speed sensor, then go to step 26.

19. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.



Wire side of female terminals

Is there about 5 V?

YES—Replace the input shaft (mainshaft) speed sensor (see page 14-227), then go to step 26.

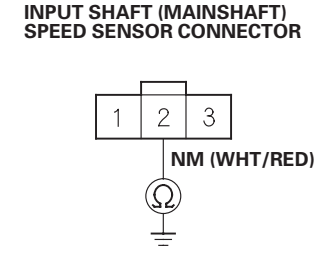
NO—Go to step 20.

20. Turn the ignition switch to LOCK (0).

21. Jump the SCS line with the HDS.

22. Disconnect PCM connector B (44P).

23. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.



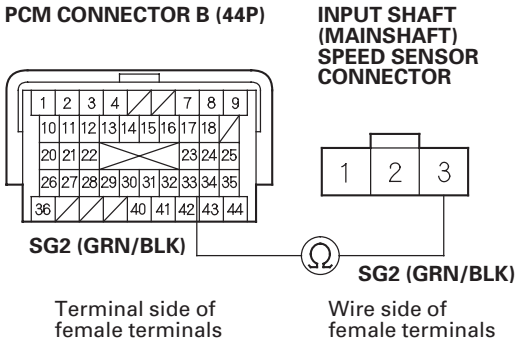
Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 26.

NO—Go to step 24.

24. Check for continuity between PCM connector terminal B33 and input shaft (mainshaft) speed sensor connector terminal No. 3.



Terminal side of female terminals

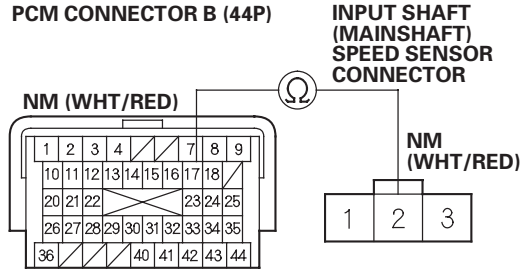
Wire side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between PCM connector terminal B33 and the input shaft (mainshaft) speed sensor, then go to step 26.

25. Check for continuity between PCM connector terminal B17 and input shaft (mainshaft) speed sensor connector terminal No. 2.



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

26. Reconnect all connectors.

27. Turn the ignition switch to ON (II).

28. Clear the DTC with the HDS.

29. Start the engine, run the vehicle with the shift lever in D, and keep the vehicle at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

32. Reconnect all connectors.

33. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

34. Start the engine, run the vehicle with the shift lever in D, and keep the vehicle at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0716 or P0717 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1.

    NO—Go to step 36.

36. Monitor the OBD STATUS for P0716 or P0717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 34.

DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

4. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 5.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.

5. Turn the ignition switch to LOCK (0).

6. Disconnect the input shaft (mainshaft) speed sensor connector, and inspect the connector and the connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

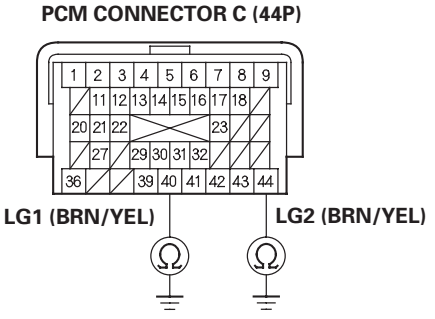
   YES—Go to step 7.

   NO—Repair the connector terminals, then go to step 23.

7. Jump the SCS line with the HDS.

8. Disconnect PCM connector C (44P).

9. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

   Is there continuity?

   YES—Go to step 10.

   NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 23.

10. Connect PCM connector C (44P).

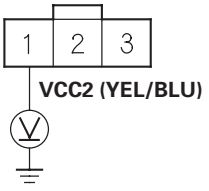
11. Turn the ignition switch to ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

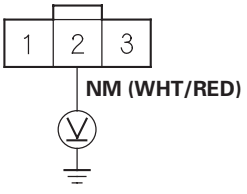
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 19.

13. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the input shaft (mainshaft) speed sensor (see page 14-227), then go to step 23.

NO—Go to step 14.

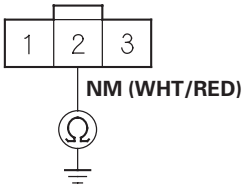
14. Turn the ignition switch to LOCK (0).

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector B (44P).

17. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



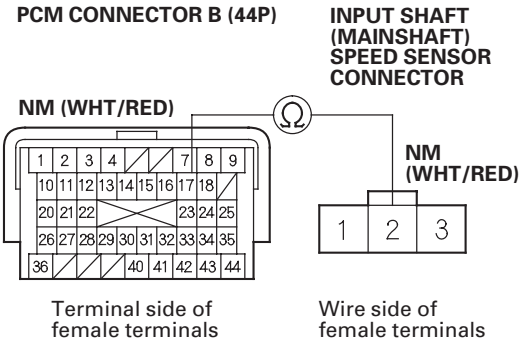
Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 23.

NO—Go to step 18.

18. Check for continuity between PCM connector terminal B17 and input shaft (mainshaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 29.

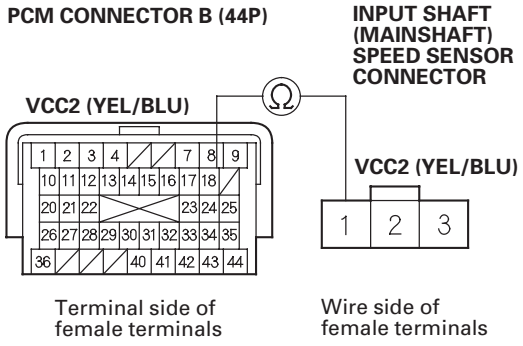
NO—Repair open in the wire between PCM connector terminal B17 and the input shaft (mainshaft) speed sensor, then go to step 23.

19. Turn the ignition switch to LOCK (0).

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector B (44P).

22. Check for continuity between PCM connector terminal B18 and input shaft (mainshaft) speed sensor connector terminal No. 1.



Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between PCM connector terminal B18 and the input shaft (mainshaft) speed sensor, then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

23. Reconnect all connectors.

24. Turn the ignition switch to ON (II).

25. Clear the DTC with the HDS.

26. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0718 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 26.

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

31. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0718 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for P0718 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 31.

DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit

DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check for proper output shaft (countershaft) speed sensor installation (see page 14-227).

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.

5. Start the engine, disable the VSA by pressing the VSA OFF switch (if equipped), run the vehicle with the shift lever in D and the engine speed 2,000 rpm or higher, for at least 10 seconds. Slow down and stop the wheels.

6. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 7.

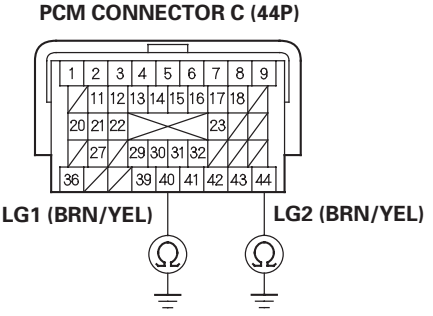
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector C (44P).

10. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

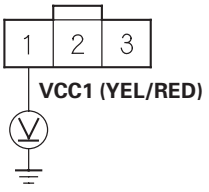
NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

11. Connect PCM connector C (44P).
12. Disconnect the output shaft (countershaft) speed sensor connector.
13. Turn the ignition switch to ON (II).
14. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

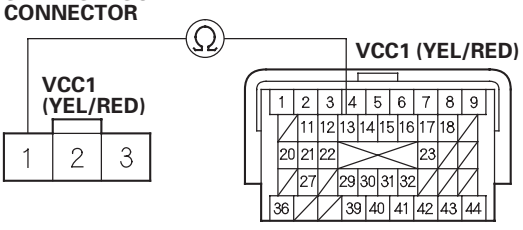
YES—Go to step 19.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector C (44P).
18. Check for continuity between PCM connector terminal C13 and output shaft (countershaft) speed sensor connector terminal No. 1.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR

PCM CONNECTOR C (44P)



Wire side of female terminals

Terminal side of female terminals

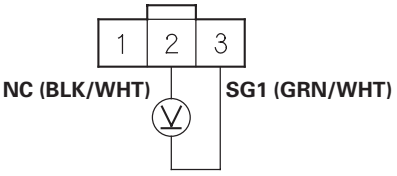
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal C13 and the output shaft (countershaft) speed sensor, then go to step 26.

19. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the output shaft (countershaft) speed sensor (see page 14-227), then go to step 26.

NO—Go to step 20.

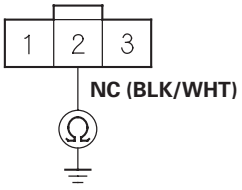
20. Turn the ignition switch to LOCK (0).

21. Jump the SCS line with the HDS.

22. Disconnect PCM connector C (44P).

23. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

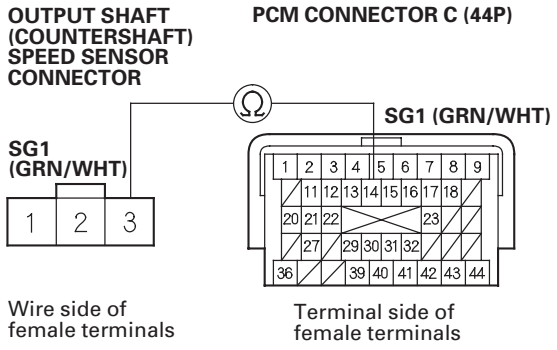
YES—Repair short to body ground in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 26.

NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

24. Check for continuity between PCM connector terminal C14 and output shaft (countershaft) speed sensor connector terminal No. 3.

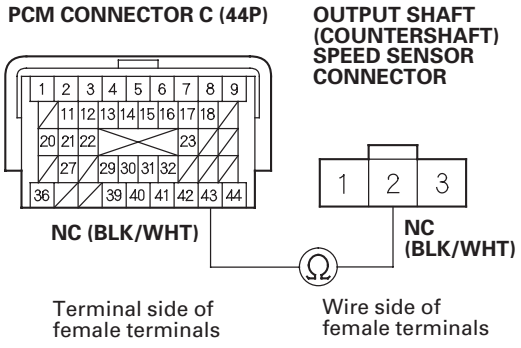


Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the output shaft (countershaft) speed sensor connector and PCM connector terminal C14, then go to step 26.

25. Check for continuity between PCM connector terminal C43 and output shaft (countershaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 26.

26. Reconnect all connectors.

27. Turn the ignition switch to ON (II).

28. Clear the DTC with the HDS.

29. Start the engine, run the vehicle with the shift lever in D at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

32. Reconnect all connectors.

33. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

34. Start the engine, run the vehicle with the shift lever in D at speeds over 20 km/h (12 mph) for at least 10 seconds. Slow down and stop the wheels.

35. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0721 or P0722 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1.

    NO—Go to step 36.

36. Monitor the OBD STATUS for P0721 or P0722 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 34.

DTC Troubleshooting (cont'd)

DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears with the engine speed at 2,000 rpm or higher.
4. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

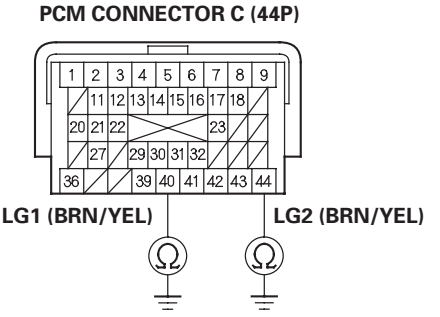
   YES—Go to step 5.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the output shaft (countershaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

   Are the connector terminals OK?

   YES—Go to step 7.

   NO—Repair the connector terminals, then go to step 23.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector C (44P).
9. Check for continuity between PCM connector terminal C40 and body ground, and between PCM connector terminal C44 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 10.

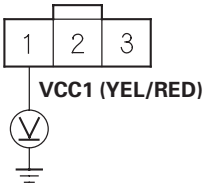
NO—Repair open in the wires between PCM connector terminals C40, C44, and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 23.

10. Connect PCM connector C (44P).

11. Turn the ignition switch to ON (II).

12. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

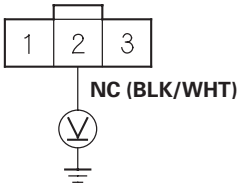
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 19.

13. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

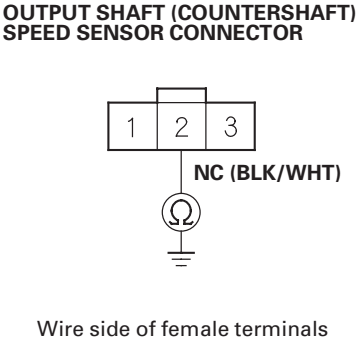
YES—Replace the output shaft (countershaft) speed sensor (see page 14-227), then go to step 23.

NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (44P).
17. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

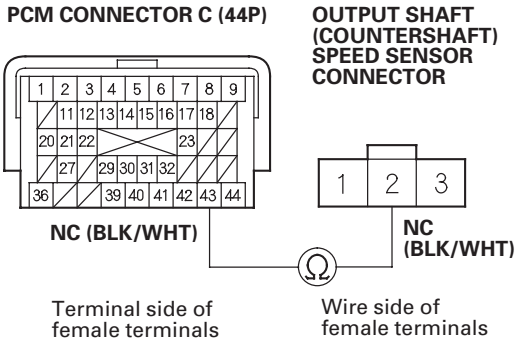


Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 23.

NO—Go to step 18.

18. Check for continuity between PCM connector terminal C43 and output shaft (countershaft) speed sensor connector terminal No. 2.



Is there continuity?

YES—Go to step 29.

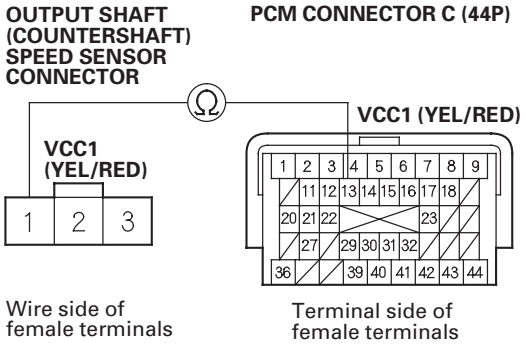
NO—Repair open in the wire between PCM connector terminal C43 and the output shaft (countershaft) speed sensor, then go to step 23.

19. Turn the ignition switch to LOCK (0).

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector C (44P).

22. Check for continuity between PCM connector terminal C13 and output shaft (countershaft) speed sensor connector terminal No. 1.



Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between PCM connector terminal C13 and the output shaft (countershaft) speed sensor, then go to step 23.

23. Reconnect all connectors.

24. Turn the ignition switch to ON (II).

25. Clear the DTC with the HDS.

26. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0723 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

31. Test-drive the vehicle with the shift lever in D at speeds over 20 km/h (12 mph), and let the transmission shift through all five gears.

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0723 indicated?

    YES—Check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for P0723 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 31. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 31.

DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Test stall speed in D (see page 14-210).

   Is the stall speed within the service limits?

   YES—Go to step 5.

   NO—Shift valves A and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.

5. Measure the line pressure (see page 14-211).

   Is the line pressure within service limit?

   YES—Go to step 6.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.

6. Measure the 1st clutch pressure (see page 14-211).

   Is the 1st clutch pressure within the service limits?

   YES—Go to step 7.

   NO—Shift valves B and C are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.

7. Turn the ignition switch to ON (II).

8. Clear the DTC with the HDS.

9. Test-drive the vehicle in 1st gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0731 indicated?

    YES—Repair the 1st clutch, or replace the transmission, then go to step 12.

    NO—Go to step 11.

11. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 1st clutch, or replace the transmission, then go to step 12. If the HDS indicates NOT COMPLETED, go to step 9.

12. Test-drive the vehicle in 1st gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0731 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Test stall speed in D (see page 14-210).

   Is the stall speed within the service limits?

   YES—Go to step 5.

   NO—Shift valve C is stuck. Repair shift valve C and the hydraulic circuit, or replace the transmission, then go to step 12.
5. Measure the line pressure (see page 14-211).

   Is the line pressure within service limit?

   YES—Go to step 6.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.
6. Measure the 2nd clutch pressure (see page 14-211).

   Is the 2nd clutch pressure within the service limits?

   YES—Go to step 7.

   NO—Shift valves A and B are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 12.
7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle in 2nd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0732 indicated?

    YES—Repair the 2nd clutch, or replace the transmission, then go to step 12.

    NO—Go to step 11.
11. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 2nd clutch, or replace the transmission, then go to step 12. If the HDS indicates NOT COMPLETED, go to step 9.

12. Test-drive the vehicle in 2nd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0732 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Measure the line pressure (see page 14-211).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 3rd clutch pressure (see page 14-211).

   Is the 3rd clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A and D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

6. Turn the ignition switch to ON (II).

7. Clear the DTC with the HDS.

8. Test-drive the vehicle in 3rd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

9. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0733 indicated?

   YES—Repair the 3rd clutch, or replace the transmission, then go to step 11.

   NO—Go to step 10.

10. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 3rd clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.

11. Test-drive the vehicle in 3rd gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0733 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 13.

13. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Measure the line pressure (see page 14-211).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.
5. Measure the 4th clutch pressure (see page 14-211).

   Is the 4th clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves B and C, and the servo control valve are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 4th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.
9. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0734 indicated?

   YES—Repair the 4th clutch, or replace the transmission, then go to step 11.

   NO—Go to step 10.
10. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 4th clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.

(cont'd)

DTC Troubleshooting (cont'd)

11. Test-drive the vehicle in 4th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0734 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 13.

13. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 11.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Measure the line pressure (see page 14-211).

   Is the line pressure within the service limits?

   YES—Go to step 5.

   NO—Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.

5. Measure the 5th clutch pressure (see page 14-211).

   Is the 5th clutch pressure within the service limits?

   YES—Go to step 6.

   NO—Shift valves A, B, and/or D are stuck. Repair these valves and the hydraulic circuit, or replace the transmission, then go to step 11.

6. Turn the ignition switch to ON (II).

7. Clear the DTC with the HDS.

8. Test-drive the vehicle in 5th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

9. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0735 indicated?

   YES—Repair the 5th clutch, or replace the transmission, then go to step 11.

   NO—Go to step 10.

10. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 9, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, repair the 5th clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.

11. Test-drive the vehicle in 5th gear, with the shift lever in D, at speeds over 12 km/h (7 mph), and with the engine speed above 1,000 rpm, for at least 12 seconds.

12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0735 indicated?

    YES—Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO—Go to step 13.

13. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DTC Troubleshooting (cont'd)

DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.
   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 7.
   NO—Replace shift solenoid valve E (see page 14-217), then go to step 11.
7. Run the engine until the ECT Sensor temperature reaches 80 ℃ (176 ℉).
8. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 9.
   NO—Follow the instructions indicated on the HDS according to the test result. Go to step 11 if any part was replaced.
9. Test-drive the vehicle on a level road with a steady speed at 96 km/h (60 mph) for at least 20 seconds.
10. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the faulty torque converter clutch mechanism, the torque converter clutch hydraulic circuit, the lock-up shift valve, or the lock-up control valve, or replace the transmission, then go to step 13.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 9.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle on a level road with a steady speed at 96 km/h (60 mph) for at least 20 seconds, or test-drive the vehicle for several minutes under the same condition as those indicated by the freeze data.
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0741 indicated?

    YES—Go to step 5.

    NO—Go to step 15.
15. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Follow the instructions indicated on the HDS according to the test result, if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve A (see page 14-219).

    Does A/T clutch pressure control solenoid valve A operate properly?

    YES—Repair the hydraulic system related with shift valves B and E, or replace the transmission, then go to step 13.

    NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 11.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0747 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and check that shift solenoid valve A operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve A (see page 14-217), then go to step 12.

10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

11. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve A, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0752 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0756: Shift Solenoid Valve B Stuck OFF

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-217), then go to step 12.
10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
11. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve B, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.
12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0756 or P0757 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0761: Shift Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

9. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and check that shift solenoid valve C operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve C (see page 14-217), then go to step 12.

10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

11. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve C, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0761 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0771: Shift Solenoid Valve E Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 12.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve E (see page 14-217), then go to step 12.

10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

11. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair shift valve E, or replace the transmission, then go to step 12.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle at speeds over 19 mph (30 km/h) for at least 20 seconds.

(cont'd)

DTC Troubleshooting (cont'd)

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0771 indicated?

    YES—Go to step 8.

    NO—Go to step 14.

14. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Follow the instructions indicated on the HDS according to the test result, if the HDS has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11.

10. Inspect A/T clutch pressure control solenoid valve B (see page 14-222).

    Does A/T clutch pressure control solenoid valve B work properly?

    YES—Repair the hydraulic system related to shift valve B, or replace the transmission, then go to step 13.

    NO—Replace A/T clutch pressure control solenoid valve B (see page 14-226), then go to step 11.

11. Turn the ignition switch to ON (II).

12. Clear the DTC with the HDS.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0776 or P0777 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC Troubleshooting (cont'd)

DTC P0780: Shift Control System

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is stored whenever DTCs P1730, P1731, P1732, P1733, or P1734 are detected.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

4. Check for other DTCs indicated along with DTC P0780.

   NOTE: DTC P0780 means there is one or more A/T DTCs regarding the shift control system.

   Are there other DTCs?

   YES—Go to the indicated DTC's troubleshooting. ■

   - P1730 (see page 14-195)
   - P1731 (see page 14-197)
   - P1732 (see page 14-198)
   - P1733 (see page 14-200)
   - P1734 (see page 14-201)

   NO—Go to step 5.

5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0780 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-7). If the PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the PCM was updated and HDS indicates FAILED, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC P0796: A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

DTC P0797: A/T Clutch Pressure Control Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Follow the instructions indicated on the HDS according to the test result, if the HDS has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11.

10. Inspect A/T clutch pressure control solenoid valve C (see page 14-224).

    Does A/T clutch pressure control solenoid valve C work properly?

    YES—Repair the hydraulic system related to shift valves B and C, or replace the transmission, then go to step 13.

    NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 11.

11. Turn the ignition switch to ON (II).

12. Clear the DTC with the HDS.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0796 or P0797 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0842: Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check the 2nd Pressure Switch in the Data List with the HDS when not in 2nd gear.

   Is the 2nd Pressure Switch OFF?

   YES—Go to step 4.

   NO—Go to step 7.

4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

5. Test-drive the vehicle in 4th gear with the shift lever in D for at least 2 seconds.

6. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 7.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 3.

7. Turn the ignition switch to LOCK (0).

8. Disconnect the 2nd clutch transmission fluid pressure switch connector.

9. Turn the ignition switch to ON (II).

10. Check the 2nd Pressure Switch in the Data List with the HDS.

    Is the 2nd Pressure Switch OFF?

    YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-228), then go to step 15.

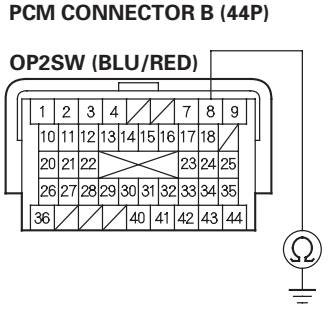
    NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between PCM connector terminal B8 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

19. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0842 indicated?

    YES—Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

25. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

(cont'd)

DTC Troubleshooting (cont'd)

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0842 indicated?

    YES—Check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0843: Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

4. Shift to S, then select 2nd gear by pressing the paddle shifter + (upshift switch) while pressing the brake pedal, and check if the Shift Control indicates 2nd in the Data List with the HDS.

5. Check the 2nd Pressure Switch in the Data List with the HDS .

   Is the 2nd Pressure Switch ON?

   YES—Go to step 6.

   NO—Go to step 8.

6. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds.

7. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.

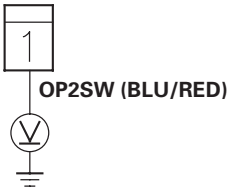
8. Turn the ignition switch to LOCK (0).

9. Disconnect the 2nd clutch transmission fluid pressure switch connector.

10. Turn the ignition switch to ON (II).

11. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-228), then go to step 16.

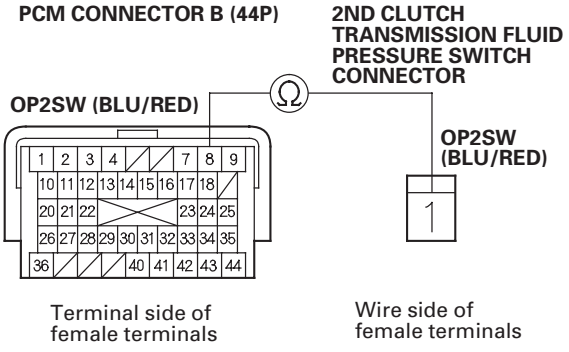
NO—Go to step 12.

12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect PCM connector B (44P).

15. Check for continuity between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between PCM connector terminal B8 and the 2nd clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

(cont'd)

DTC Troubleshooting (cont'd)

20. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0843 indicated?

    YES—Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

25. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

26. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0843 indicated?

    YES—Check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 2nd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 25.

DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check the 3rd Pressure Switch in the Data List with the HDS when the transmission is not in 3rd gear.

   Is the 3rd Pressure Switch OFF?

   YES—Go to step 4.

   NO—Go to step 7.
4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Test-drive the vehicle in 4th gear with the shift lever in D for at least 2 seconds.
6. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

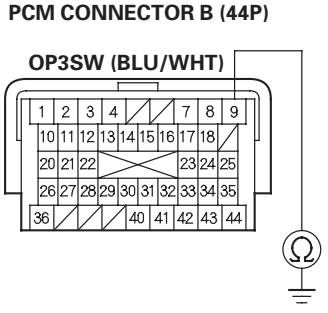
   YES—Go to step 7.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the 3rd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch to ON (II).
10. Check the 3rd Pressure Switch in the Data List with the HDS.

    Is the 3rd Pressure Switch OFF?

    YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-228), then go to step 15.

    NO—Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between PCM connector terminal B9 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B9 and the 3rd clutch transmission fluid pressure switch, then go to step 15.

NO—Go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

19. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0847 indicated?

    YES—Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

25. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0847 indicated?

    YES—Check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 27.

27. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Test-drive the vehicle in 3rd gear in S, and check if the Shift Control indicates 3rd in the Data List with the HDS.
5. Check the 3rd Pressure Switch in the Data List with the HDS.

   Is the 3rd Pressure Switch ON?

   YES—Go to step 6.

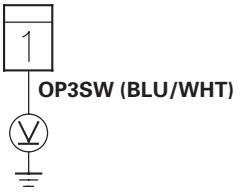
   NO—Go to step 8.
6. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds.
7. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the 3rd clutch transmission fluid pressure switch connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

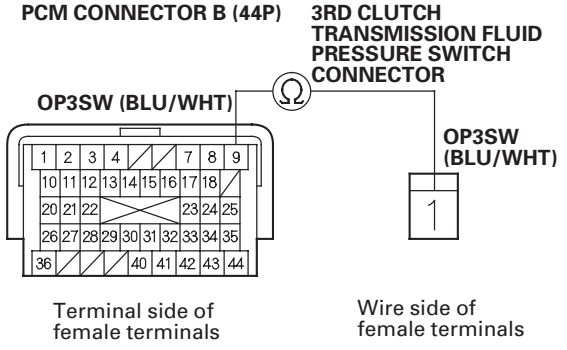
YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-228), then go to step 16.

NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (44P).
15. Check for continuity between PCM connector terminal B9 and the 3rd clutch transmission fluid pressure switch connector terminal.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between PCM connector terminal B9 and the 3rd clutch transmission fluid pressure switch, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
20. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0848 indicated?

    YES—Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

25. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

26. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0848 indicated?

    YES—Check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the 3rd clutch transmission fluid pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 25.

DTC Troubleshooting (cont'd)

DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0962 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

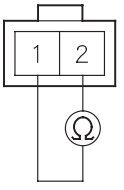
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve A at 1.0 A.
7. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve A connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

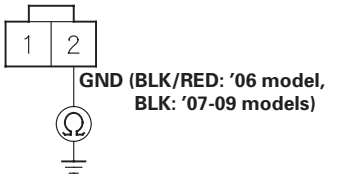
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

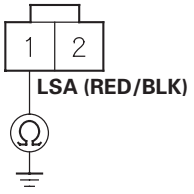
NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 16.

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

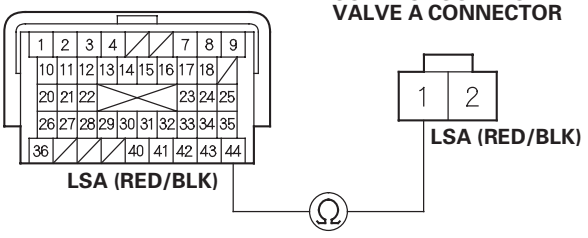
YES—Repair short to body ground in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground, then go to step 16.

NO—Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminal B44.

PCM CONNECTOR B (44P)

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminal B44, then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0962 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and wait for at least 1 second.
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0962 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0963 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

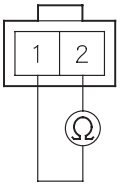
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve A at 0.2 A.
7. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve A connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

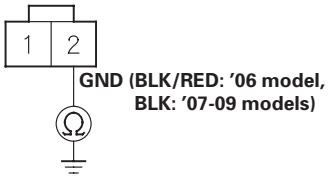
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve A and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0963 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
20. Start the engine, and wait for at least 1 second.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0963 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0966 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

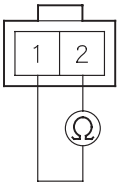
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve B at 1.0 A.
7. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

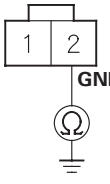
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve B (see page 14-226), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



GND (BLK/RED: '06 model, BLK: '07-09 models)

Wire side of female terminals

Is there continuity?

YES—Go to step 12.

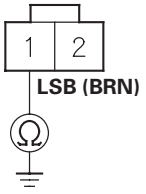
NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (44P).
14. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

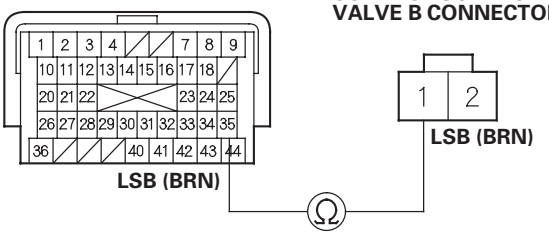
YES—Repair short to body ground in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground, then go to step 16.

NO—Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminal B35.

PCM CONNECTOR B (44P)

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminal B35, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0966 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine, and wait for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0966 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0967 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

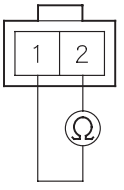
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve B at 0.2 A.
7. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

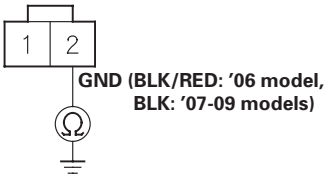
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve B (see page 14-226), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve B and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 12.

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II).

14. Clear the DTC with the HDS.

15. Start the engine, and wait for at least 1 second.

16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0967 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

20. Start the engine, and wait for at least 1 second.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0967 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DTC Troubleshooting (cont'd)

DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0970 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

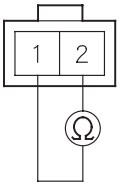
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve C at 1.0 A.
7. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

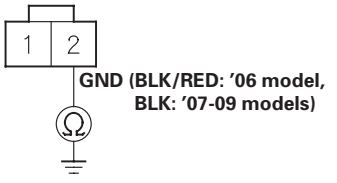
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

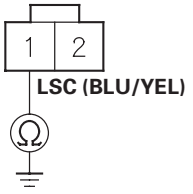
NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 16.

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector B (44P).

14. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

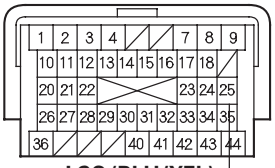
Is there continuity?

YES—Repair short to body ground in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground, then go to step 16.

NO—Go to step 15.

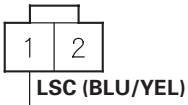
15. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B25.

PCM CONNECTOR B (44P)



Terminal side of female terminals

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B25, then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0970 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and wait for at least 1 second.
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0970 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0971 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES—Go to step 6.

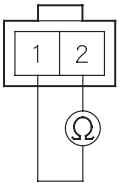
   NO—Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control Menu, select A/T clutch pressure control solenoid valve C at 0.2 A.
7. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

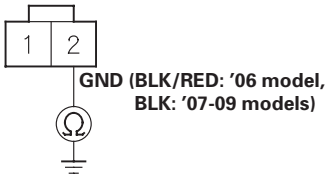
Is there 3— 10 Ω ?

YES—Go to step 11.

NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/T clutch pressure control solenoid valve C and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0971 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 17.

17. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
20. Start the engine, and wait for at least 1 second.
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0971 indicated?

    YES—Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0973 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

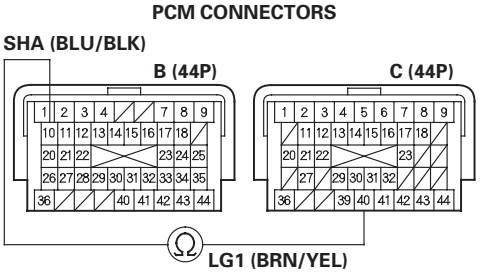
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B10 and C40.

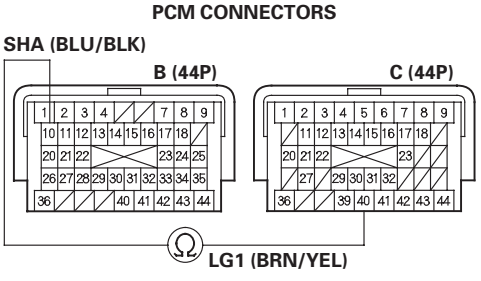


Terminal side of female terminals

   Is there less than 12 Ω ?

   YES—Go to step 12.

   NO—Go to step 22.
12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B10 and C40.



Terminal side of female terminals

   Is there continuity?

   YES—Repair short to body ground in the wire between PCM connector terminal B10 and the shift solenoid wire harness connector, then go to step 16.

   NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Inspect shift solenoid valve A and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve A or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0973 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0973 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0974 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

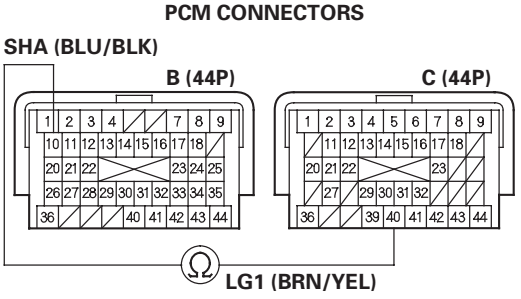
   YES—Go to step 6.

   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B10 and C40.



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 22.

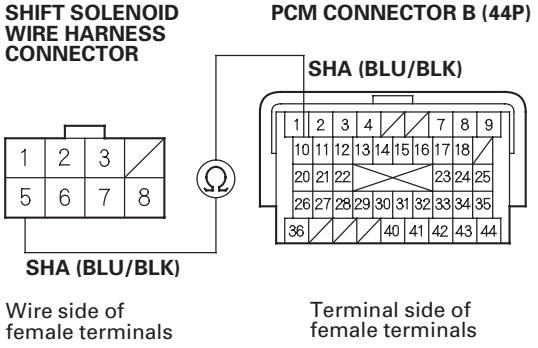
NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B10 and shift solenoid wire harness connector terminal No. 5.



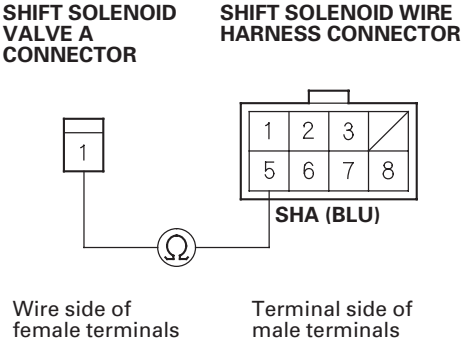
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B10 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 5 and the shift solenoid valve A connector terminal.



Is there continuity?

YES—Replace shift solenoid valve A (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0974 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0974 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0976 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

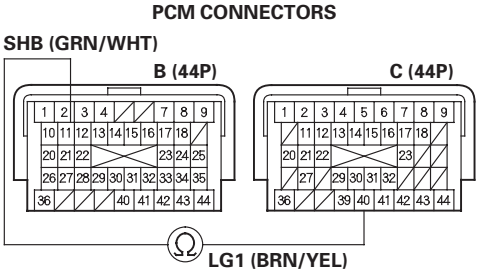
   YES—Go to step 6.

   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B11 and C40.



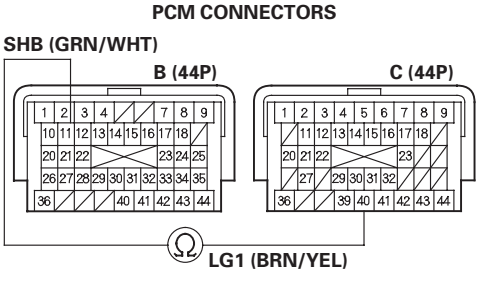
Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 12.

NO—Go to step 22.

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B11 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B11 and the shift solenoid wire harness connector, then go to step 16.

NO—Go to step 14.

14. Inspect shift solenoid valve B and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve B or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0976 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0976 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0977 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

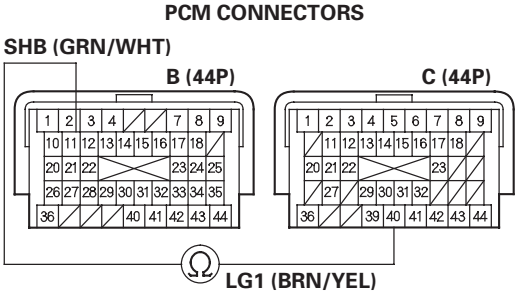
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.
7. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B11 and C40.



Terminal side of female terminals

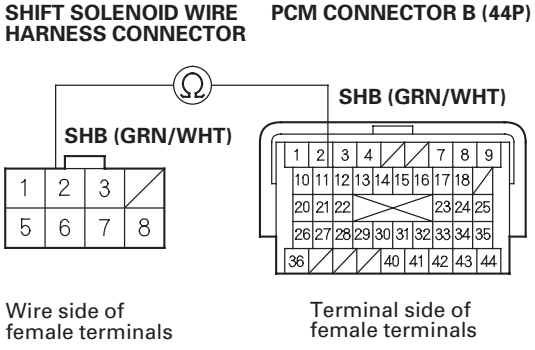
Is there 12—25 Ω ?

YES—Go to step 22.

NO—Go to step 12.

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B11 and shift solenoid wire harness connector terminal No. 2.



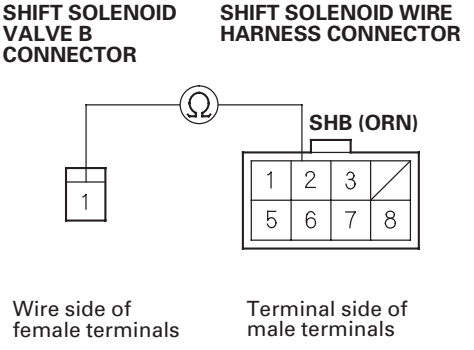
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B11 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 2 and the shift solenoid valve B connector terminal.



Is there continuity?

YES—Replace shift solenoid valve B (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0977 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle in 3rd gear for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0977 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0979 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

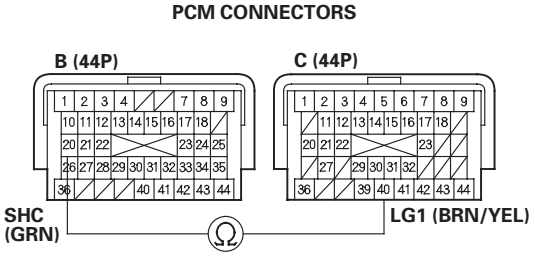
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B20 and C40.

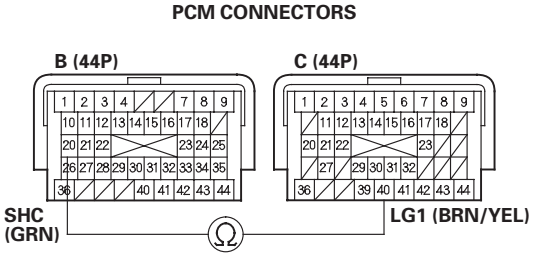


Terminal side of female terminals

   Is there less than 12 Ω ?

   YES—Go to step 12.

   NO—Go to step 22.
12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B20 and C40.



Terminal side of female terminals

   Is there continuity?

   YES—Repair short to body ground in the wire between PCM connector terminal B20 and the shift solenoid wire harness connector, then go to step 16.

   NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Inspect shift solenoid valve C and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve C or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0979 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0979 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0980 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

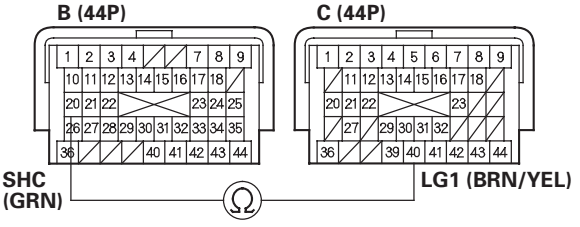
   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B20 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 22.

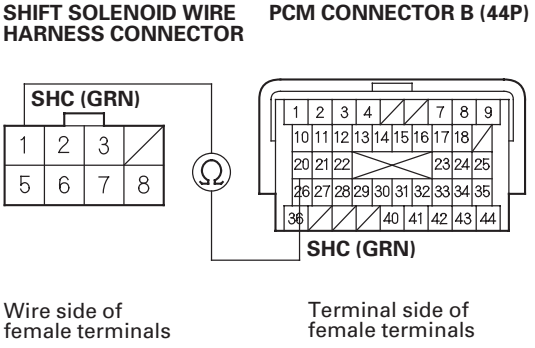
NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B20 and shift solenoid wire harness connector terminal No. 1.



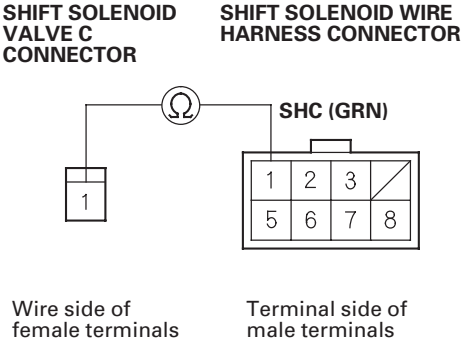
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B20 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 1 and the shift solenoid valve C connector terminal.



Is there continuity?

YES—Replace shift solenoid valve C (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0980 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0980 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0982: Short in Shift Solenoid Valve D Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0982 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

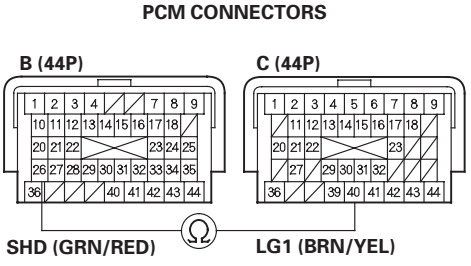
   YES—Go to step 6.

   NO—Go to step 8.
6. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B26 and C40.



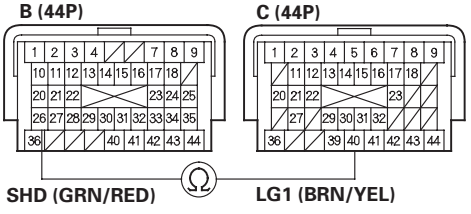
Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 12.

NO—Go to step 22.

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B26 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B26 and the shift solenoid wire harness connector, then go to step 16.

NO—Go to step 14.

14. Inspect shift solenoid valve D and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve D or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0982 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0982 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0983: Open in Shift Solenoid Valve D Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0983 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

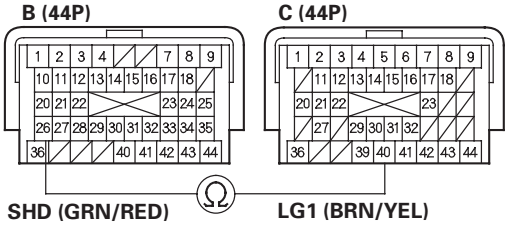
   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B26 and C40.

PCM CONNECTORS



Terminal side of female terminals

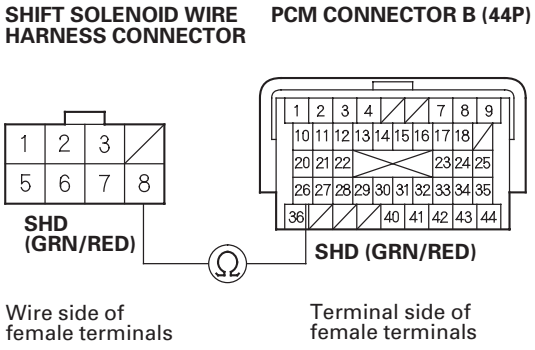
Is there 12—25 Ω ?

YES—Go to step 22.

NO—Go to step 12.

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B26 and shift solenoid wire harness connector terminal No. 8.



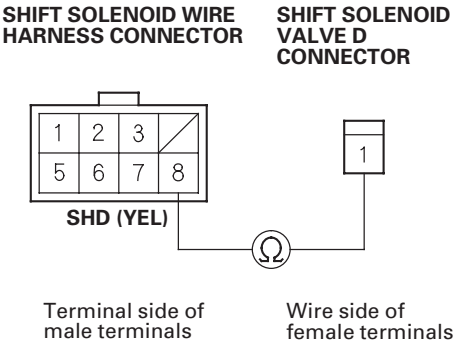
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B26 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 8 and the shift solenoid valve D connector terminal.



Is there continuity?

YES—Replace shift solenoid valve D (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0983 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear in D for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0983 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0985: Short in Shift Solenoid Valve E Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

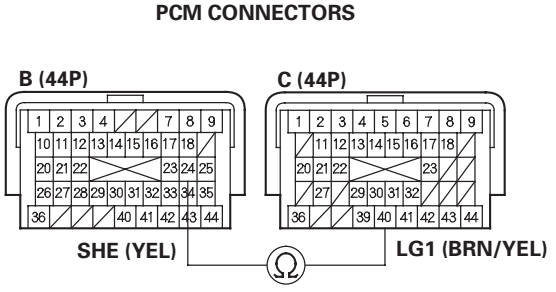
'06 Model

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0985 indicated?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Disconnect PCM connectors B (44P) and C (44P).
8. Measure the resistance between PCM connector terminals B24 and C40.



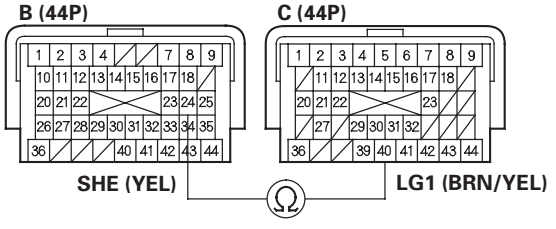
Terminal side of female terminals

Is there less than 12 Ω ?

YES—Go to step 9.

NO—Go to step 18.

9. Disconnect the shift solenoid wire harness connector.
10. Check for continuity between PCM connector terminals B24 and C40.



Terminal side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between PCM connector terminal B24 and the shift solenoid wire harness connector, then go to step 13.

NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Inspect shift solenoid valve E and the shift solenoid harness (see page 14-215).

12. Replace either shift solenoid valve E or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 13.

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Clear the DTC with the HDS.

16. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

20. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

DTC P0985: Short in Shift Solenoid Valve E Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

'07-09 Models

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0985 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.

   Is a clicking sound heard?

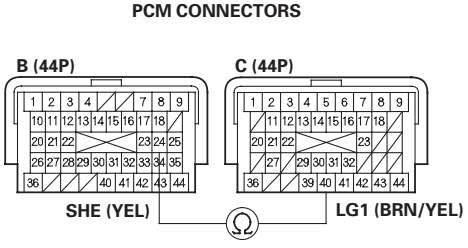
   YES—Go to step 6.

   NO—Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

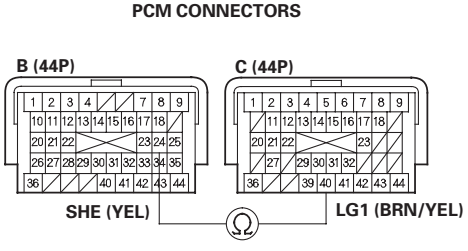
   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B24 and C40.



   Is there less than 12 Ω ?

   YES—Go to step 12.

   NO—Go to step 22.
12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminals B24 and C40.



   Is there continuity?

   YES—Repair short to body ground in the wire between PCM connector terminal B24 and the shift solenoid wire harness connector, then go to step 16.

   NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Inspect shift solenoid valve E and the shift solenoid wire harness (see page 14-215).

15. Replace either shift solenoid valve E or the shift solenoid wire harness (see page 14-217), whichever failed the test, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0985 indicated?

    YES—Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0986: Open in Shift Solenoid Valve E Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in N, and wait for at least 1 second.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0986 indicated?

   YES—Go to step 8.

   NO—Go to step 5.
5. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.

   Is a clicking sound heard?

   YES—Go to step 6.

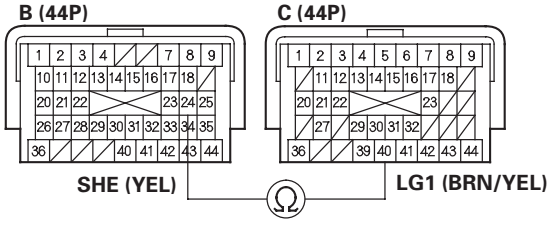
   NO—Go to step 8.
6. Start the engine with the shift lever in N, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connectors B (44P) and C (44P).
11. Measure the resistance between PCM connector terminals B24 and C40.

PCM CONNECTORS



Terminal side of female terminals

Is there 12—25 Ω ?

YES—Go to step 22.

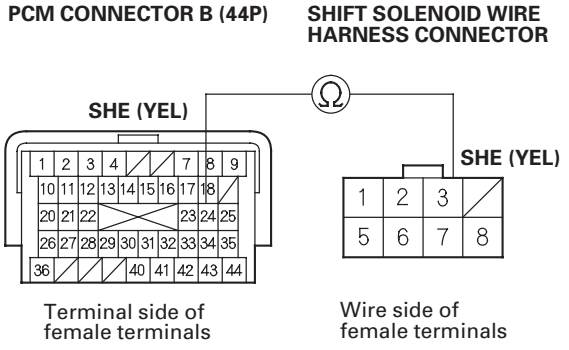
NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.

13. Check for continuity between PCM connector terminal B24 and shift solenoid wire harness connector terminal No. 3.



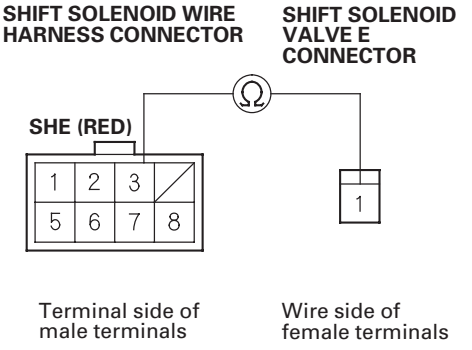
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between PCM connector terminal B24 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-217).

15. Check for continuity between shift solenoid wire harness connector terminal No. 3 and the shift solenoid valve E connector terminal.



Is there continuity?

YES—Replace shift solenoid valve E (see page 14-217), then go to step 19.

NO—Replace the shift solenoid wire harness (see page 14-217), then go to step 19.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Clear the DTC with the HDS.

19. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0986 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve E and the PCM, then go to step 1.

    NO—Go to step 21.

21. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve E and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

24. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0986 indicated?

    YES—Check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P16C0: PCM A/T Control System Incomplete Update

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is indicated when PCM updating is incomplete.
- Do not turn the ignition switch to LOCK (0) or ACCESSORY (I) while updating the PCM. If you turn the ignition switch to LOCK (0) or ACCESSORY (I) before completion, the PCM can be damage.

1. Update the PCM (see page 11-227).
2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16C0 indicated?

   YES—Replace the PCM (see page 11-228). ■

   NO—PCM updating is complete. ■

DTC P1717: Open in Transmission Range Switch ATPRVS Switch Circuit

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Shift to R, and check the A/T R Switch in the Data List with the HDS.

   Is the A/T R SWITCH ON?

   YES—Go to step 3.

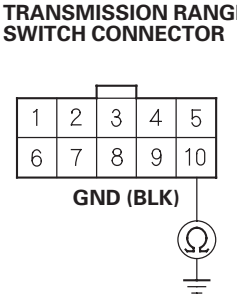
   NO—Check for proper transmission range switch installation (see page 14-267), adjust the shift cable (see page 14-259), then recheck. If transmission range switch and shift cable are OK, go to step 4.
3. Check the Reverse Switch (ATPRVS) in the Data List with the HDS.

   Is the Reverse Switch (ATPRVS) ON?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Disconnect the transmission range switch connector.

6. Check for continuity between transmission range switch connector terminal No. 10 and body ground.



Wire side of female terminals

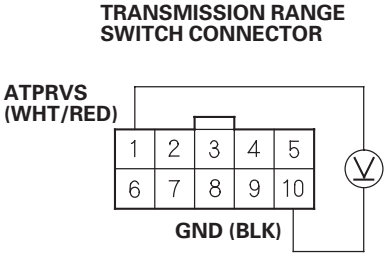
Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire between transmission range switch connector terminal No. 10 and body ground (G101) (see page 22-16), or repair poor body ground (G101), then go to step 10.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between transmission range switch connector terminals No. 1 and No. 10.



Wire side of female terminals

Is there about battery voltage?

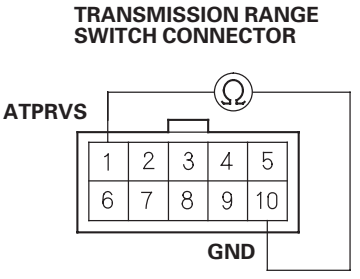
YES—Go to step 9.

NO—Repair open in the wire between PCM connector terminal B22 and the transmission range switch, then go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between transmission range switch connector terminals No. 1 and No. 10 while the shift lever is in R, and when the shift lever is shifted to any position other than R.



Terminal side of male terminals

Is there continuity while the shift lever is in R, and no continuity when the shift lever is shifted to any position other than R?

YES—Go to step 16.

NO—Replace the transmission range switch (see page 14-267), then go to step 10.

10. Reconnect all connectors.

11. Turn the ignition switch to ON (II).

12. Clear the DTC with the HDS.

13. Start the engine with the shift lever in P. Shift to N, then shift to R while pressing the brake pedal, and wait for at least 2 seconds.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1717 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 13.

16. Reconnect all connectors.

17. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

18. Start the engine with the shift lever in P. Shift to N, then shift to R while pressing the brake pedal, and wait for at least 2 seconds.

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1717 indicated?

    YES—Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 18. If the PCM was substituted, go to step 1.

    NO—Go to step 20.

20. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 18. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

DTC P1730: Problem in Shift Control System:

- Shift Solenoid Valves A or D Stuck OFF
- Shift Solenoid Valve B Stuck ON
- Shift Valves A, B, or D Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review the General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

9. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve A (see page 14-217), then go to step 14.

10. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 11.

    NO—Replace shift solenoid valve B (see page 14-217), then go to step 14.

11. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 12.

    NO—Replace shift solenoid valve D (see page 14-217), then go to step 14.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the hydraulic system related with shift valves A, B, and D, or replace the transmission, then go to step 14.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 12.

14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1730 indicated?

    YES—Go to step 8.

    NO—Go to step 16.

16. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P1731: Problem in Shift Control System:

- Shift Solenoid Valve E Stuck ON
- Shift Valve E Stuck
- A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve E (see page 14-217), then go to step 14.

10. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

    Does the HDS indicate NORMAL?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—Follow the instructions indicated on the HDS by the test result, but if the HDS has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve A (see page 14-219).

    Does A/T clutch pressure control solenoid valve A operate properly?

    YES—Repair the hydraulic system related with shift valve E, or replace the transmission, then go to step 14.

    NO—Replace A/T clutch pressure control solenoid valve A (see page 14-221), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1731 indicated?

    YES—Go to step 8.

    NO—Go to step 16.
16. Monitor the OBD STATUS for P1731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P1732: Problem in Shift Control System:

- Shift Solenoid Valves B or C Stuck ON
- Shift Valves B or C Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-217), then go to step 13.

10. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 11.

    NO—Replace shift solenoid valve C (see page 14-217), then go to step 13.

11. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

12. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the hydraulic system related with shift valves B and C, or replace the transmission, then go to step 13.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 11.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1732 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC Troubleshooting (cont'd)

DTC P1733: Problem in Shift Control System:

- Shift Solenoid Valve D Stuck ON
- Shift Valve D Stuck
- A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 14.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1733 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve D (see page 14-217), then go to step 14.

10. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

    Does the HDS indicate NORMAL?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—Follow the instructions indicated on the HDS according to the test result, but if the HDS has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12.

11. Inspect A/T clutch pressure control solenoid valve C (see page 14-224).

    Does A/T clutch pressure control solenoid valve C operate properly?

    YES—Repair the hydraulic system related with shift valve D, or replace the transmission, then go to step 14.

    NO—Replace A/T clutch pressure control solenoid valve C (see page 14-226), then go to step 12.

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1733 indicated?

    YES—Go to step 8.

    NO—Go to step 16.

16. Monitor the OBD STATUS for P1733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P1734: Problem in Shift Control System:

- Shift Solenoid Valves B or C Stuck OFF
- Shift Valves B or C Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Warm up the engine to normal operating temperature (the radiator fan comes on).

2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.

3. Drain the ATF (see step 3 on page 14-232) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES—Replace the transmission, then go to step 13.

   NO—Replace the ATF (see page 14-232), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES—Go to step 8.

   NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

9. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check it operates with the HDS.

   Is a clicking sound heard?

   YES—Go to step 10.

   NO—Replace shift solenoid valve B (see page 14-217), then go to step 13.

10. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and check it operates with the HDS.

    Is a clicking sound heard?

    YES—Go to step 11.

    NO—Replace shift solenoid valve C (see page 14-217), then go to step 13.

11. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

12. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES—Repair the hydraulic system related with shift valves B and C, or replace the transmission, then go to step 13.

    NO—If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 11.

13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1734 indicated?

    YES—Go to step 8.

    NO—Go to step 15.

15. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

    NO—If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P2122: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P2122 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC P2122 troubleshooting in the electronic throttle control system (ETCS) (see page 11-253).■

   NO—Go to step 4.
4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2122 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting.■
5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2122 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P2122 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting.■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

DTC P2123: Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage Input

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P2123 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC P2123 troubleshooting in the electronic throttle control system (ETCS) (see page 11-256). ■

   NO—Go to step 4.
4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2123 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P2123 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for P2123 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC U0028: F-CAN Malfunction (BUS-OFF (PCM))

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0028 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC U0028 troubleshooting in the PGM-FI SYSTEM (see page 11-183). ■

   NO—Go to step 4.

4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0028 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

6. Start the engine, and wait for at least 2 minutes.

7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0028 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for U0028 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

DTC U0122: F-CAN Malfunction (PCM-VSA Modulator-Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0122 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC U0122 troubleshooting in the PGM-FI SYSTEM (see page 11-184). ■

   NO—Go to step 4.
4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0122 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■
5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0122 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals between the VSA modulator-control unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.
8. Monitor the OBD STATUS for U0122 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the VSA modulator-control unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC U0155: F-CAN Malfunction (PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-3).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC U0155 indicated in the PGM-FI SYSTEM?

   YES—Go to the DTC U0155 troubleshooting in the PGM-FI SYSTEM (see page 11-188). ■

   NO—Go to step 4.

4. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs were indicated, go to the indicated DTC's troubleshooting. ■

5. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).

6. Start the engine, and wait for at least 2 minutes.

7. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES—Check for poor connections or loose terminals between the gauge control module and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for U0155 in the DTCs MENU with the HDS.

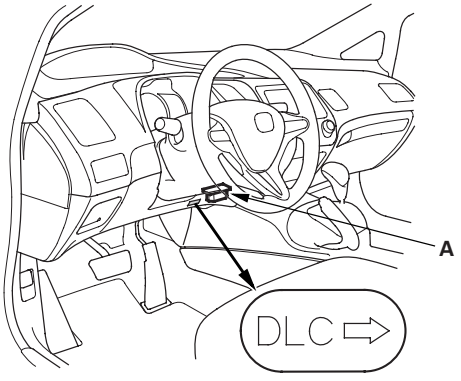
   Does the HDS indicate PASSED?

   YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

   NO—If the HDS indicates FAILED, check for poor connections or loose terminals between the gauge control module and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

Road Test

1. Apply the parking brake, and block both rear wheels.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Shift to D while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
4. Repeat step 3 in all shift lever positions.
5. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



6. Turn the ignition switch to ON (II), and go to the A/T Data List. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
7. Prepare the HDS to take a HIGH SPEED SNAPSHOT (refer to the HDS user guide for more details if needed):
   - Select High Speed icon.
   - Select these parameters:
     – Vehicle Speed
     – Output Shaft (Countershaft) Speed (rpm)
     – Input Shaft (Mainshaft) Speed (rpm)
     – Engine Speed
     – APP Sensor A (V)
     – ATF Temp Sensor (V)
     – Battery Voltage
     – Shift Control
     – Brake Switch
   - Set the Trigger Type to Parameter.
   - Adjust the Parameter setting to APP Sensor A above 1.2 V.
   - Set the recording time to 60 seconds.
   - Set the Trigger point to —30 seconds.
8. Find a suitable level road. When you are ready to do the test, press OK on the HDS.
9. Monitor the HDS and accelerate quickly until the APP Sensor A reads 1.3 V. Maintain a steady throttle until the transmission shifts to 5th gear, then slow the vehicle and come to a stop.
10. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 9.
11. Adjust the Parameter setting to 2.4 V. Retest-drive the vehicle. While monitoring the HDS, accelerate quickly until the APP Sensor A reads 2.5 V. Maintain a steady throttle until the transmission shifts to 5th gear (or reasonable speed), then slow the vehicle and come to a stop.
12. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 11.
13. Accelerate quickly until the accelerator pedal is to the floor. Maintain a steady pedal until the transmission shifts to 3rd gear, then slow to a stop, and save the snapshot.

14. Review each snapshot individually, and compare the Shift Control, the APP Sensor A Voltage, and the Vehicle Speed to the following table.

Upshift: D Position

APP sensor A voltage: 1.3 V	
1st→2nd	14—18 km/h (9—11 mph)
2nd→3rd	29—35 km/h (18—22 mph)
3rd→4th	41—49 km/h (25—30 mph)
4th→5th	62—72 km/h (39—45 mph)
Lock-up ON	48—56 km/h (30—35 mph)
APP sensor A voltage: 2.5 V	
1st→2nd	24—30 km/h (15—19 mph)
2nd→3rd	49—59 km/h (30—37 mph)
3rd→4th	81—93 km/h (50—58 mph)
4th→5th	155—171 km/h (96—106 mph)
Lock-up ON	177—193 km/h (110—120 mph)
Fully-opened throttle APP sensor A voltage: 4.4 V	
1st→2nd	54—64 km/h (34—40 mph)
2nd→3rd	100—112 km/h (62—70 mph)
3rd→4th	148—162 km/h (92—101 mph)

Downshift: D Position

APP sensor A voltage: 1.3 V	
Lock-up OFF	46—54 km/h (29—34 mph)
5th→4th	47—57 km/h (29—35 mph)
4th→3rd	29—35 km/h (18—22 mph)
3rd→1st	7—13 km/h (4—8 mph)
APP sensor A voltage: 2.5 V	
Lock-up OFF	106—118 km/h (66—73 mph)
Fully-opened throttle APP sensor A voltage: 4.4 V	
Lock-up OFF	173—189 km/h (108—117 mph)
5th→4th	182—198 km/h (113—123 mph)
4th→3rd	123—137 km/h (76—85 mph)
3rd→2nd	84—96 km/h (52—60 mph)
2nd→1st	42—52 km/h (26—32 mph)

15. Drive the vehicle in 4th or 5th gear with the shift lever in S with the sequential sportshift mode, then decelerate and downshift to 2nd gear by pressing the paddle shifter — (downshift switch). The vehicle should immediately begin to slow down from the engine braking, then slow to a stop.

16. Shift to R, accelerate from a stop at full throttle momentarily, and check for abnormal noise and clutch slippage.

17. Park the vehicle on a slope (about 16-degrees), apply the brake, and shift into P. Release the brake; the vehicle should not move.

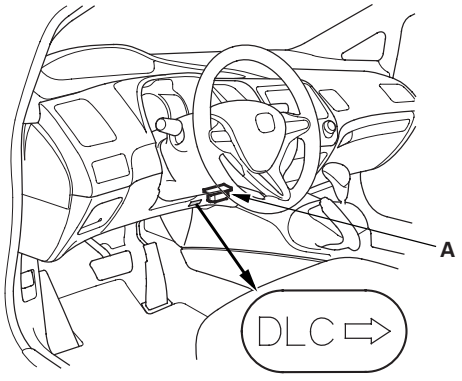
    NOTE: Always use the brake to hold the vehicle, when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released.

Stall Speed Test

1. Make sure the transmission fluid is filled to the proper level (see page 14-231).

2. Apply the parking brake, and block all four wheels.

3. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



4. Turn the ignition switch to ON (II), and go to the A/T Data List. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

5. Make sure the A/C switch is OFF.

6. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

7. Shift to D while pressing the brake pedal firmly, then fully press the accelerator pedal for 6 to 8 seconds, and note the engine speed. Do not move the shift lever or remove your foot off the brake pedal while raising the engine speed.

8. Allow 2 minutes for cooling, then repeat the test in S and R.

   NOTE:
   - Do not test the stall speed for more than 10 seconds at a time.
   - The stall speed tests should be used for diagnostic purposes only.
   - Stall speed test results should be the same with the shift lever in D, S, and R.
   - Do not test the stall speed with the A/T oil pressure gauges installed.

   Stall Speed rpm:
   Specification: 2,150 rpm
   Service Limit: 2,000—2,300 rpm

9. If the stall speeds are out of the service limit, the problems and probable causes are listed in the table.

Problem	Probable causes
Stall speed rpm high in D, S, and R	• ATF pump output low • Clogged ATF strainer • Regulator valve stuck • Slipping clutch
Stall speed rpm high in R	Slippage of 4th clutch
Stall speed rpm low in D, S, and R	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

Pressure Test

Special Tools Required
- A/T oil pressure gauge set 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

NOTE:
- Disable the VSA by pressing the VSA OFF switch (if equipped).
- VSA DTC(s) may come on during the pressure test. If the VSA(s) come on, clear the DTC(s) with the HDS.

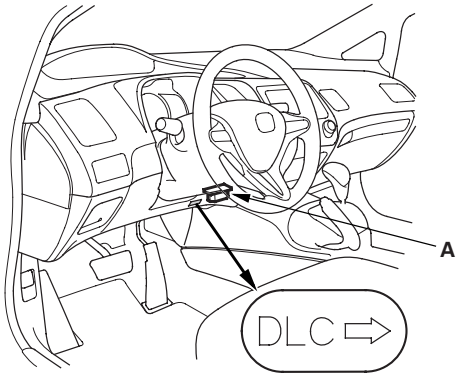
1. Make sure the transmission fluid is filled to the proper level (see page 14-231).

2. Raise the vehicle on a lift, or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

3. Remove the splash shield.

4. Allow the front wheels to rotate freely.

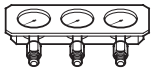
5. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



6. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

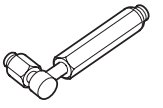
7. Connect the A/T oil pressure gauge to the line pressure inspection port (A). Do not allow dust or other foreign particles to enter the ports while connecting the gauges.

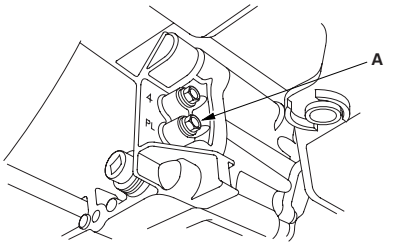
A/T OIL PRESSURE GAUGE SET 07406-0020401



A/T PRESSURE HOSE, 2,210 mm 07MAJ-PY4011A (3 required)

A/T PRESSURE HOSE ADAPTER 07MAJ-PY40120 (3 required)





8. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).

9. Measure the line pressure at the line pressure inspection port with the shift lever in P or N while holding the engine speed at 2,000 rpm.

   NOTE: Higher pressure may be indicated if measurements are made in shift lever position other than P or N.

Pressure	Fluid Pressure	
	Standard	Service Limit
Line	900—960 kPa (9.2—9.8 kgf/cm^2, 130—140 psi)	850 kPa (8.7 kgf/cm^2, 120 psi)

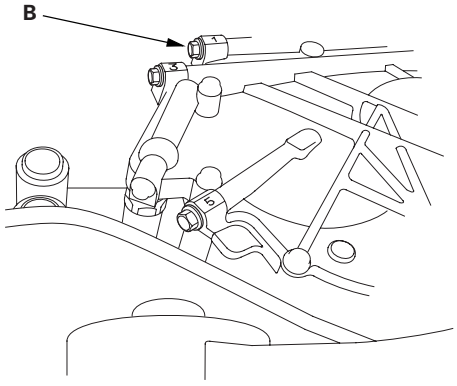
10. Turn the engine off, then disconnect the A/T oil pressure gauge from the line pressure inspection port.

11. Install the sealing bolt to the line pressure inspection port with a new sealing washer, and tighten the bolt to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washer.

(cont'd)

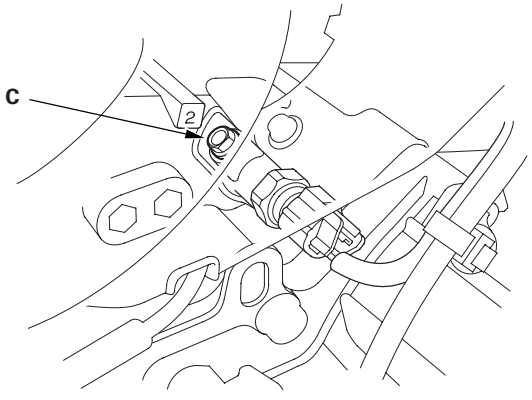
Pressure Test (cont'd)

12. Connect the A/T oil pressure gauge to the 1st clutch pressure inspection port (B).



13. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

14. Remove the harness cover from its bracket, and connect the A/T oil pressure gauge to the 2nd clutch pressure inspection port (C). Then temporarily install the air cleaner assembly and the intake air duct.



15. Start the engine, and shift to S.

16. Shift to 1st gear by pressing the paddle shifter (downshift switch) if needed, and measure the 1st clutch pressure at the 1st clutch pressure inspection port (B) while holding the engine speed at 2,000 rpm.

17. Upshift to 2nd gear by pressing the paddle shifter + (upshift switch), and measure the 2nd clutch pressure at the 2nd clutch pressure inspection port (C) while holding the engine speed at 2,000 rpm.

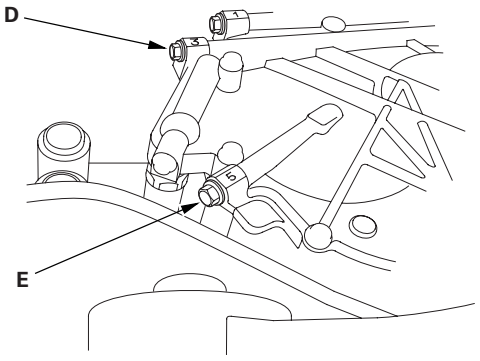
Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (B) 2nd clutch (C)	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)

18. Turn the engine off, remove the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348), then disconnect the A/T oil pressure gauge from the 1st and 2nd clutch pressure inspection ports.

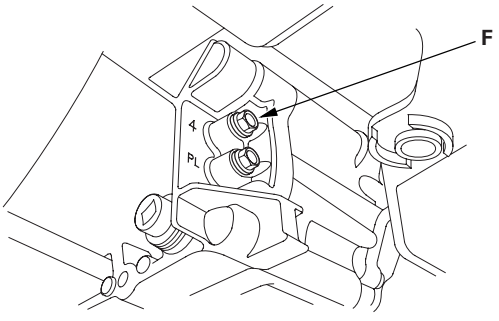
19. Install the sealing bolts to the 1st and 2nd clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

20. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

21. Connect the A/T oil pressure gauge to the 3rd clutch pressure inspection port (D) and the 5th clutch pressure inspection port (E).



22. Connect the A/T oil pressure gauge to the 4th clutch pressure inspection port (F).



23. Start the engine, and shift to S.

24. Upshift to 3rd gear by pressing the paddle shifter + (upshift switch), and measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (D) while holding the engine speed at 2,000 rpm.

25. Upshift to 4th gear, and measure the 4th clutch pressure at the 4th clutch pressure inspection port (F) while holding the engine speed at 2,000 rpm.

26. Upshift to 5th gear, and measure the 5th clutch pressure at the 5th clutch pressure inspection port (E) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (D) 4th clutch (F) 5th clutch (E)	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)

(cont'd)

Pressure Test (cont'd)

27. Bring the engine back to an idle, then apply the brake pedal to stop the wheels from rotating.

28. Shift to R, then release the brake pedal. Measure the 4th clutch pressure at the 4th clutch pressure inspection port (F) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
4th clutch (F) in R	890—970 kPa (9.1—9.9 kgf/cm^2, 130—140 psi)	840 kPa (8.6 kgf/cm^2, 120 psi)

29. Turn the engine off, then disconnect the A/T oil pressure gauge from the 3rd, 4th, and 5th clutch pressure inspection ports.

30. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection ports with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.

31. If the pressures are out of the service limit, the problems and probable causes are listed in the table.

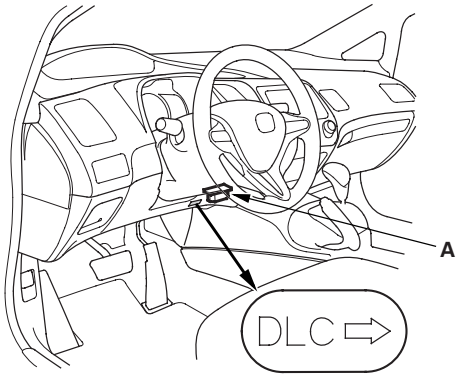
Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve • Clogged ATF strainer
No or low 1st clutch pressure	• 1st clutch • O-rings
No or low 2nd clutch pressure	• 2nd clutch • O-rings
No or low 3rd clutch pressure	• 3rd clutch • O-rings
No or low 4th clutch pressure	• 4th clutch • O-rings
No or low 5th clutch pressure	• 5th clutch • O-rings
No or low 4th clutch pressure in R	• Servo valve • 4th clutch • O-rings

32. Install the splash shield.

33. Check the ATF level (see page 14-231).

Shift Solenoid Valve Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

3. Select Shift Solenoid Valves A, B, C, D, and E Test in the Miscellaneous Test Menu with the HDS.

4. Check that shift solenoid valves A, B, C, D, and E operate with the HDS. A clicking sound should be heard.

   - If a clicking sound is heard, the valves are OK. The test is complete, disconnect the HDS.
   - If no clicking sound is heard, go to step 5, and test the solenoid valve.

5. Do the battery removal procedure (see page 22-69).

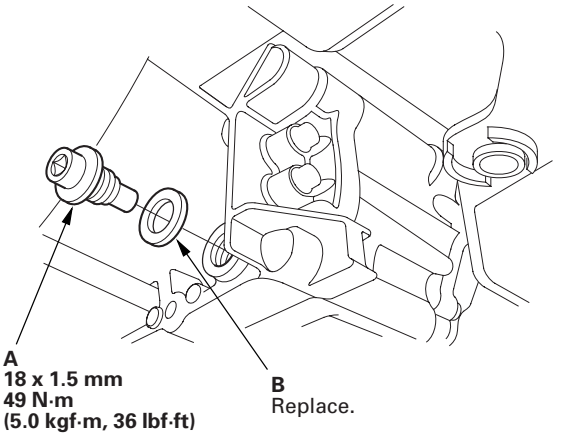
6. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

7. Remove the battery tray, the battery base, and the resonator.

8. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

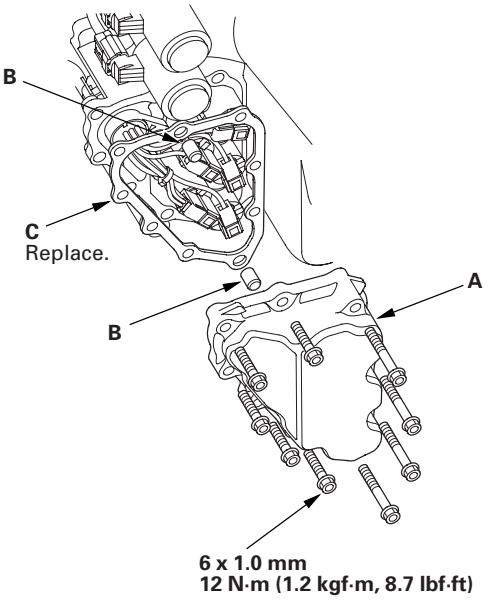
9. Remove the splash shield.

10. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



11. Reinstall the drain plug with a new sealing washer (B).

12. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).



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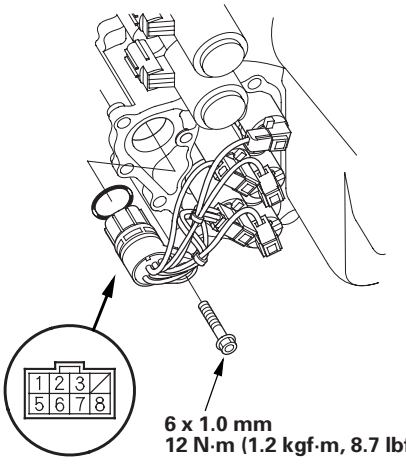
Shift Solenoid Valve Test (cont'd)

13. Disconnect the shift solenoid wire harness connector, and remove it from the transmission housing.



14. Measure the shift solenoid valve resistance between the following shift solenoid wire harness connector terminals and body ground:

    - No. 1 (GRN): Shift solenoid valve C
    - No. 2 (ORN): Shift solenoid valve B
    - No. 3 (RED): Shift solenoid valve E
    - No. 5 (BLU): Shift solenoid valve A
    - No. 8 (YEL): Shift solenoid valve D

    Standard: 12—25 Ω

15. If the resistance is within the standard, go to step 17 and check the solenoid valve for a clicking sound. If the resistance is out of standard, go to step 16.

16. Disconnect the shift solenoid valve connector, and measure the resistance at the solenoid valve connector. Replace the shift solenoid valve if the resistance is out of standard, then go to step 20.

17. Connect a jumper wire from the battery positive terminal to the shift solenoid wire harness connector terminals, and connect another jumper wire from the battery negative terminal to body ground individually. A clicking sound should be heard.

    - If a clicking sound is heard, the valves are OK, and the test is complete, connect the connector.
    - If no clicking sound is heard, replace the shift solenoid valve (see page 14-217).

18. Replace the shift solenoid harness if the test results are OK.

19. Install a new O-ring on the shift solenoid wire harness connector, and install the connector in the transmission housing.

20. Install a new gasket, the dowel pins, and the shift solenoid valve cover.

21. Check the shift solenoid wire harness connector for rust, dirt, or oil, then connect the connector securely.

22. Refill the transmission with ATF (see step 5 on page 14-232).

23. Install the battery tray, the battery base, and the resonator.

24. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

25. Do the battery installation procedure (see page 22-69).

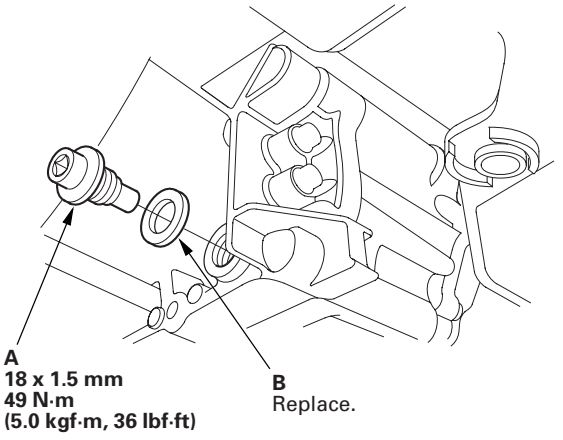
26. Install the splash shield.

Shift Solenoid Valve and Shift Solenoid Wire Harness Replacement

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

2. Remove the splash shield.

3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



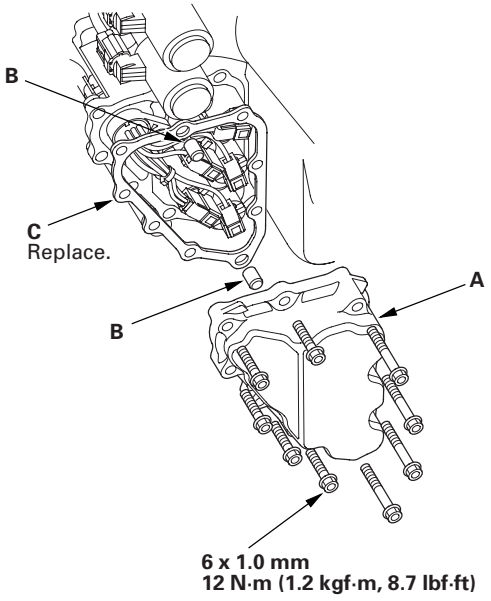
4. Reinstall the drain plug with a new sealing washer (B).

5. Do the battery removal procedure (see page 22-69).

6. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

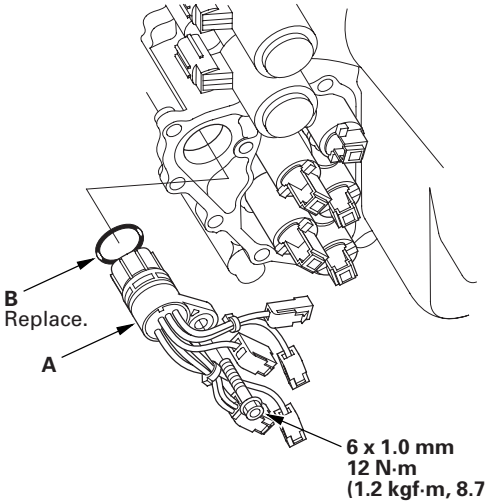
7. Remove the battery tray, the battery base, and the resonator.

8. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).



9. Disconnect the shift solenoid valve connectors.

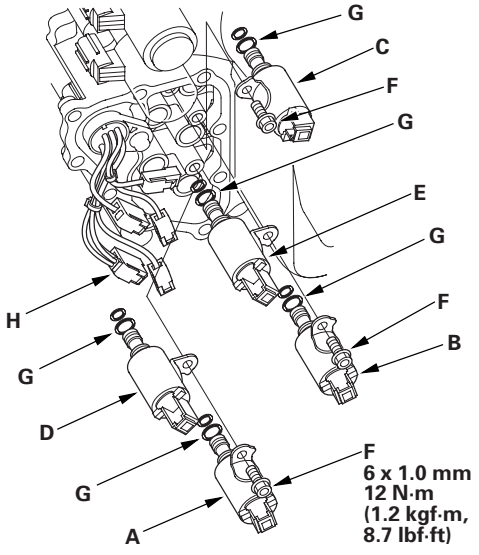
   - If replacing the shift solenoid valve(s), go to step 10.
   - If replacing the shift solenoid wire harness, remove the shift solenoid wire harness connector (A), and replace it. Install a new O-ring (B) on a new shift solenoid wire harness connector, and install it in the transmission housing, then go to step 15.



(cont'd)

Shift Solenoid Valve and Shift Solenoid Wire Harness Replacement (cont'd)

10. Remove the mounting bolts (F), then hold the shift solenoid valve body and remove the shift solenoid valves. Do not hold the connector to remove the shift solenoid valve.



11. Install new O-rings (two O-rings per solenoid valve) (G) on the reused solenoid valve.

    NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided with it.

12. Install shift solenoid valves C (brown connector), D (black connector), and E (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the servo body.

    NOTE: Do not hold the shift solenoid valve connector to install the shift solenoid valve. Be sure to hold the shift solenoid valve body.

13. Install shift solenoid valve B (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve E.

14. Install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve D.

    NOTE: Do not install shift solenoid valves A and B before installing shift solenoid valve D and E. If shift solenoid valve A or B is installed before installing shift solenoid valve D or E, it may damage to hydraulic control system.

15. Connect YEL, WHT, and WHT harnesses terminal (H) to shift solenoid valve D. The ATF temperature sensor is installed in the connector.

16. Connect the shift solenoid valve connectors:

    - BLU wire to shift solenoid valve A
    - ORN wire to shift solenoid valve B
    - GRN wire to shift solenoid valve C
    - RED wire to shift solenoid valve E

17. Install a new gasket, the dowel pins, and the shift solenoid valve cover.

18. Check the connector for rust, dirt, or oil, then connect the connector securely.

19. Refill the transmission with ATF (see step 5 on page 14-232).

20. Install the battery base, the battery tray, and the resonator.

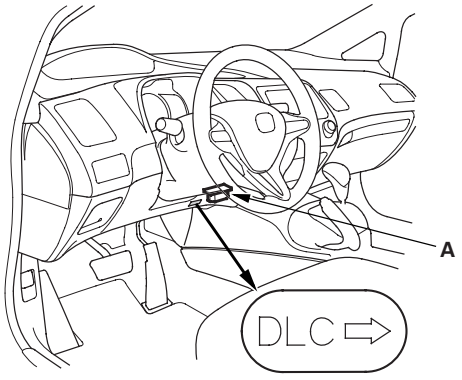
21. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

22. Do the battery installation procedure (see page 22-69).

23. Install the splash shield.

A/T Clutch Pressure Control Solenoid Valve A Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

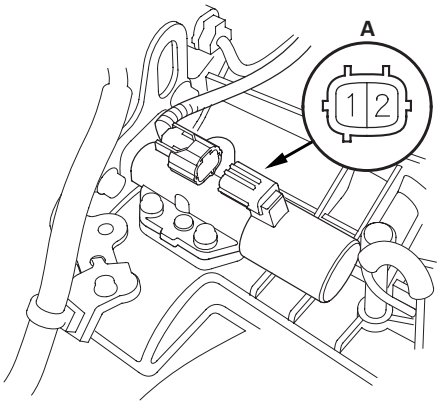
3. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu with the HDS.

4. Test A/T clutch pressure control solenoid valve A with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.

5. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

6. Disconnect the A/T clutch pressure control solenoid valve A connector (A).



7. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

   Standard: 3—10 Ω

   - If the resistance is within the standard, go to step 8.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A (see page 14-221).

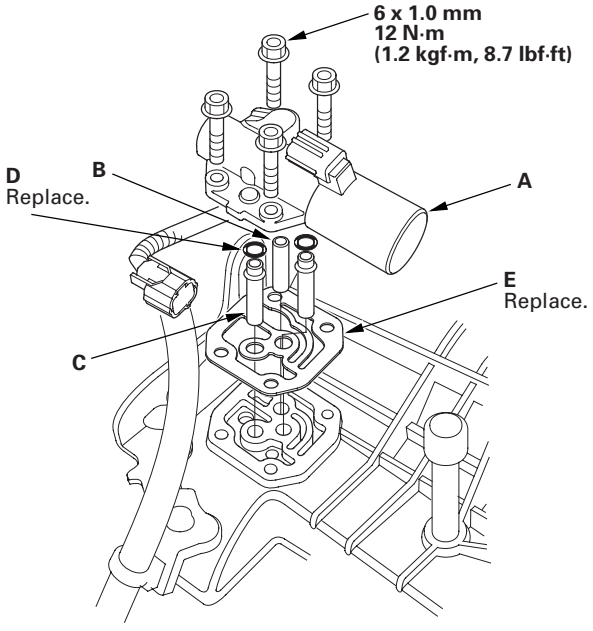
8. Connect a jumper wire from the negative battery terminal to solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.

   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 9.

(cont'd)

A/T Clutch Pressure Control Solenoid Valve A Test (cont'd)

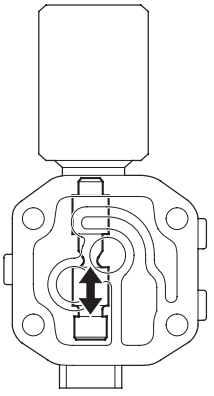
9. Remove the mounting bolts and A/T clutch pressure control solenoid valve A.



10. Remove the ATF pipe (B), the ATF joint pipes (C), the O-rings (D), and the gasket (E).

11. Check the fluid passage of the solenoid valve for contamination.

12. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve A moves.



13. Disconnect one of the jumper wires, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve A.

14. Clean the mounting surfaces and the fluid passages of the A/T clutch pressure control solenoid valve body and the transmission housing.

15. Install a new gasket on the transmission housing, and install the ATF pipe and the ATF joint pipes.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

16. Install new O-rings over the ATF joint pipes.

17. Install A/T clutch pressure control solenoid valve A.

18. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

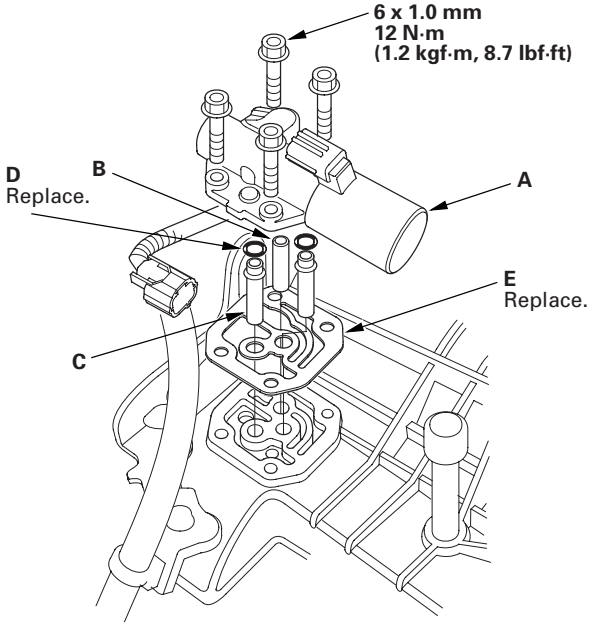
19. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

A/T Clutch Pressure Control Solenoid Valve A Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the A/T clutch pressure control solenoid valve A connector.

3. Remove the mounting bolts and A/T clutch pressure control solenoid valve A.



4. Remove the ATF pipe (B), the ATF joint pipes (C), the O-rings (D), and the gasket (E).

5. Clean the mounting surface and the fluid passage of the transmission housing.

6. Install a new gasket on the transmission housing, and install the ATF pipe and the ATF joint pipes.

   NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

7. Install new O-rings over the ATF joint pipes.

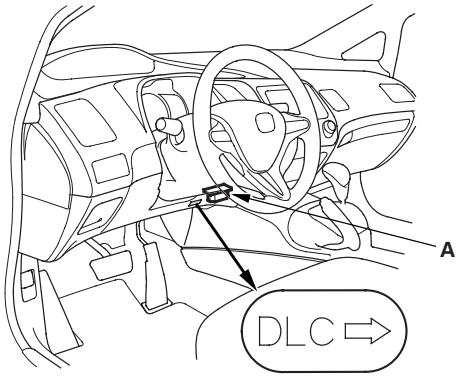
8. Install a new A/T clutch pressure control solenoid valve A.

9. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connect it securely.

10. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

A/T Clutch Pressure Control Solenoid Valve B Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

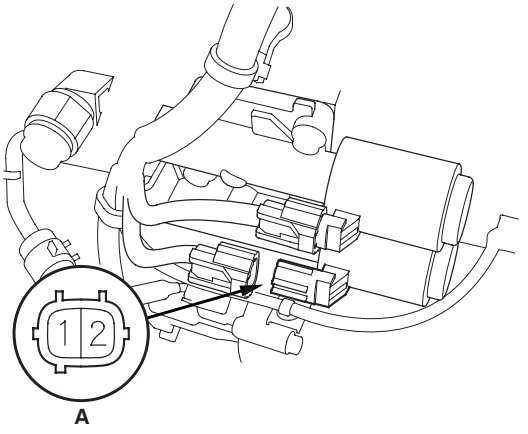
3. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu with the HDS.

4. Test A/T clutch pressure control solenoid valve B with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.

5. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

6. Disconnect the A/T clutch pressure control solenoid valve B connector (A).



7. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

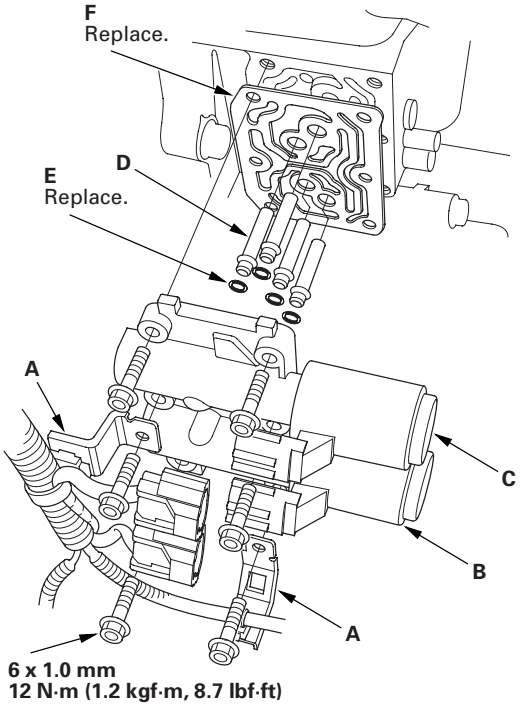
   Standard: 3—10 Ω

   - If the resistance is within the standard, go to step 8.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve B (see page 14-226).

8. Connect a jumper wire from the negative battery terminal to solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.

   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 9.

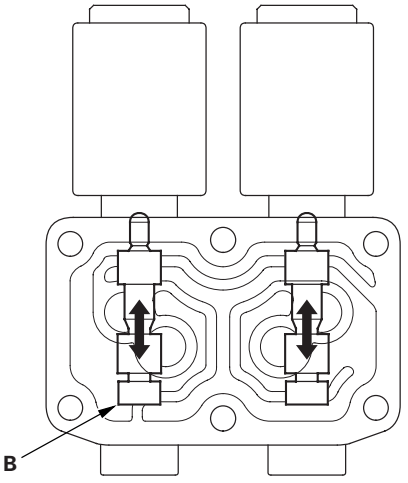
9. Remove the mounting bolts, the harness clamp brackets (A), and A/T clutch pressure control solenoid valves B and C.



10. Remove the ATF joint pipes (D), the O-rings (E), and the gasket (F).

11. Check the fluid passage of the solenoid valves for contamination.

12. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve B moves.



13. Disconnect one of the jumper wires, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.

14. Clean the mounting surfaces and the fluid passages of the A/T clutch pressure control solenoid valve body and the transmission housing.

15. Install a new gasket on the transmission housing.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

16. Install the ATF joint pipes, and install new O-rings over the ATF joint pipes.

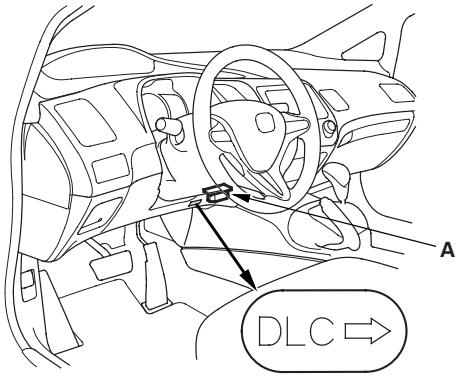
17. Install A/T clutch pressure control solenoid valves B and C.

18. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

19. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

A/T Clutch Pressure Control Solenoid Valve C Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

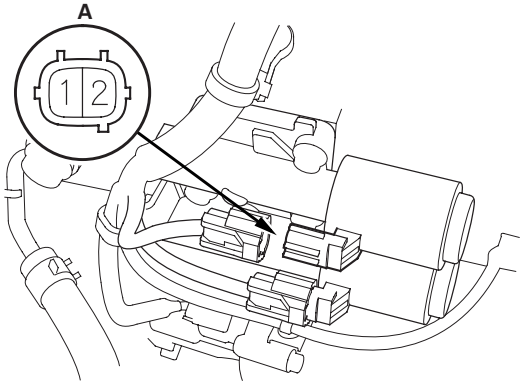
3. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu with the HDS.

4. Test A/T clutch pressure control solenoid valve C with the HDS.

   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.

5. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

6. Disconnect the A/T clutch pressure control solenoid valve C connector (A).



7. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

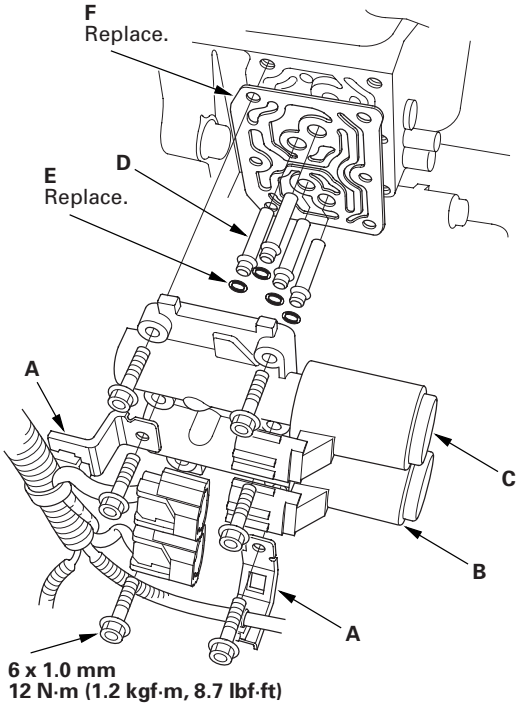
   Standard: 3—10 Ω

   - If the resistance is within the standard, go to step 8.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve C (see page 14-226).

8. Connect a jumper wire from the negative battery terminal to solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1.

   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 9.

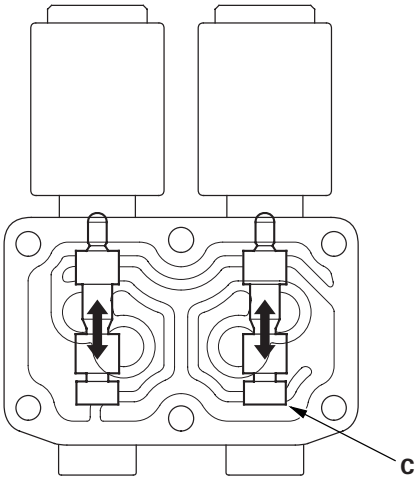
9. Remove the mounting bolts, the harness clamp brackets (A), and A/T clutch pressure control solenoid valves B and C.



10. Remove the ATF joint pipes (D), the O-rings (E), and the gasket (F).

11. Check the fluid passage of the solenoid valves for contamination.

12. Connect a jumper wire from the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect another jumper wire from the positive battery terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve C moves.



13. Disconnect one of the jumper wires, and check valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.

14. Clean the mounting surfaces and the fluid passages of the A/T clutch pressure control solenoid valve body and the transmission housing.

15. Install a new gasket on the transmission housing.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

16. Install the ATF joint pipes, and install new O-rings over the ATF joint pipes.

17. Install A/T clutch pressure control solenoid valves B and C.

18. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.

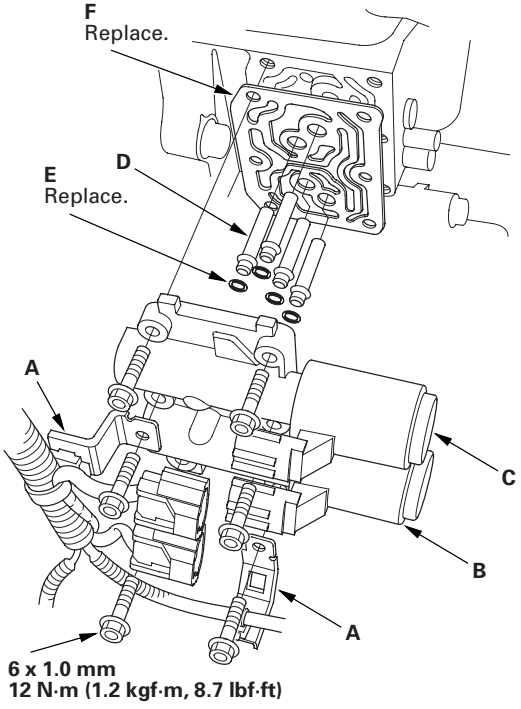
19. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

A/T Clutch Pressure Control Solenoid Valve B and C Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.

3. Remove the mounting bolts, the harness clamp brackets (A), and A/T clutch pressure control solenoid valves B and C.



4. Remove the ATF joint pipes (D), the O-rings (E), and the gasket (F).

5. Clean the mounting surface and the fluid passage of the transmission housing.

6. Install a new gasket on the transmission housing, and install the ATF joint pipes.

   NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

7. Install new O-rings over the ATF joint pipes.

8. Install new A/T clutch pressure control solenoid valves B and C, and harness clamp brackets.

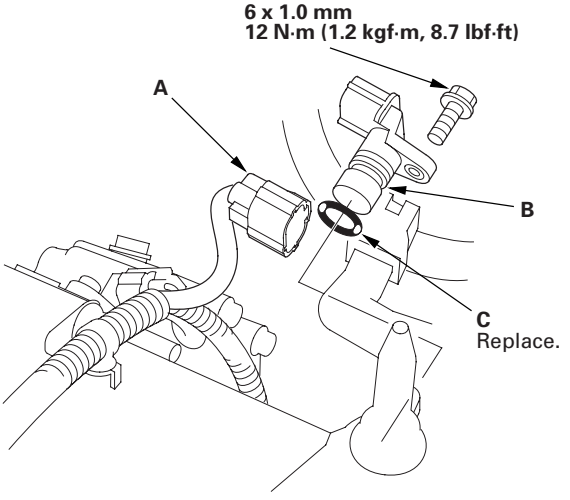
9. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect it securely.

10. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

Input Shaft (Mainshaft) Speed Sensor Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the input shaft (mainshaft) speed sensor connector (A), and remove the input shaft (mainshaft) speed sensor (B) with the O-ring (C).



3. Install a new O-ring on a new input shaft (mainshaft) speed sensor, then install the input shaft (mainshaft) speed sensor in the transmission housing.

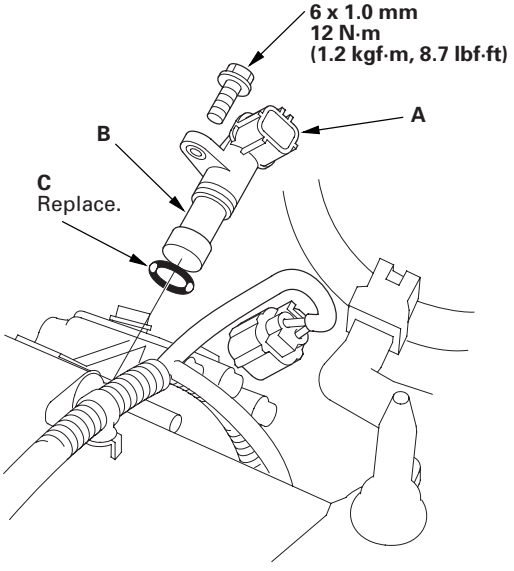
4. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

5. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

Output Shaft (Countershaft) Speed Sensor Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the output shaft (countershaft) speed sensor connector (A), and remove the output shaft (countershaft) speed sensor (B).



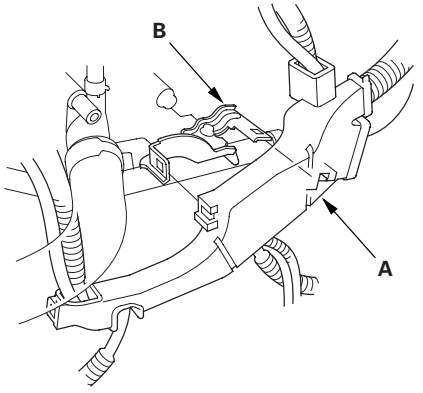
3. Install a new O-ring on a new output shaft (countershaft) speed sensor, then install the output shaft (countershaft) speed sensor in the transmission housing.

4. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

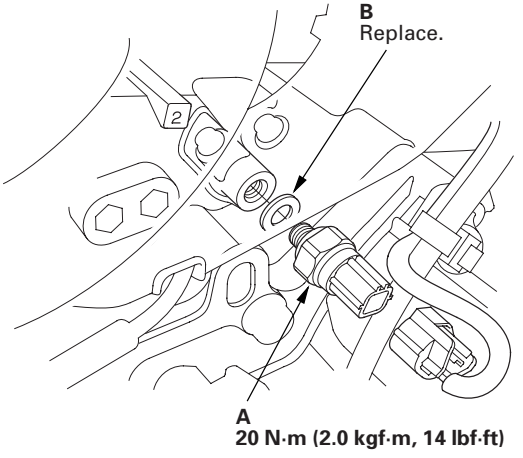
5. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

2nd Clutch Transmission Fluid Pressure Switch Replacement

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).
2. Remove the harness cover (A) from its bracket (B).



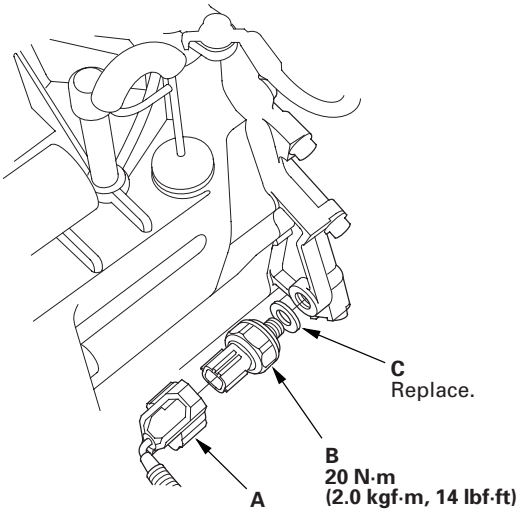
3. Disconnect the 2nd clutch transmission fluid pressure switch connector, and remove the 2nd clutch transmission fluid pressure switch (A).



4. Install a new 2nd clutch transmission fluid pressure switch with a new sealing washer (B), and tighten the metal part of the switch, not the plastic part.
5. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.
6. Install the harness cover on its bracket.
7. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

3rd Clutch Transmission Fluid Pressure Switch Replacement

1. Do the battery removal procedure (see page 22-69).
2. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).
3. Remove the battery tray, the battery base, and the resonator.
4. Disconnect the 3rd clutch transmission fluid pressure switch connector (A), then remove the 3rd clutch transmission fluid pressure switch (B) with the sealing washer (C).



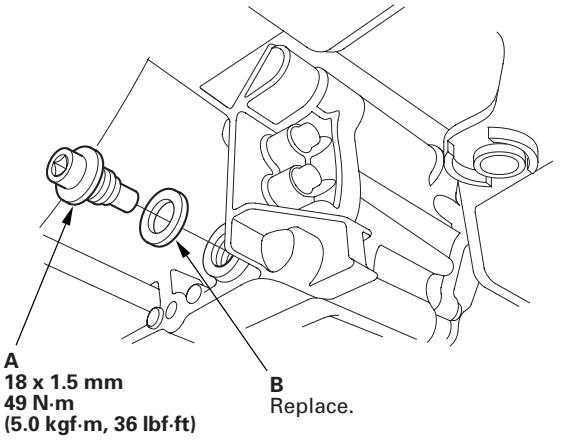
5. Install a new 3rd clutch transmission fluid pressure switch with a new sealing washer, and tighten the metal part of the switch, not the plastic part.
6. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.
7. Install the battery tray, the battery base, and the resonator.
8. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).
9. Do the battery installation procedure (see page 22-69).

ATF Temperature Sensor Test/Replacement

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

2. Remove the splash shield.

3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



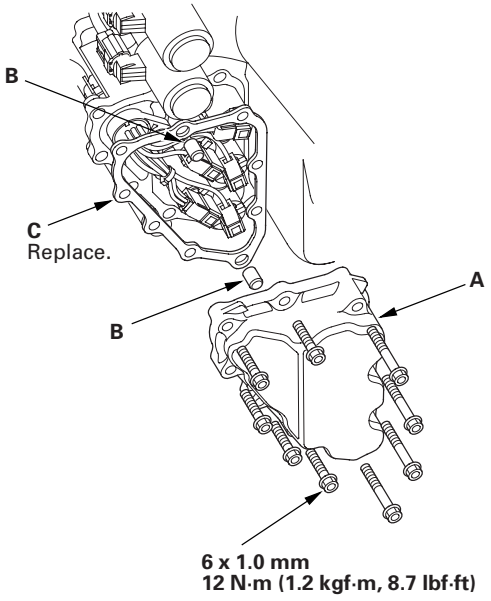
4. Reinstall the drain plug with a new sealing washer (B).

5. Do the battery removal procedure (see page 22-69).

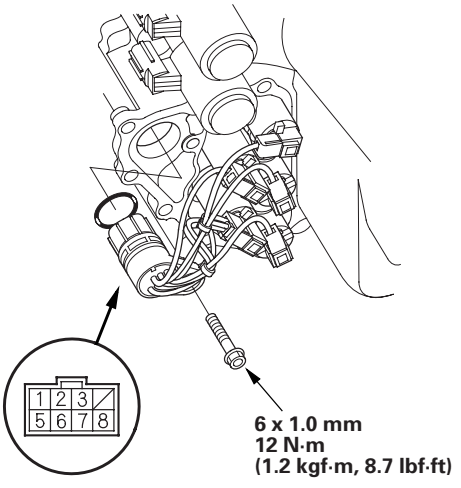
6. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

7. Remove the battery tray, the battery base, and the resonator.

8. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).



9. Disconnect the shift solenoid wire harness connector, and remove it from the transmission housing.



(cont'd)

ATF Temperature Sensor Test/Replacement (cont'd)

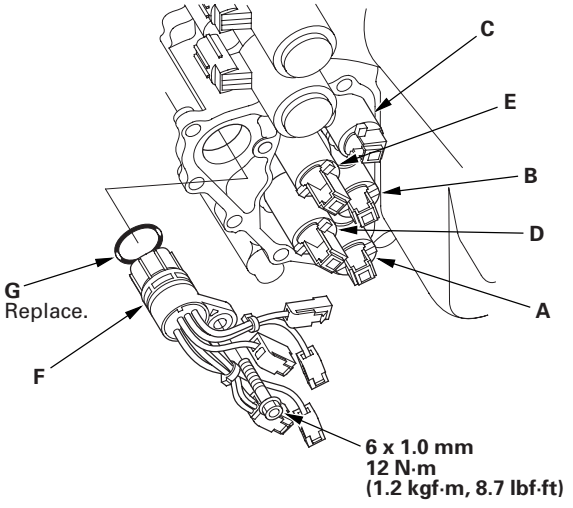
10. Measure the ATF temperature sensor resistance between shift solenoid wire harness connector terminals No. 6 and No. 7.

    Standard: 50 Ω —25 kΩ

    - If the resistance is within the standard, install the shift solenoid wire harness and a new O-ring in the transmission, then go to step 13.
    - If the resistance is out of standard, go to step 11.

11. Disconnect the connectors from the shift solenoid valves, and replace the ATF temperature sensor/ shift solenoid harness assembly (F) and the O-ring (G) with new ones.

    NOTE: The ATF temperature sensor is not available separately from the shift solenoid wire harness.



12. Connect the shift solenoid valve connectors:

    - BLU wire to shift solenoid valve A.
    - ORN wire to shift solenoid valve B.
    - GRN wire to shift solenoid valve C.
    - YEL, WHT, and WHT wire connector to shift solenoid valve D.
    - RED wire to shift solenoid valve E.

13. Install a new gasket, the dowel pins, and the shift solenoid valve cover.

14. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

15. Refill the transmission with ATF (see step 5 on page 14-232).

16. Install the battery tray, the battery base, and the resonator.

17. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).

18. Do the battery installation procedure (see page 22-69).

19. Install the splash shield.

ATF Level Check

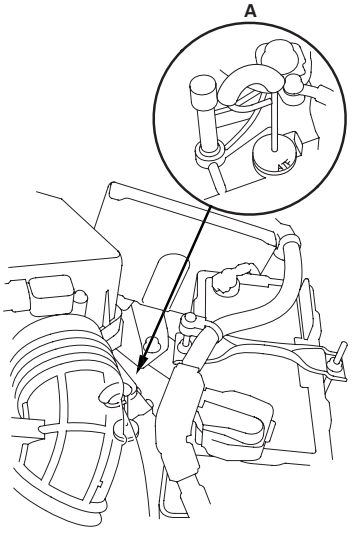
NOTE: Keep all foreign particles out of the transmission.

1. Park the vehicle on the level ground.

2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off. Do not allow the engine to warm up more than two cycles of the cooling fan.

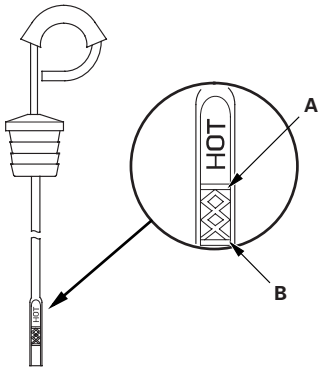
   NOTE: Check the ATF level within 60—90 seconds after turning the engine off. Higher ATF level may be indicated if the radiator fan comes on twice or more.

3. Remove the ATF dipstick (yellow loop) (A), and wipe it with a clean cloth.



4. Insert the dipstick into the transmission.

5. Remove the dipstick and check the ATF level. It should be between the upper mark (A) and the lower mark (B).



6. If the ATF level is below the lower mark, check for fluid leaks at the transmission, the hoses, and the line joints. If a problem is found, fix it before filling the transmission with ATF.

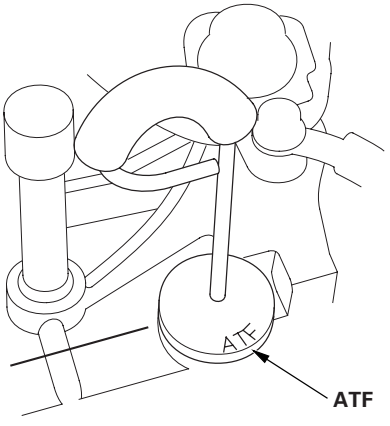
   NOTE: If the vehicle is driven when the ATF level is below the lower mark, one or more of these symptoms may occur:
   - The transmission damage.
   - The vehicle may not move in any gear.
   - The vehicle may accelerates poorly, and flares when starting off in D, S, and R.
   - Vibration when the engine is idling.

7. If the ATF level is above the upper mark, drain the ATF to proper level (see step 3 on page 14-232).

   NOTE: If the vehicle is driven when the ATF level is above the upper mark, the vehicle may creep forward while in N, or have problems shifting.

8. If necessary, fill the transmission with ATF through the dipstick hole to bring the fluid level to midway between the upper mark and the lower mark of the dipstick. Do not fill the fluid above the upper mark. Always use genuine Acura ATF-Z1 automatic transmission fluid (ATF). Using a non-Acura ATF can affect shift quality.

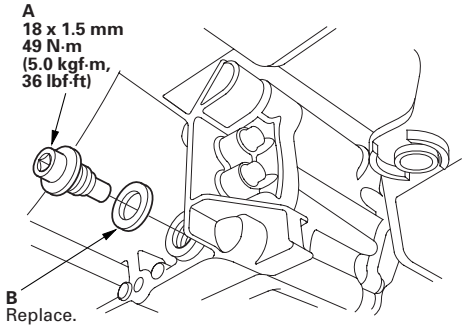
9. Insert the dipstick back into the transmission with the letters ''ATF'' pointing toward the front of the vehicle.



ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

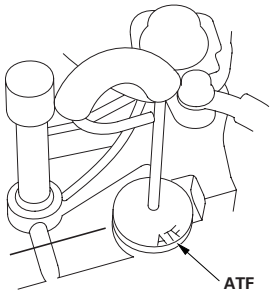
1. Park the vehicle on the level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



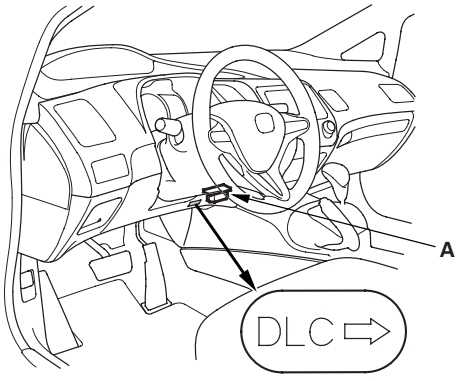
4. Reinstall the drain plug with a new sealing washer (B).
5. Refill the transmission with ATF into the dipstick hole to bring the fluid level between the upper mark and the lower mark of the dipstick. Always use Acura ATF-Z1 automatic transmission fluid (ATF). Using a non-Acura ATF can affect shift quality.

   Automatic Transmission Fluid Capacity:
   2.9 L (3.1 US qt) at change
   6.5 L (6.9 US qt) at overhaul

6. Check that the ATF level is between the upper mark and the lower mark of the dipstick.
7. Insert the dipstick back into the transmission with the letters ''ATF'' pointing toward the front of the vehicle.



8. If the maintenance minder required to replace the ATF, reset the maintenance minder (see page 3-4), and this procedure is complete. If the maintenance minder did not require you to replace the ATF, go to step 9.
9. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



10. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).
11. Select BODY ELECTRICAL with the HDS.
12. Select ADJUSTMENT in the GAUGES MENU with the HDS.
13. Select RESET in the MAINTENANCE MINDER MENU with the HDS.
14. Select RESETTING THE ATF with the HDS.

    NOTE: If you changed the engine oil at the same time with the ATF, select RESETTING THE ENGINE OIL LIFE AND ATF with the HDS instead.

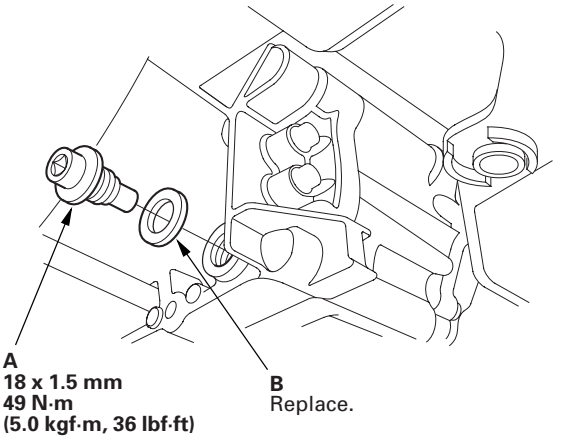
Transmission Removal

Special Tools Required
- Engine hanger plate 07AAK-SNAA120
- Engine support hanger, A and Reds AAR-T1256 *
- 2006 Civic engine hanger VSB02C000025 *
- Front subframe adapter VSB02C000016 *

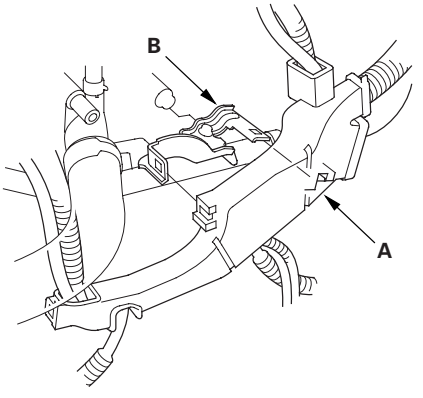
* Available through Acura Canada Technical Tools Department; Fax #866-398-8665/ e-mail: ch_technicaltools@ch.honda.com

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Special tool engine support hanger must be used with the side engine mount installed.

1. Remove the cowl cover (see page 20-163) and the under-cowl panel.
2. Remove the front grille cover (see page 20-163).
3. Do the battery removal procedure (see page 22-69).
4. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).
5. Remove the battery tray, the battery base, and the resonator.
6. Raise the vehicle on a lift, and make sure it is securely supported and remove the front wheels.
7. Remove the splash shield.
8. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



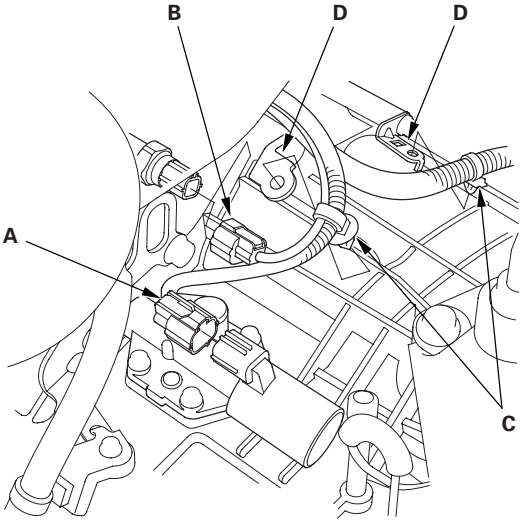
9. Reinstall the drain plug with a new sealing washer (B).
10. Secure the hood in the vertical position.
11. Remove the harness cover (A) from its bracket (B).



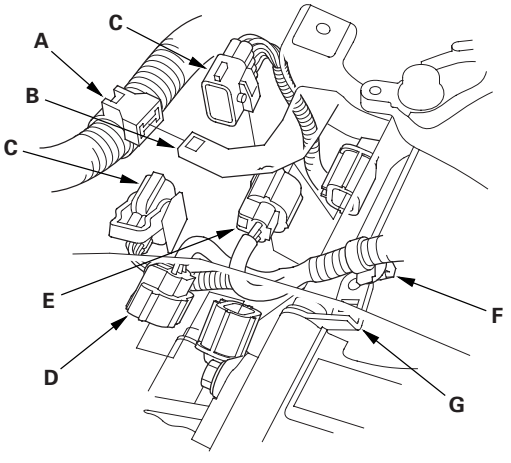
(cont'd)

Transmission Removal (cont'd)

12. Disconnect the A/T clutch pressure control solenoid valve A connector (A) and the 2nd clutch transmission fluid pressure switch connector (B), and remove the harness clamps (C) from the clamp brackets (D).

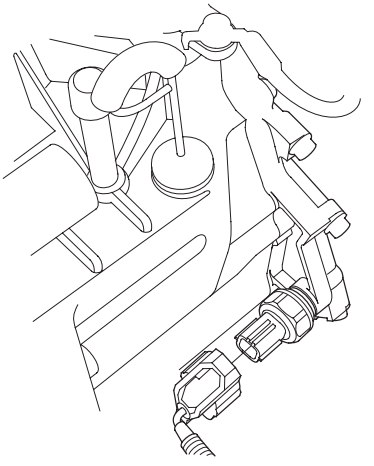


13. Remove the harness clamp (A) from the clamp bracket (B). Disconnect the transmission range switch connector (C), and remove the connector from its bracket.

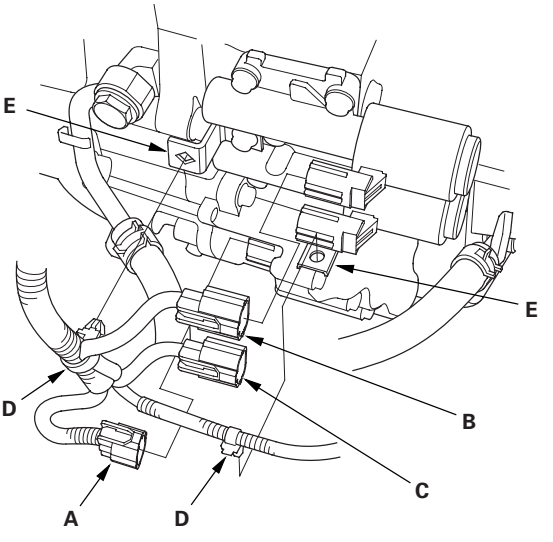


14. Disconnect the output shaft (countershaft) speed sensor connector (D) and the input shaft (mainshaft) speed sensor connector (E), and remove the harness clamp (F) from the clamp bracket (G).

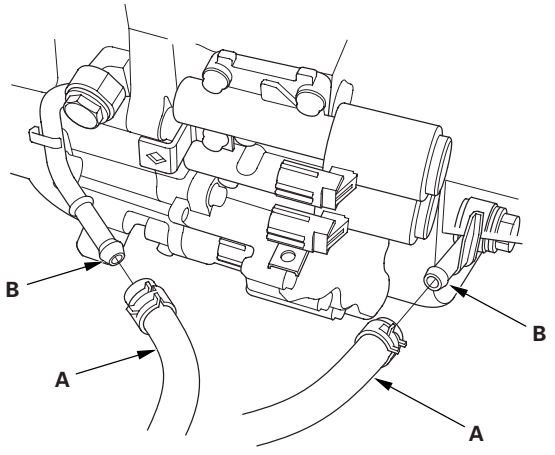
15. Disconnect the 3rd clutch transmission fluid pressure switch connector.



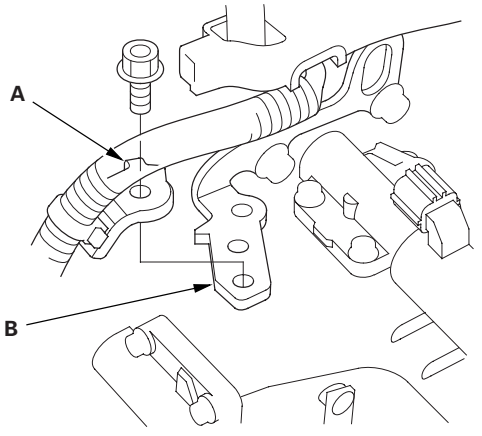
16. Disconnect the shift solenoid wire harness connector (A), the A/T clutch pressure control solenoid valve B connector (B), and the A/T clutch pressure control solenoid valve C connector (C), then remove the harness clamps (D) from the clamp brackets (E).



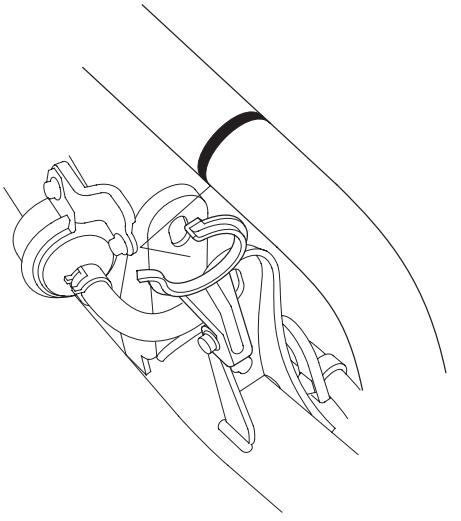
17. Disconnect the ATF cooler hoses (A) from the ATF lines (B). Turn the end of the ATF cooler hoses up to prevent ATF from flowing out, then plug the hoses and lines.



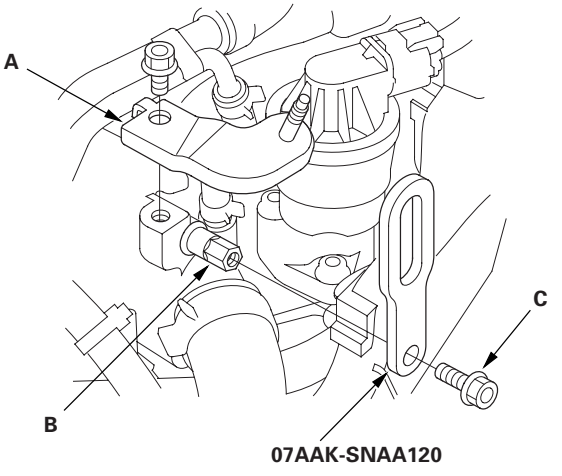
18. Remove the bolt securing the harness clamp bracket (A) from the transmission hanger (B).



19. Remove the water hose from its clamp.



20. Remove the air cleaner housing mounting bracket (A).

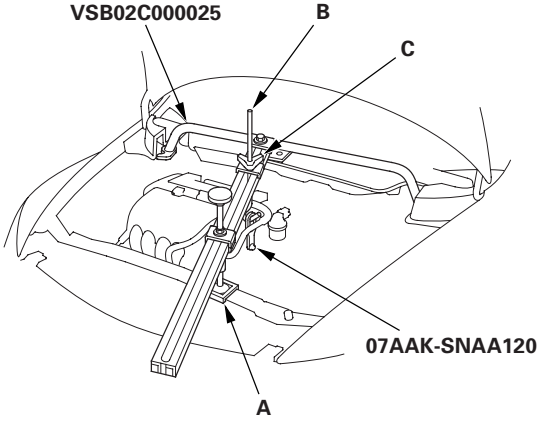


21. Install the engine hanger plate (07AAK-SNAA120) on the stud nut (B) with a 8 x 1.25 - 16 mm bolt (C). Use only the 8 x 1.25 mm and 16 mm in length of the threaded bolt. If you use other than 16 mm threaded-length bolt, it may damage the engine cylinder head.

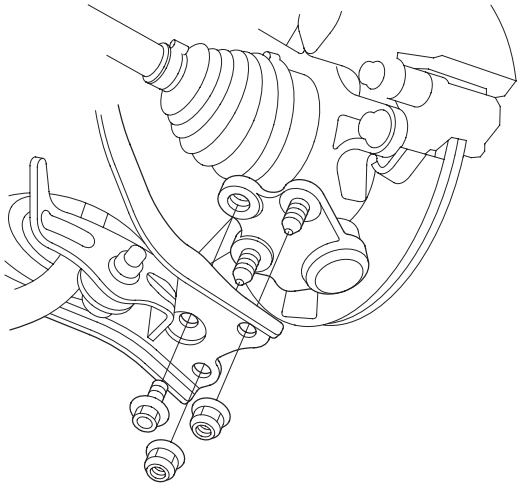
(cont'd)

Transmission Removal (cont'd)

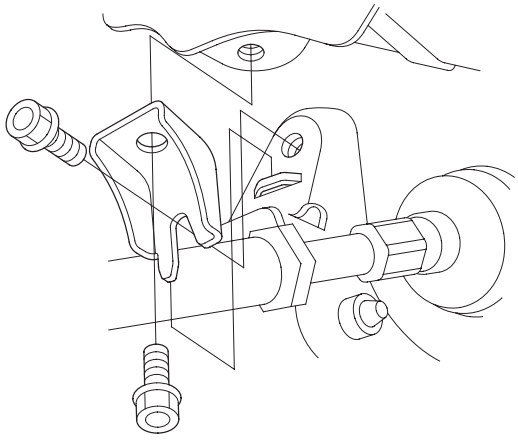
22. Install the front leg assembly (A), the hook (B), and the wing nut (C) from the A and Reds engine support hanger (AAR-T1256) onto the 2006 civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the slotted hole in the engine hanger plate (07AAK-SNAA120). Tighten the wing nut by hand to lift and support the engine. Use care when working around the windshield.



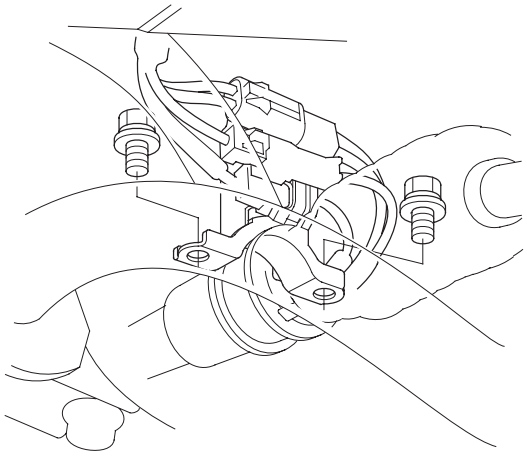
23. Remove the nuts and the bolt securing the lower arms and the ball joints, and separate the lower arms from the ball joints.



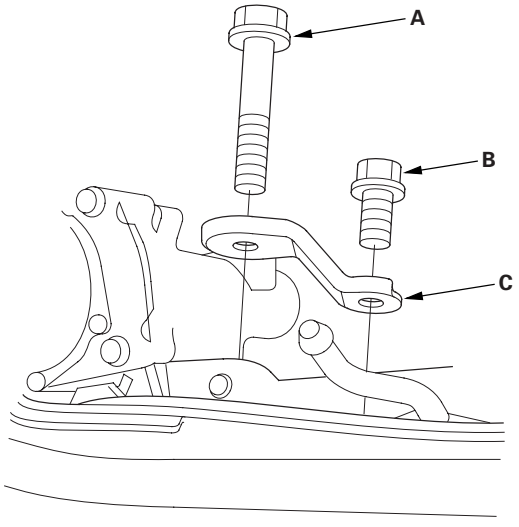
24. Remove both front subframe body mount brackets.



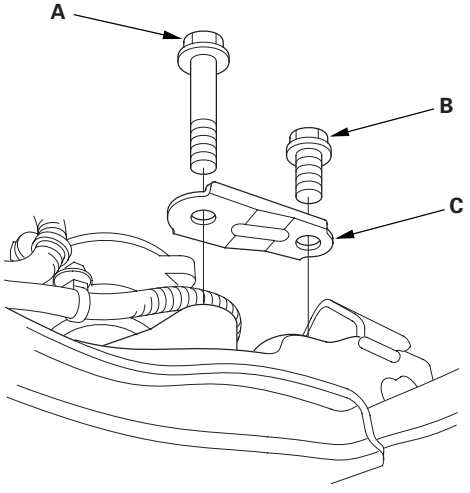
25. Remove the steering gearbox bracket mounting bolts.



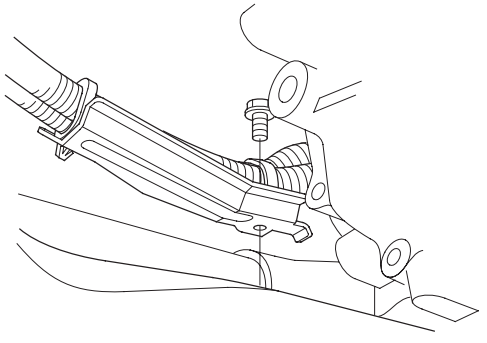
26. Remove the steering gearbox mounting bolt (A), the stiffener mounting bolt (B), and the stiffener (C).



27. Remove the steering gearbox mounting bolt (A), the stiffener mounting bolt (B), and the stiffener (C).



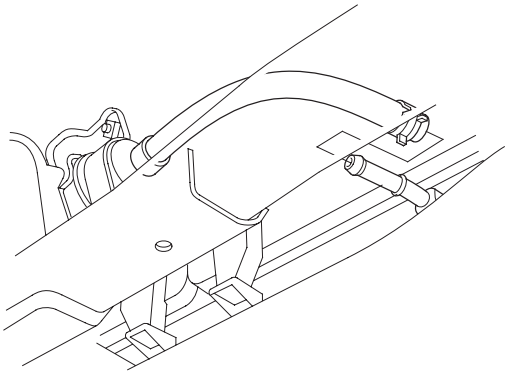
28. Remove the bolt securing the harness clamp bracket.



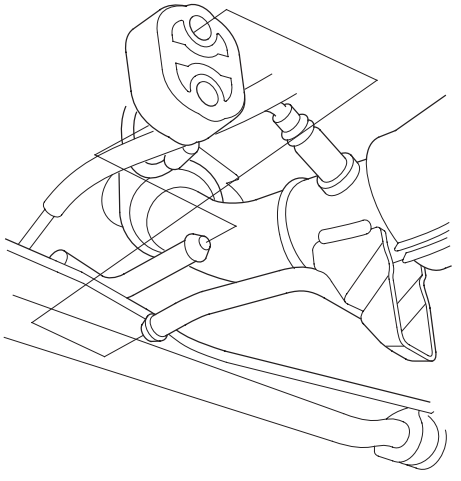
(cont'd)

Transmission Removal (cont'd)

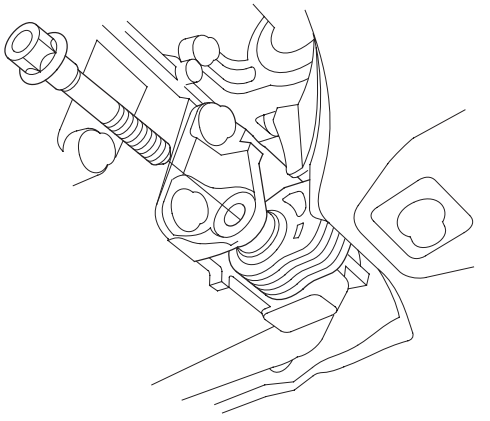
29. Remove the ATF cooler hose from the ATF cooler.



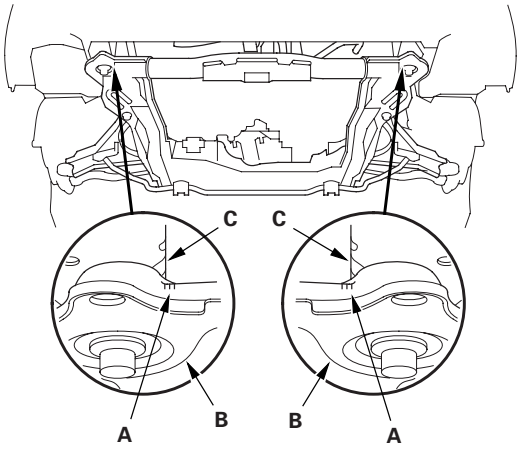
30. Remove the exhaust pipe rubber mount.



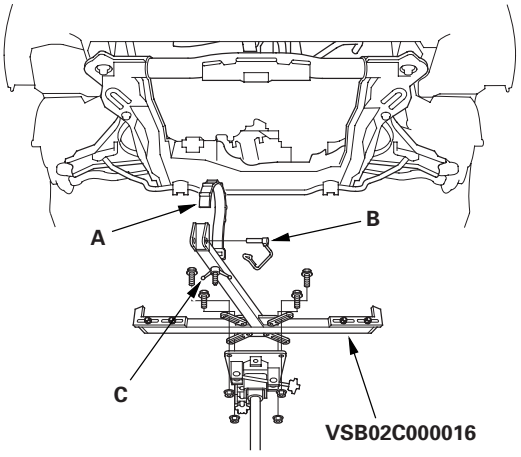
31. Remove the lower torque rod bolt.



32. Make appropriate lines (A) on the front subframe (B) that line up with the edge (C) of the body.

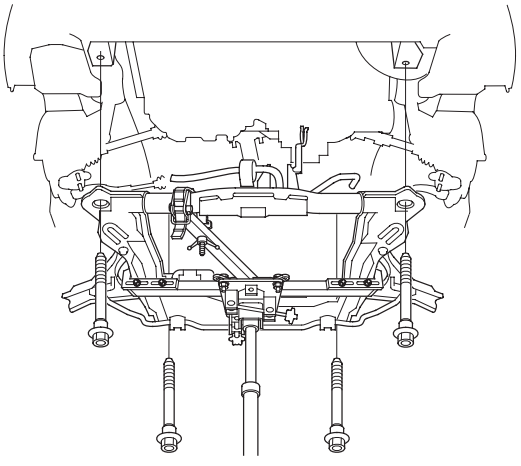


33. Attach the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the front subframe, then secure the strap with the stop (B), then tighten the wing nut (C).



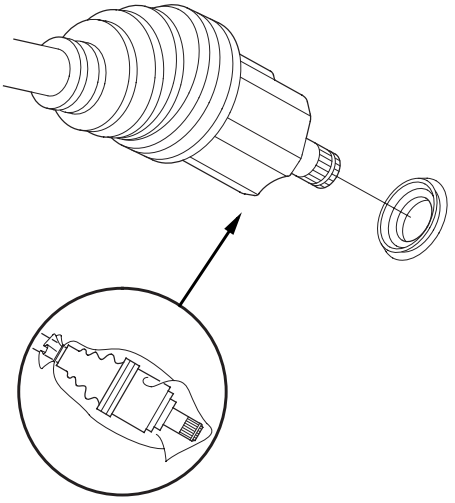
34. Raise a jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then tighten the bolts.

35. Remove the four bolts securing the front subframe, and lower the front subframe.

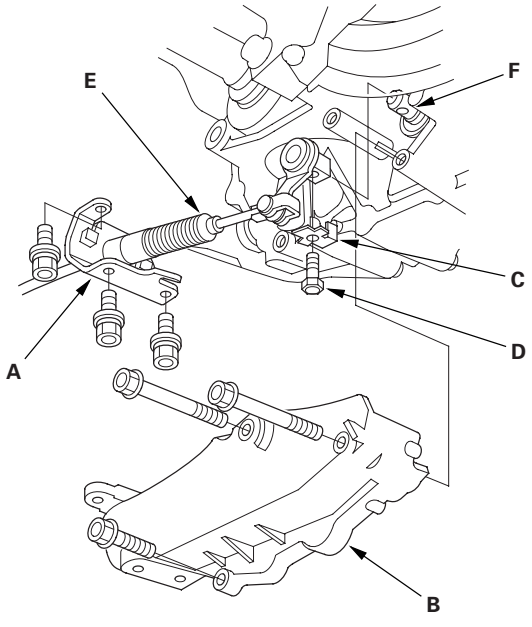


36. Secure the steering gearbox to the body with a rope.

37. Remove the driveshafts from the differential and the intermediate shaft. Coat all precision machined surfaces with clean engine oil, then put plastic bags over the driveshaft ends.



38. Remove the three bolts securing the shift cable holder (A), then remove the shift cable cover (B).

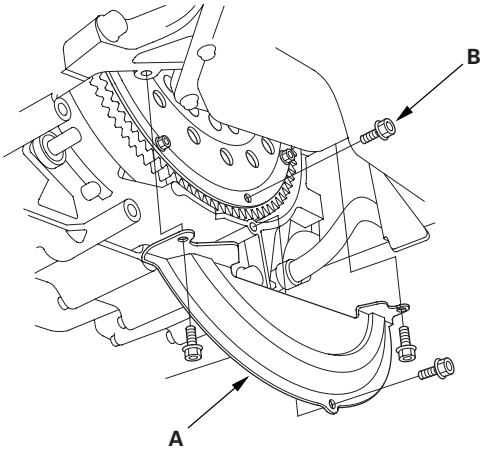


39. Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the shift cable (E) from the selector control shaft (F). Do not bend the shift cable excessively.

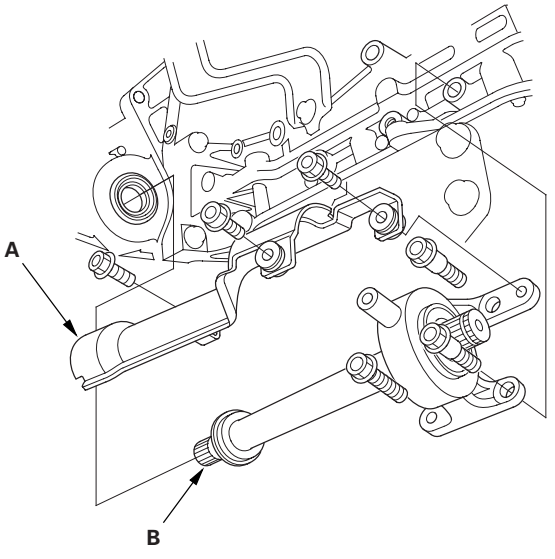
(cont'd)

Transmission Removal (cont'd)

40. Remove the torque converter cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.

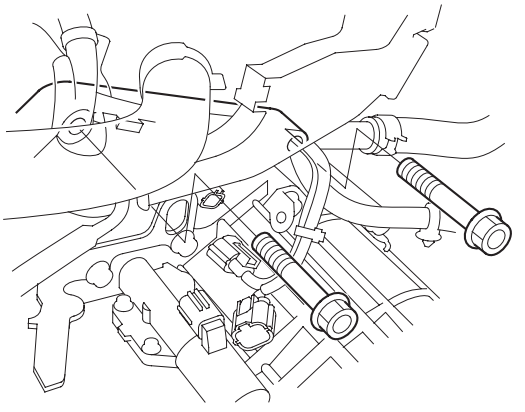


41. Remove the intermediate shaft cover (A).

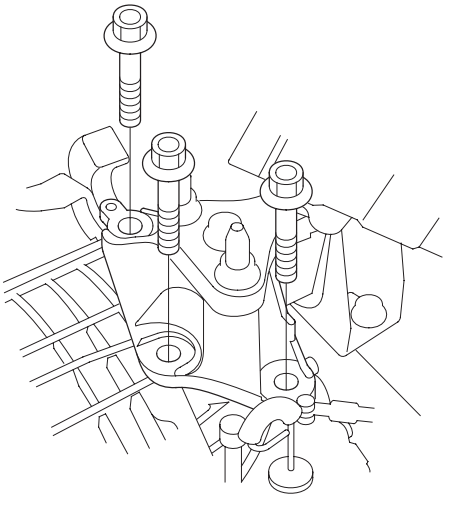


42. Remove the intermediate shaft (B). Coat all precision finished surfaces with clean engine oil, then tie the plastic bags over the intermediate shaft ends.

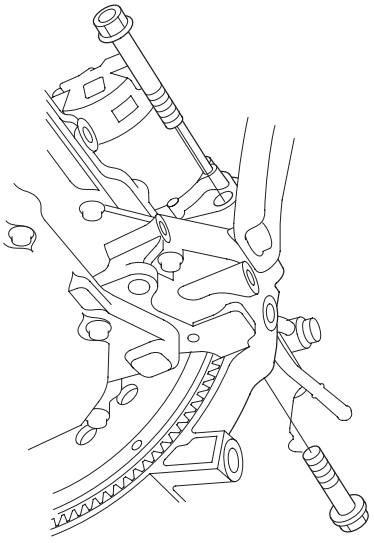
43. Remove the upper transmission housing mounting bolts.



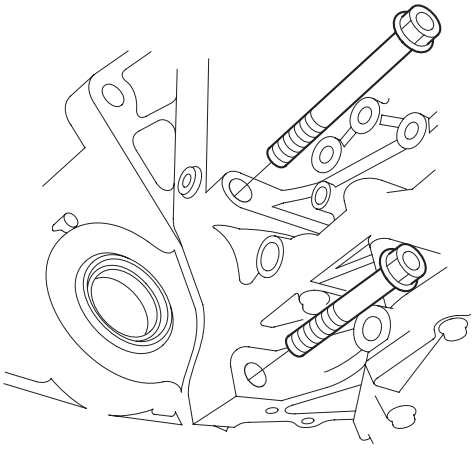
44. Remove the transmission mount bracket bolts.



45. Remove the front transmission housing mounting bolts.



46. Remove the rear transmission housing mounting bolts.

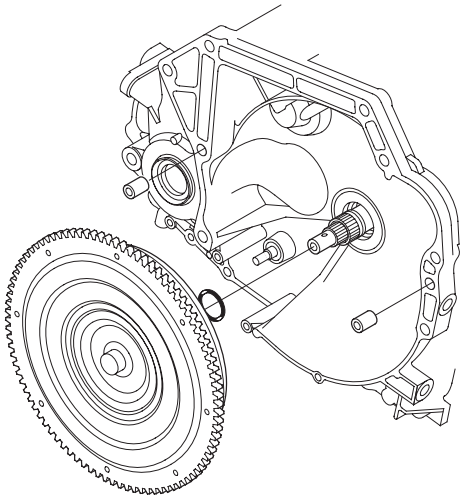


47. Lower the transmission by loosening the wing nut of the engine support hanger, and tilt the engine just enough for the transmission to clear the side frame.

48. Place a jack under the transmission.

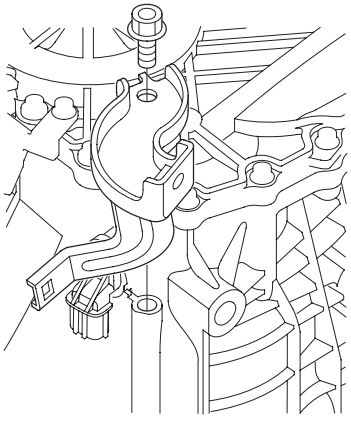
49. Slide the transmission away from the engine to remove it from the vehicle.

50. Remove the torque converter, the O-ring, and the dowel pins.



51. Inspect the drive plate, and replace it if it is damaged.

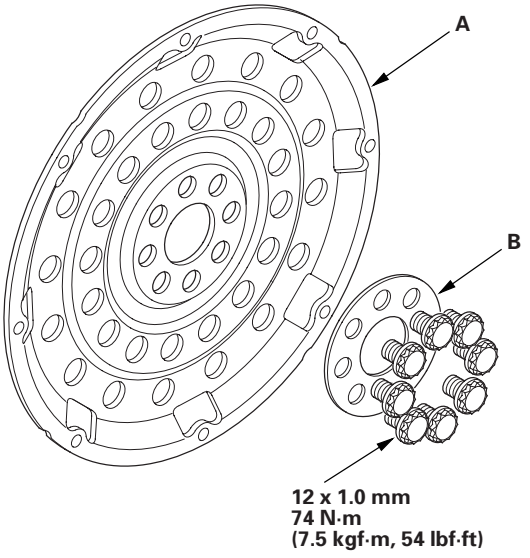
52. Remove the air cleaner housing mounting bracket.



Drive Plate Removal and Installation

1. Remove the transmission assembly (see page 14-233).

2. Remove the drive plate (A) and the washer (B) from the engine crankshaft.



3. Install the drive plate and the washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in at least two steps.

4. Install the transmission assembly (see page 14-242).

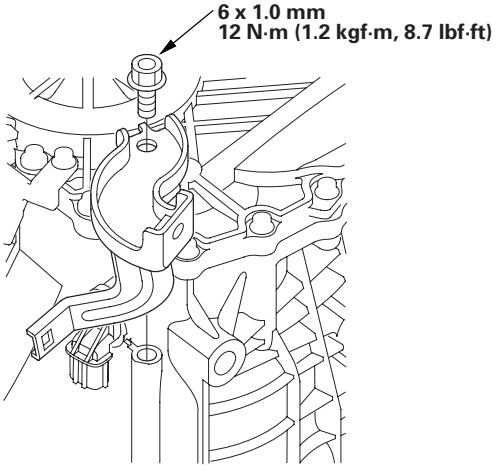
Transmission Installation

Special Tools Required
- Engine hanger plate 07AAK-SNAA120
- Engine support hanger, A and Reds AAR-T1256 *
- 2006 Civic engine hanger VSB02C000025 *
- Front subframe adapter VSB02C000016 *

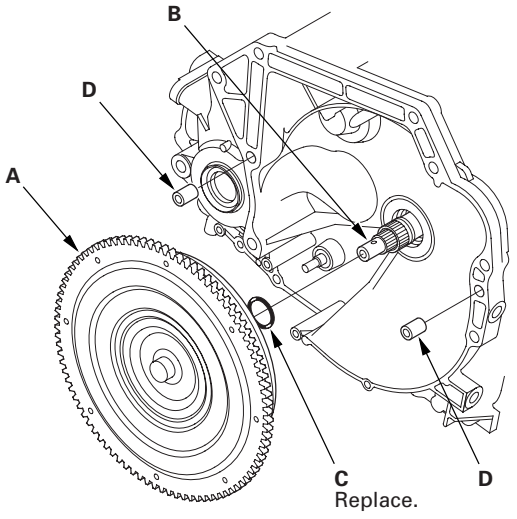
* Available through Acura Canada Technical Tools Department; Fax # 866-398-8665/ e-mail: ch_technicaltools@ch.honda.com

NOTE: Use fender covers to avoid damaging painted surfaces.

1. Install the air cleaner housing mounting bracket.



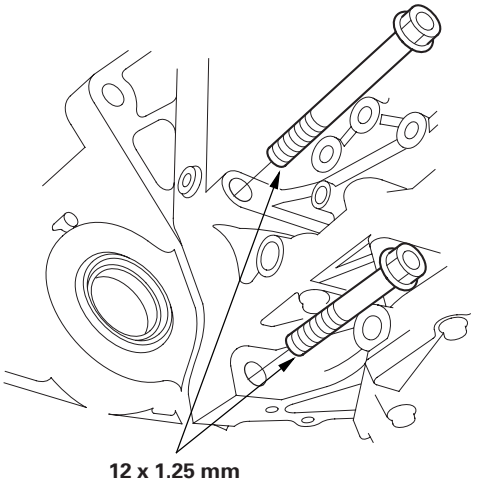
2. Install the torque converter (A) on the mainshaft (B) with a new O-ring (C).



3. Install the 14 x 20 mm dowel pins (D) in the torque converter housing.

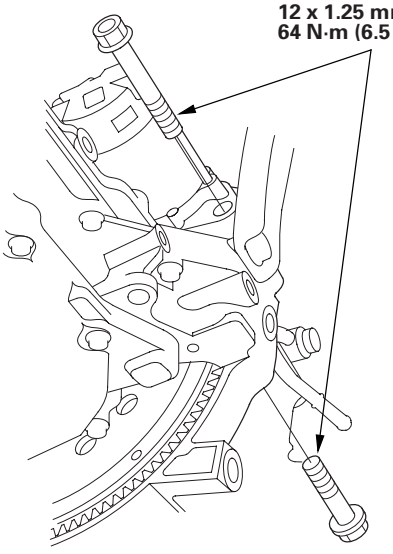
4. Place the transmission on a jack, and raise the transmission to the engine level.

5. Install the rear transmission housing mounting bolts.



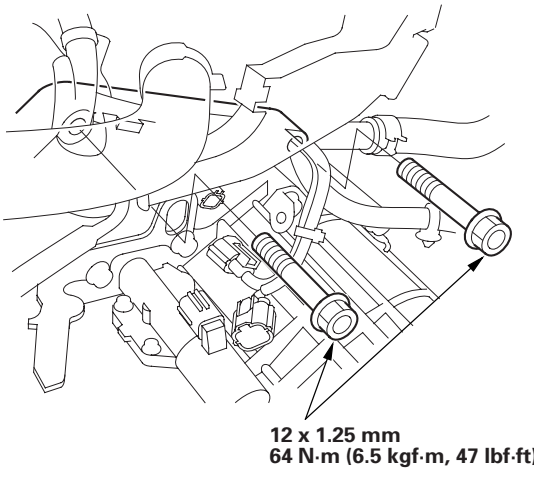
12 x 1.25 mm
64 N·m (6.5 kgf·m, 47 lbf·ft)

6. Install the front transmission housing mounting bolts.



12 x 1.25 mm
64 N·m (6.5 kgf·m, 47 lbf·ft)

7. Install the upper transmission housing mounting bolts.

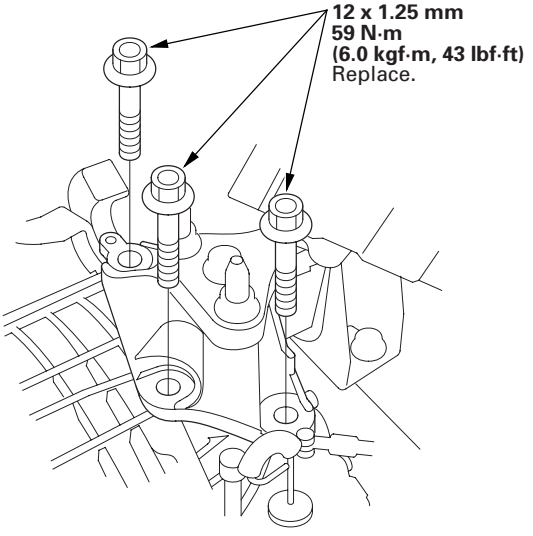


12 x 1.25 mm
64 N·m (6.5 kgf·m, 47 lbf·ft)

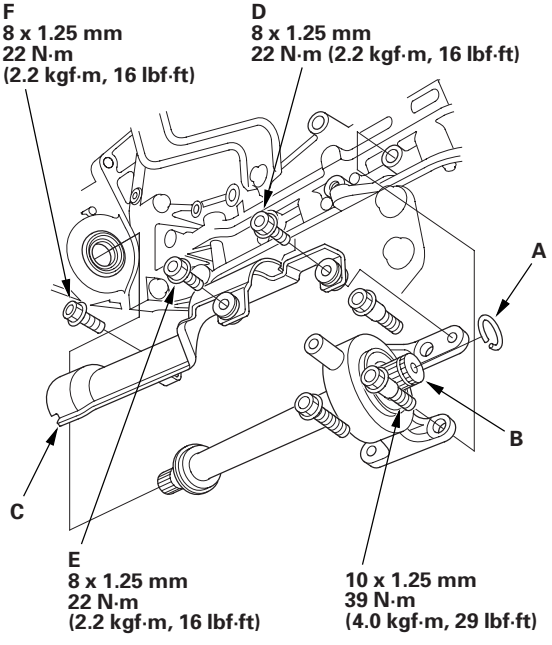
(cont'd)

Transmission Installation (cont'd)

8. Secure the transmission mount bracket on the transmission housing with new mounting bolts.



9. Install a new set ring (A) on the intermediate shaft (B).

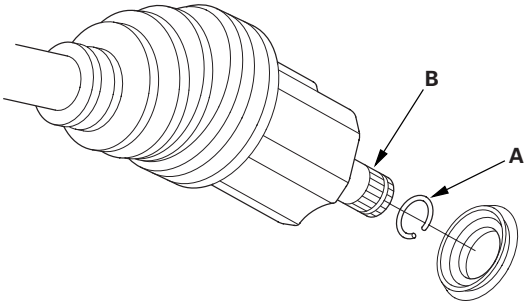


10. Clean the areas where the intermediate shaft contacts the transmission (differential) with solvent, and dry with compressed air. Apply intermediate shaft splines with ATF, then install the intermediate shaft, be sure not to allow dust or other foreign particles to enter the transmission.

11. Install the intermediate shaft cover (C) with installing the mounting bolts loosely.

12. First tighten the right upper bolt (D) on the cover, then the right lower bolt (E), and lastly the left bolt (F).

13. Install a new set ring (A) on the left driveshaft (B).

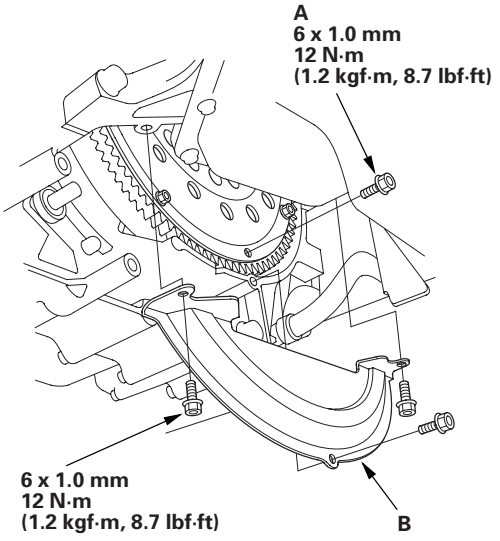


14. Clean the areas where the left driveshaft contacts the transmission (differential) with solvent, and dry with compressed air. Then install the left driveshaft, be sure not to allow dust or other foreign particles to enter the transmission. Turn the steering knuckle fully outward, and slide the driveshaft into the differential until you feel its set ring fully engage the side gear.

15. Apply right driveshaft inboard-joint splines with the recommended grease (P/N 08734-0001).

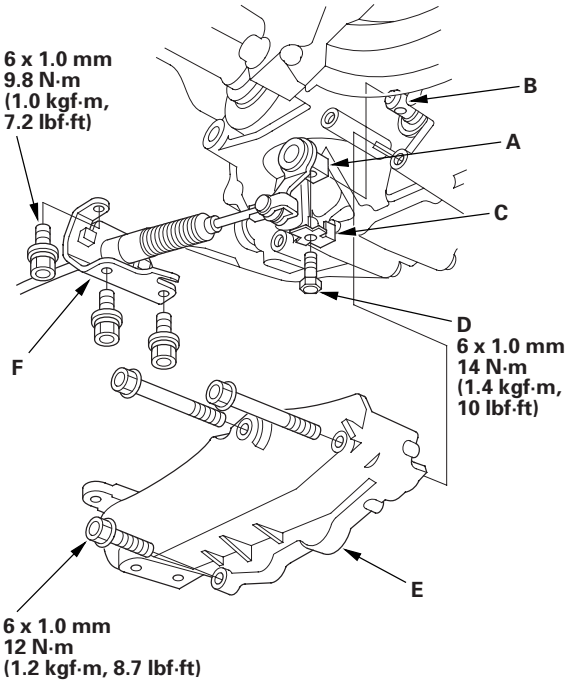
16. Slide the right driveshaft over the intermediate shaft splines until you feel the driveshaft fully engage the intermediate shaft set ring.

17. Attach the torque converter to the drive plate with the eight bolts (A). Rotate the crankshaft pulley as necessary to tighten the bolts to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotate freely.



18. Install the torque converter cover (B).

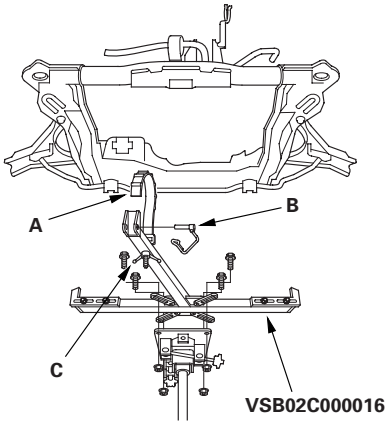
19. Install the control lever (A) over the selector control shaft (B).



20. Secure the control lever with a new lock washer (C) and the lock bolt (D), then bend the lock tab of the lock washer against the bolt head.

21. Install the shift cable cover (E), and install the shift cable holder (F) on the shift cable cover.

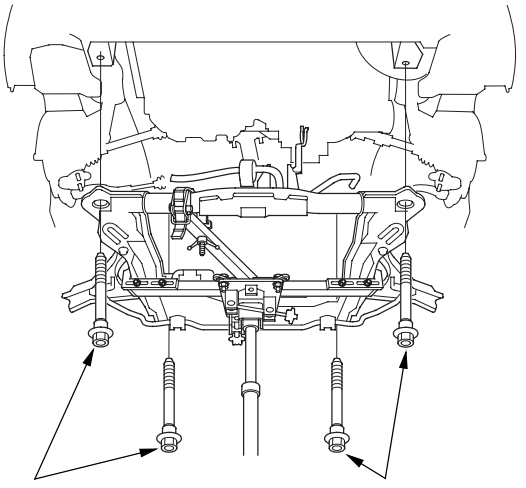
22. Set the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the front subframe, then secure the strap with the stop (B), then tighten the wing nut (C).



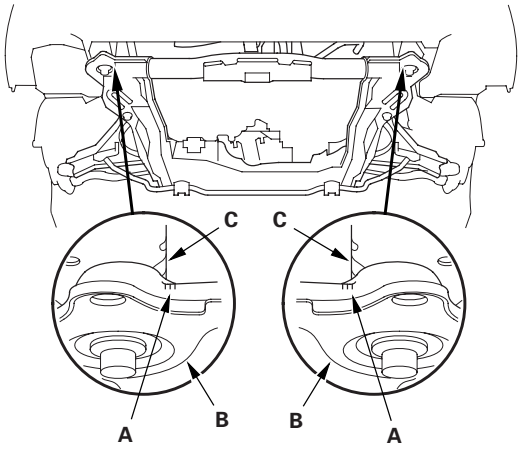
(cont'd)

Transmission Installation (cont'd)

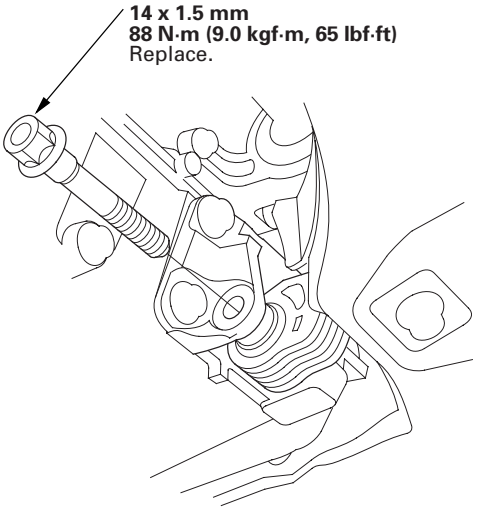
23. Loosely install new front subframe mounting bolts.



24. Align the reference marks (A) on the front subframe (B) with the edge (C) of the body, and tighten the mounting bolts to the specified torque.

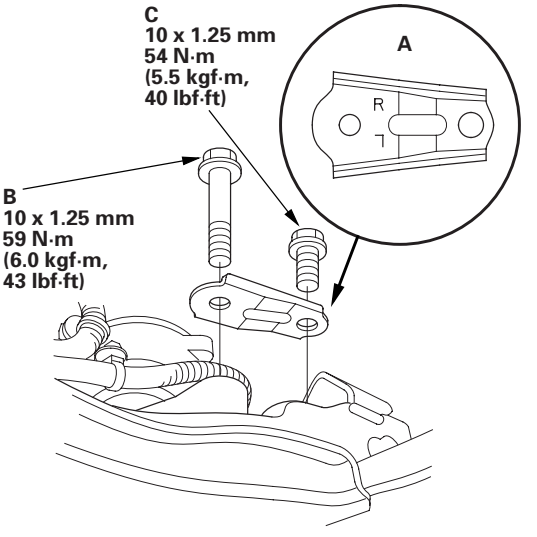


25. Secure the lower torque rod with a new bolt.

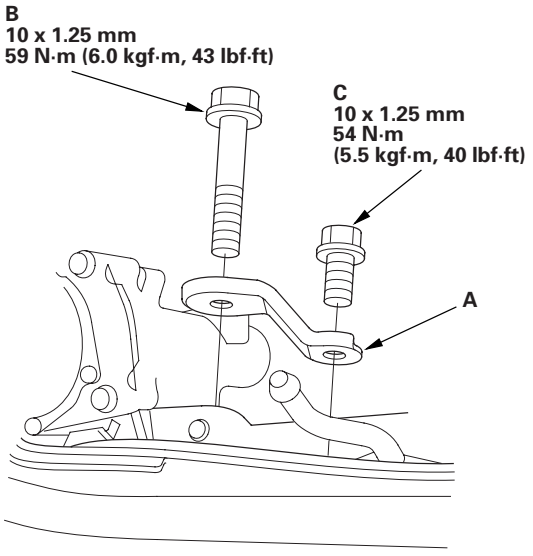


26. Position the steering gearbox on the gearbox mounting bracket of the front subframe.

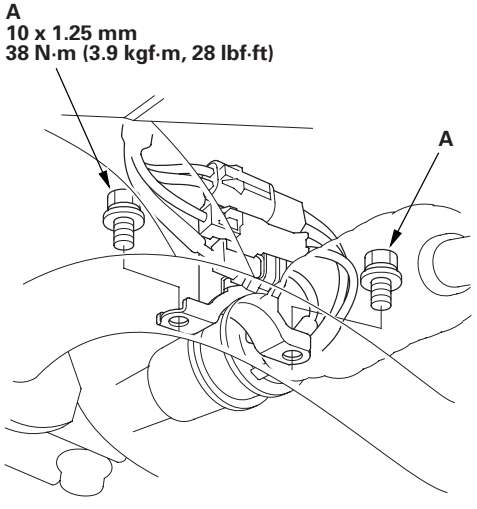
27. Install the gearbox stiffener (A) in the direction shown. Install the steering gearbox mounting bolt (B) and the stiffener mounting bolt (C), and tighten the bolts loosely.



28. Install the stiffener (A), the steering gearbox mounting bolt (B), and the stiffener mounting bolt (C), and tighten the bolts loosely.

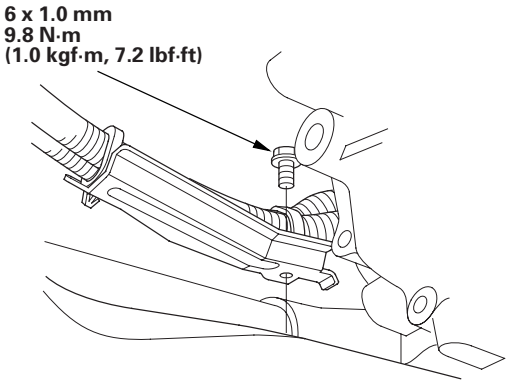


29. Install the steering gearbox bracket mounting bolts (A).

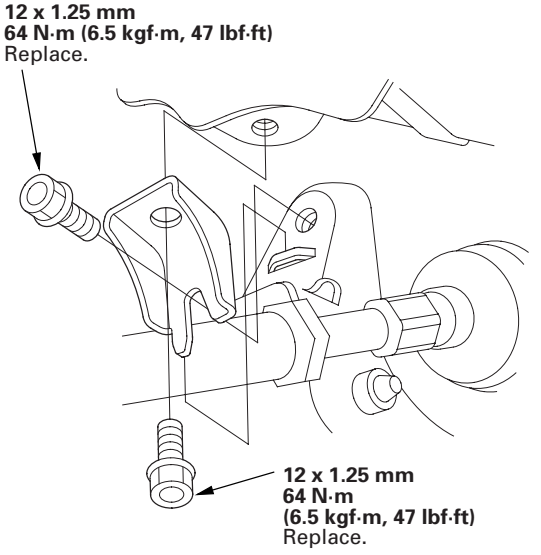


30. Tighten the steering gearbox mounting bolts and the stiffener mounting bolts to the specified torque.

31. Install the bolt securing the harness clamp bracket.



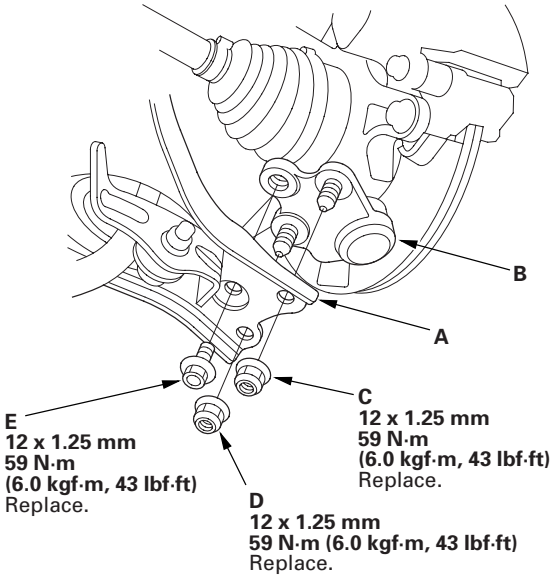
32. Install both front subframe body mount brackets with new bolts.



(cont'd)

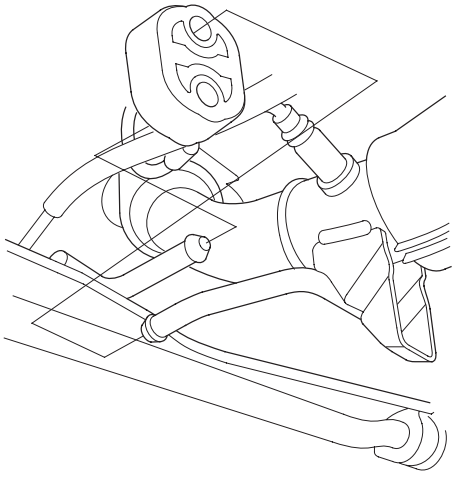
Transmission Installation (cont'd)

33. Install both of the lower arms (A) to the ball joints (B), and loosely install new mounting nuts and bolts.

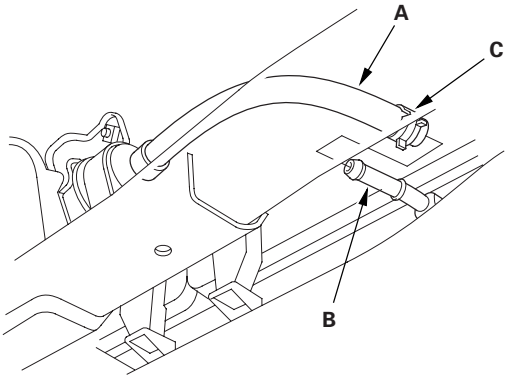


34. Tighten the nuts and bolts to 59 N·m (6.0 kgf·m, 43 lbf·ft) in the following order; (C), then (D), then (E).

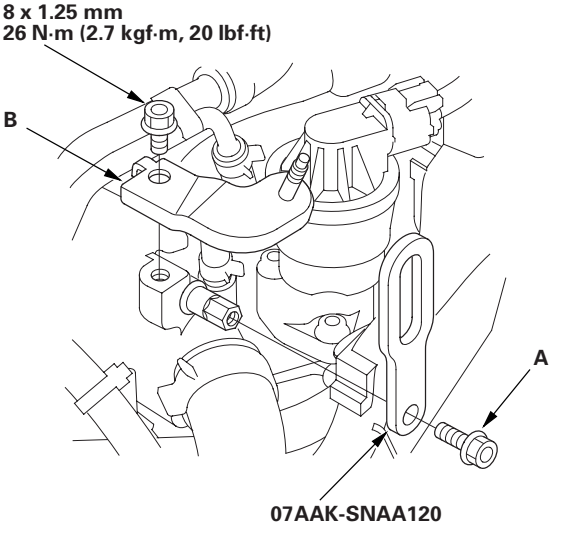
35. Install the exhaust pipe rubber mount.



36. Connect the ATF cooler hose (A) to the ATF cooler (B), and secure the hose with the clip (C) (see page 14-253).

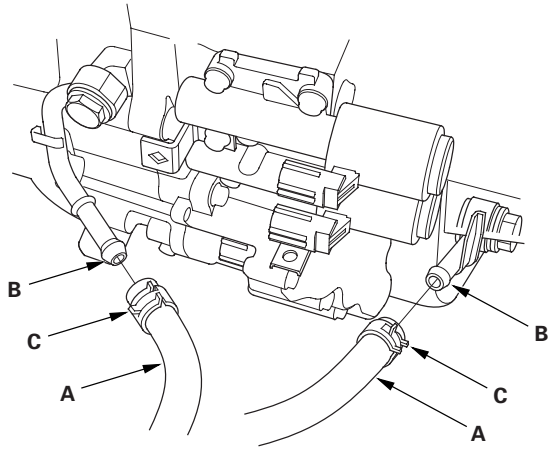


37. Remove the engine hanger plate (07AAK-SNAA120) and the bolt (A), and install the air cleaner housing mounting bracket (B) on the engine.

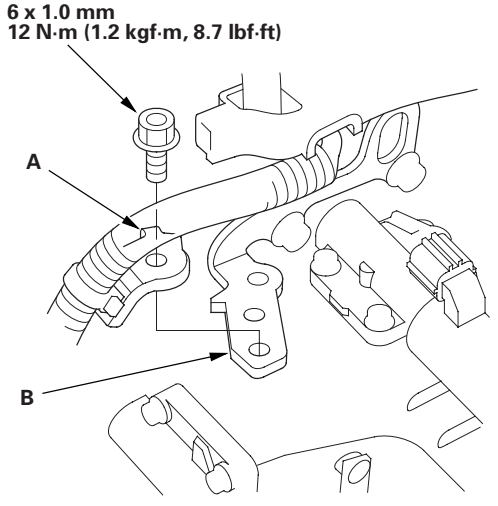


38. Remove the engine hanger.

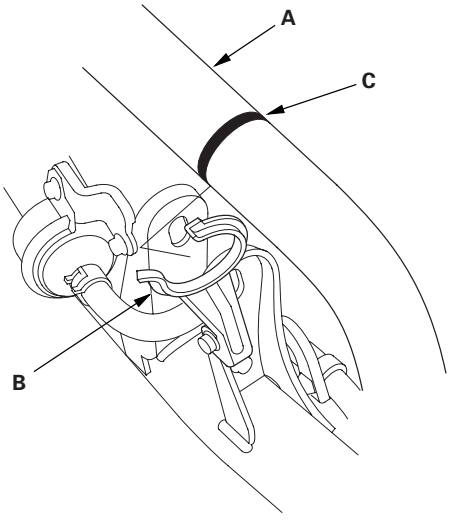
39. Connect the ATF cooler hoses (A) to the ATF cooler lines (B), and secure the hoses with the clips (C) (see page 14-253).



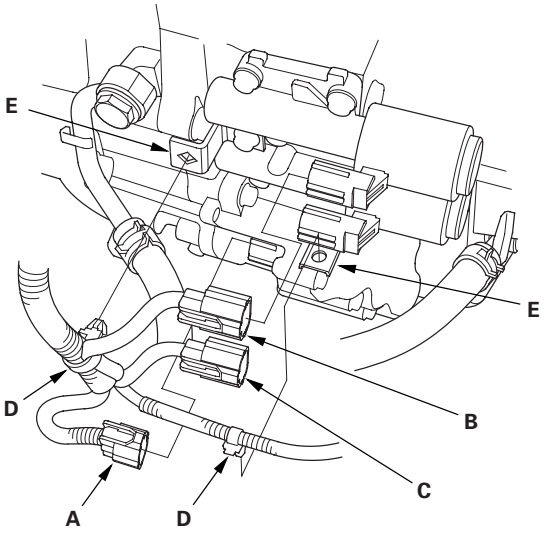
40. Secure the harness clamp bracket (A) on the transmission hanger (B) with the bolt.



41. Install the water hose (A) to its clamp (B) at the mark (C).



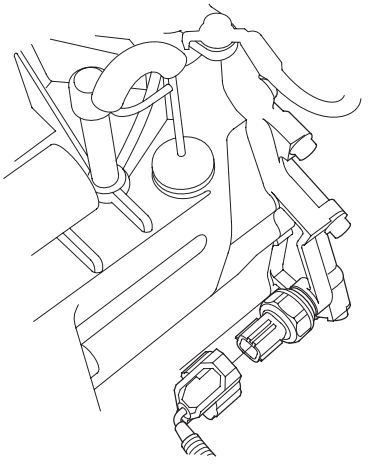
42. Connect the shift solenoid wire harness connector (A), the A/T clutch pressure control solenoid valve B connector (B), and the A/T clutch pressure control solenoid valve C connector (C), and install the harness clamps (D) on the clamp brackets (E).



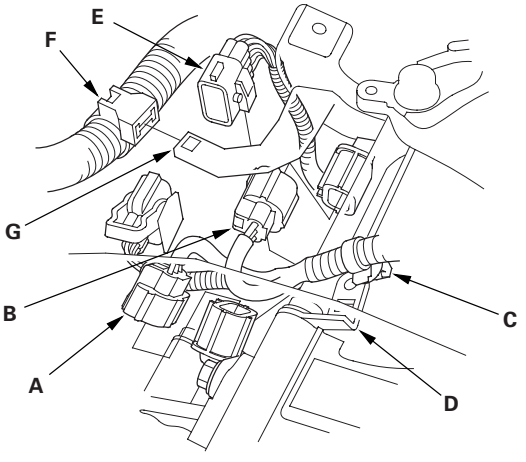
(cont'd)

Transmission Installation (cont'd)

43. Connect the 3rd clutch transmission fluid pressure switch connector.

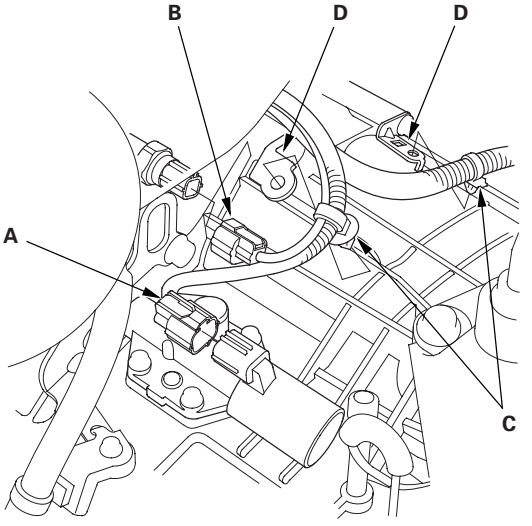


44. Connect the output shaft (countershaft) speed sensor connector (A) and the input shaft (mainshaft) speed sensor connector (B), and install the harness clamp (C) on its clamp bracket (D).

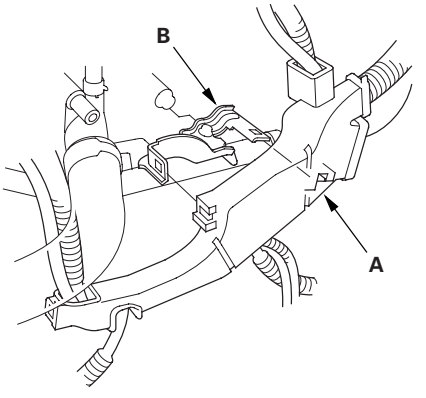


45. Install the transmission range switch connector (E) on the connector bracket, and connect the connector. Install the harness clamp (F) to the clamp bracket (G).

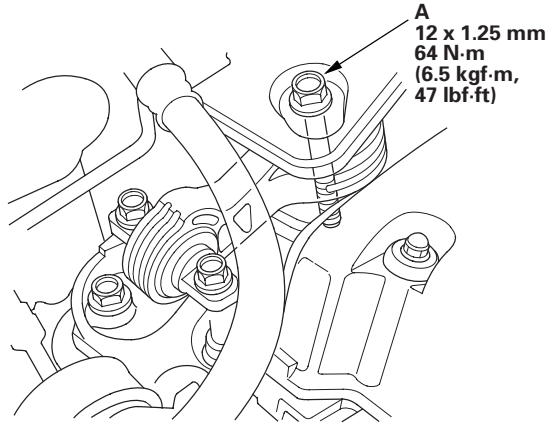
46. Connect the A/T clutch pressure control solenoid valve A connector (A) and the 2nd clutch transmission fluid pressure switch connector (B), and install the harness clamps (C) on the clamp brackets (D).



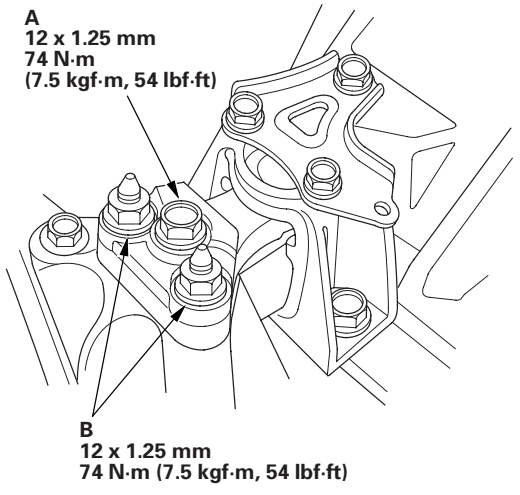
47. Install the harness cover (A) on its bracket (B).



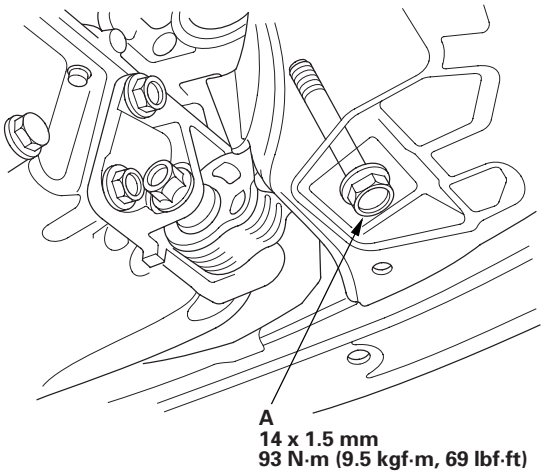
48. Loosen the upper torque rod mounting bolt (A).



49. Loosen the transmission bolt (A) and the nuts (B).



50. Loosen the lower torque rod mounting bolt (A).



51. Tighten the lower torque rod mounting bolt.

52. Tighten the transmission mounting bolt and the nuts.

53. Tighten the upper torque rod mounting bolt.

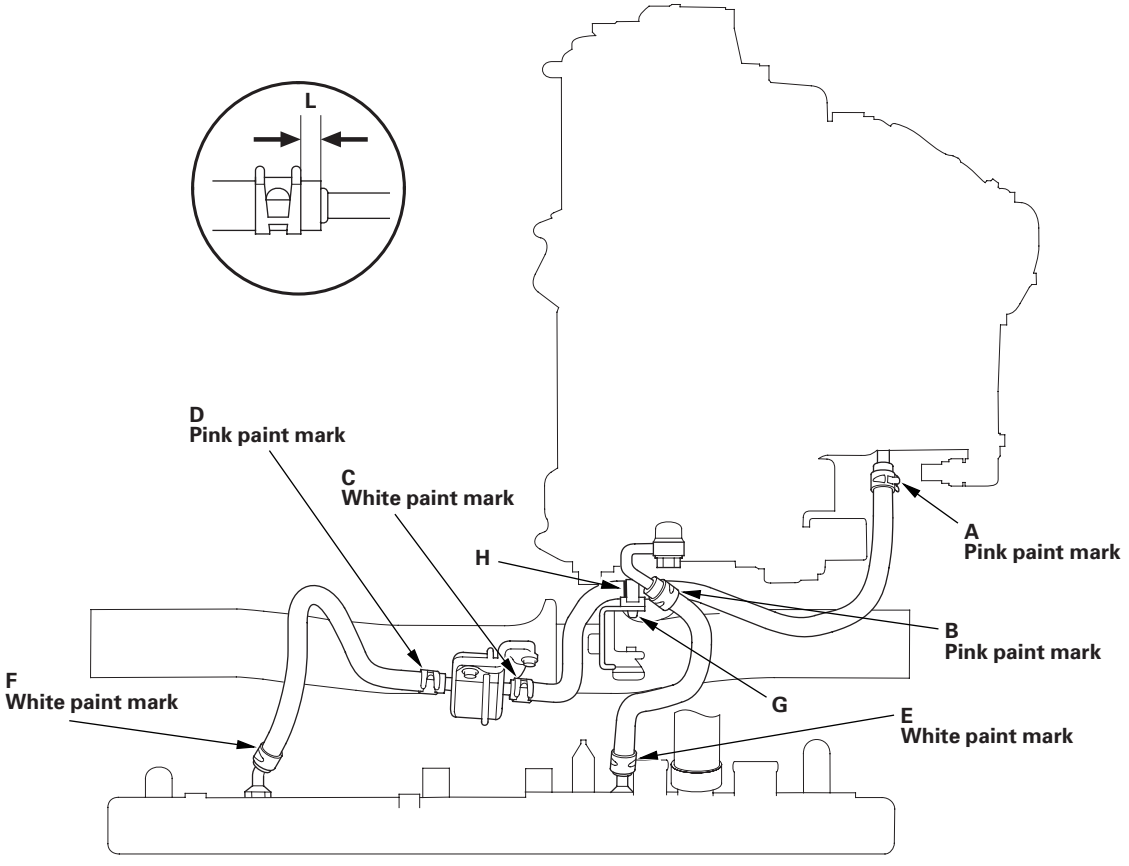
(cont'd)

Transmission Installation (cont'd)

54. Refill the transmission with ATF (see step 5 on page 14-232).
55. Install the battery tray, the battery base, and the resonator.
56. Install the air cleaner assembly (see page 11-345) and the intake air duct (see page 11-348).
57. Install the front grille cover (see page 20-163).
58. Install the under-cowl lower panel and the cowl cover (see page 20-163).
59. Do the battery installation procedure (see page 22-69).
60. Install the front wheels.
61. Set the parking brake. Start the engine, and shift the transmission through all positions three times.
62. Check the shift lever operation, the A/T gear position indicator operation, and the shift cable adjustment.
63. Check and adjust the front wheel alignment (see page 18-5).
64. Install the splash shield.
65. Start the engine with the shift lever in P or N, and warm it up to normal operating temperature (the radiator fan comes on). Turn off the engine, and check the ATF level (see page 14-231).
66. Road-test the vehicle (see page 14-208).

ATF Cooler Hose Replacement

Exploded View



NOTE: When installing the hose clamps, make sure not to interfere to the surrounding parts.

1. Install the ATF cooler hoses over the ATF cooler lines with the clips at appropriate points in reference to the following list.

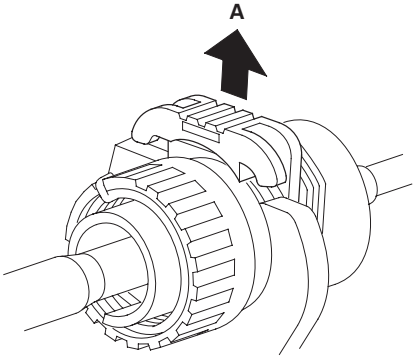
Point	Distance from Hose End to Clip (L)	Hose End Contact Point
A	6—8 mm (0.24—0.31 in.)	Bulge
B		
C	5—7 mm (0.20—0.28 in.)	ATF filter from 10—12 mm (0.40—0.47 in.)
D		
E	2—4 mm (0.08—0.16 in.)	White paint line
F	2—4 mm (0.08—0.16 in.)	Bulge

2. Secure the ATF cooler hose with the clamp (G) at the white paint line (H).

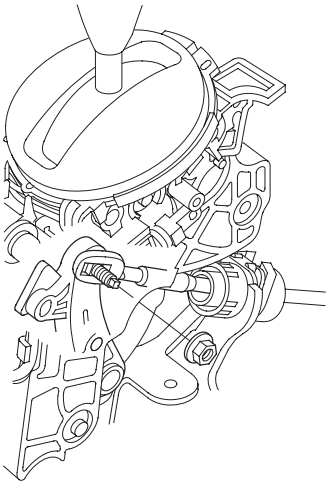
3. Refill the transmission with ATF to the proper level (see page 14-232).

Shift Lever Removal

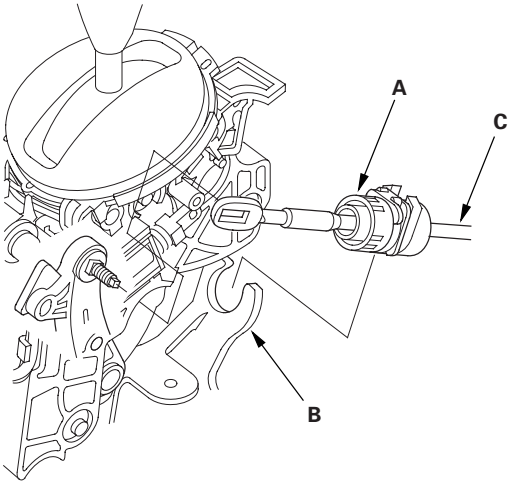
1. Remove the center console (see page 20-92).
2. Move the shift lever to R.
3. Pry the socket holder lock (A) up using a screwdriver.



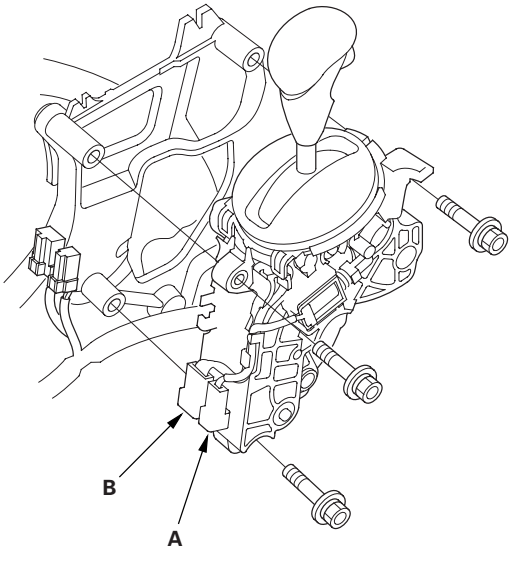
4. Remove the nut securing the shift cable end.



5. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the socket holder bracket.



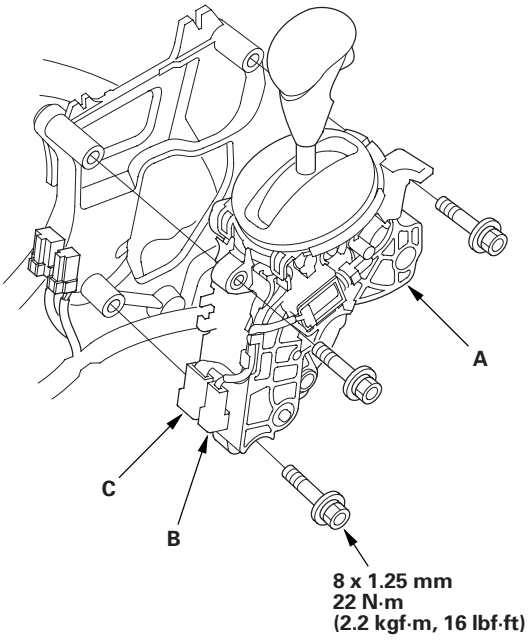
6. Disconnect the shift lock solenoid connector (A) and the park pin switch/A/T gear position indicator panel light connector (B).



7. Remove the shift lever assembly.

Shift Lever Installation

1. Install the shift lever assembly (A).

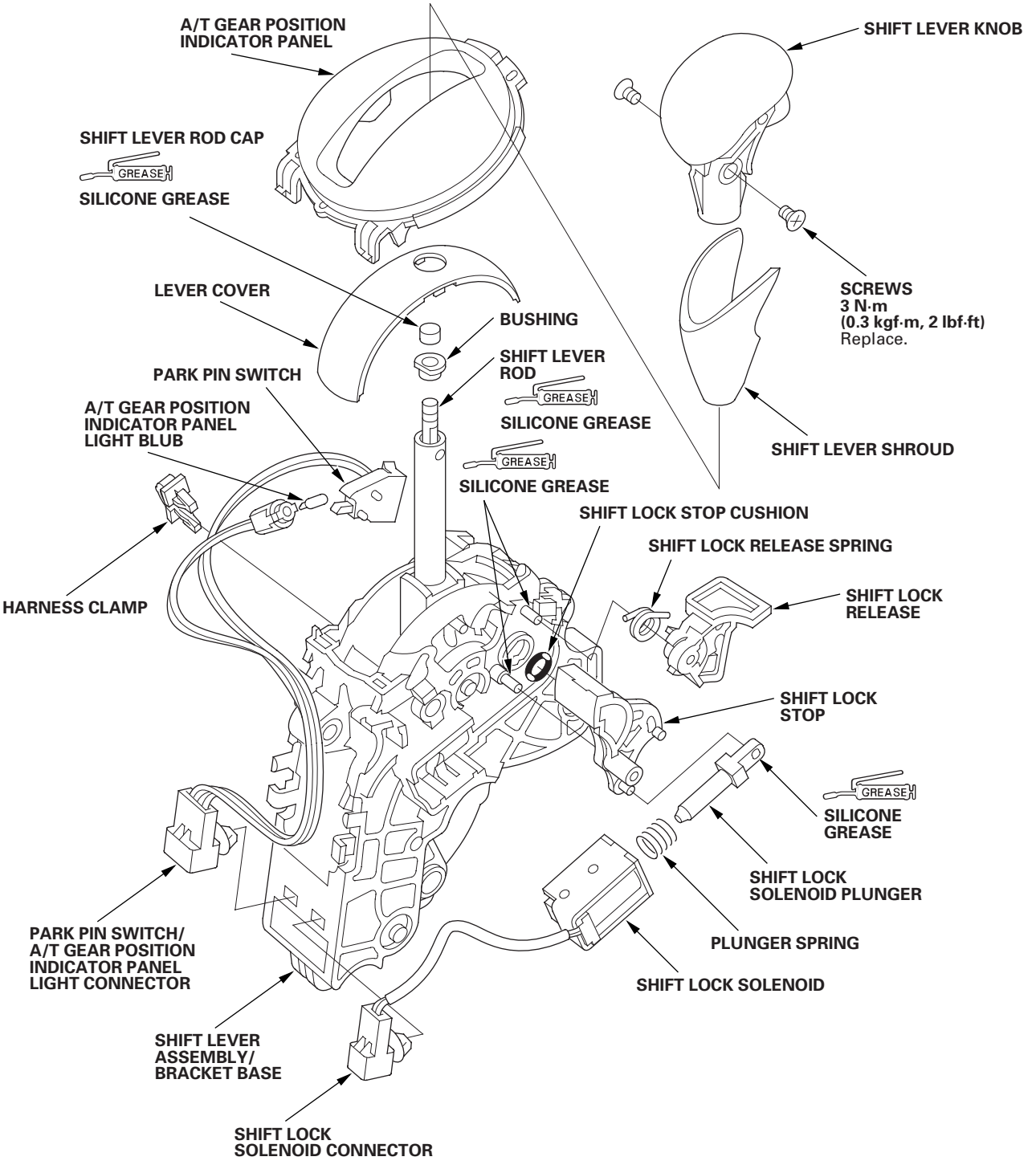


2. Connect the shift lock solenoid connector (B) and the park pin switch/A/T gear position indicator panel light connector (C).

3. Install the shift cable on the shift lever, and adjust the cable (see step 5 on page 14-259).

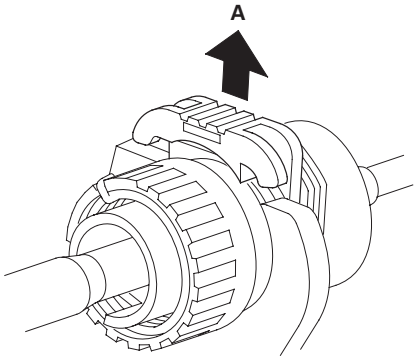
Shift Lever Disassembly/Reassembly

NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

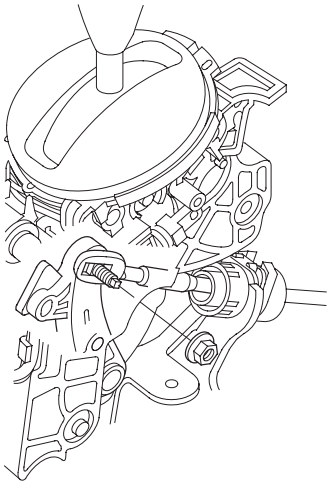


Shift Cable Replacement

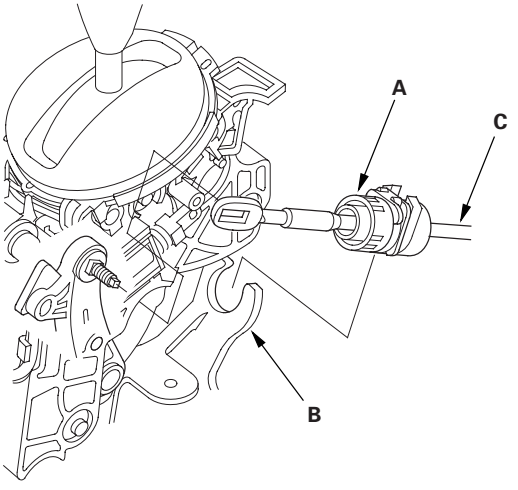
1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Move the shift lever to R.
3. Remove the center console (see page 20-92).
4. Pry the socket holder lock (A) up using a screwdriver.



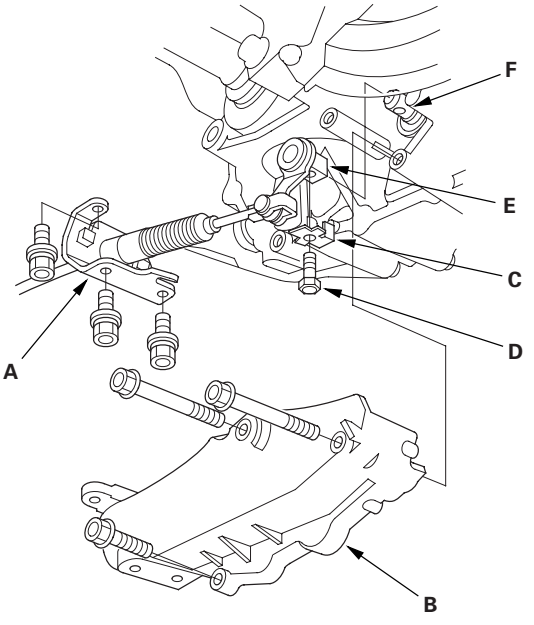
5. Remove the nut securing the shift cable end.



6. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the socket holder bracket.



7. Remove the three bolts securing the shift cable holder (A), then remove the shift cable cover (B).

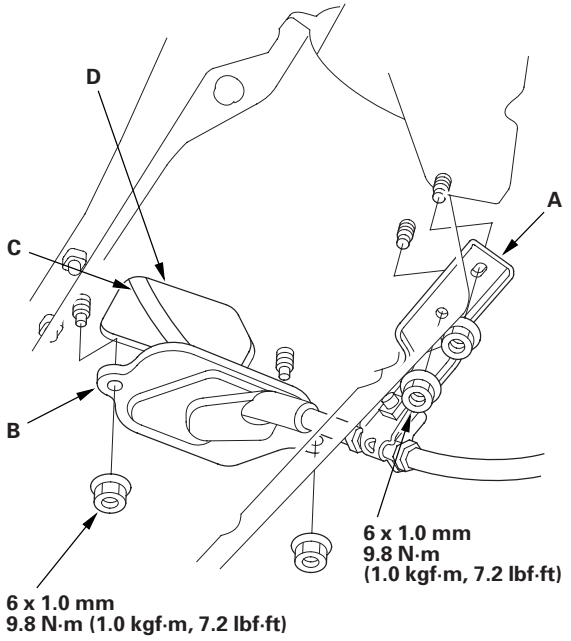


8. Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the control lever (E) from the selector control shaft (F). Do not bend the shift cable excessively.

(cont'd)

Shift Cable Replacement (cont'd)

9. Remove the nuts securing the shift cable bracket (A) and the grommet (B).



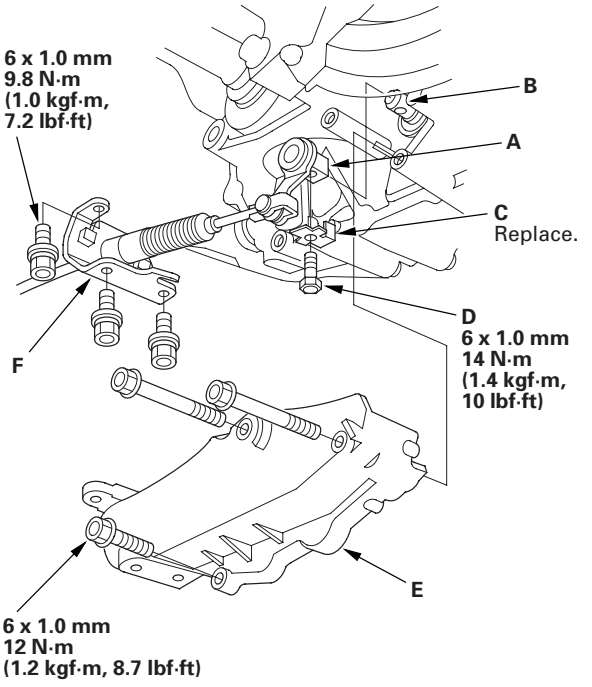
10. Remove the shift cable grommet, and pull out the shift cable (C).

11. Insert a new shift cable through the grommet hole (D), and install the grommet in its hole. Do not bend the shift cable excessively.

12. Secure the shift cable bracket and the grommet with the nuts.

13. Make sure that the transmission is in the R position at the selector control shaft.

14. Install the control lever (A) over the selector control shaft (B).



15. Secure the control lever with a new lock washer (C) and the lock bolt (D), then bend the lock tab of the lock washer against the bolt head.

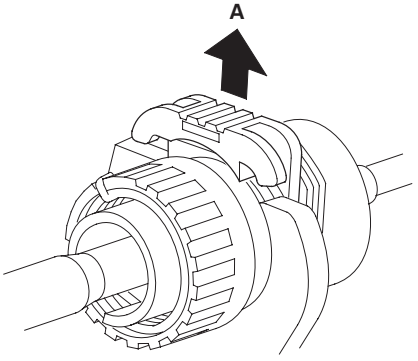
16. Install the shift cable cover (E), and install the shift cable holder (F) on the cover.

17. Install the shift cable on the shift lever, and adjust the cable (see step 5 on page 14-259).

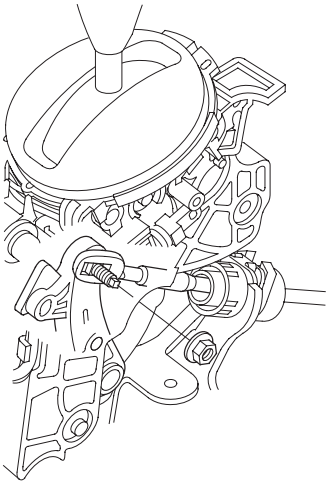
Shift Cable Adjustment

1. Remove the center console (see page 20-92).

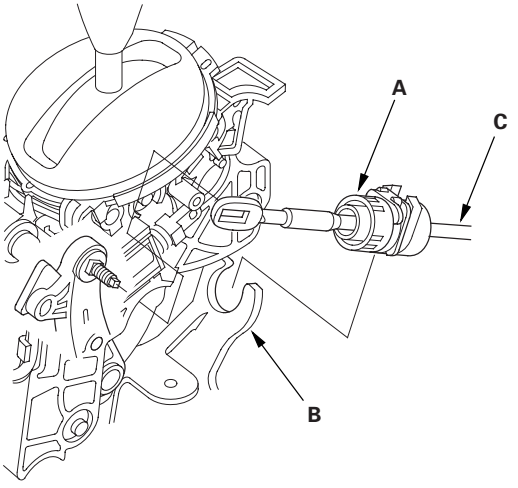
2. Pry the socket holder lock (A) up using a screwdriver.



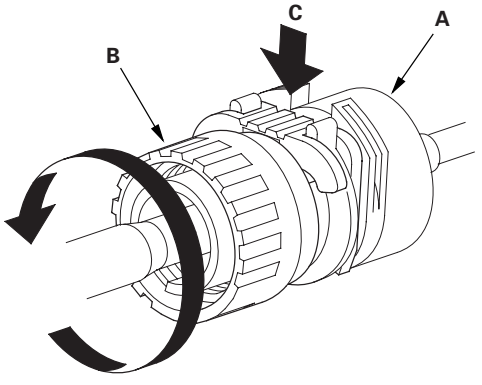
3. Remove the nut securing the shift cable end.



4. Rotate the socket holder retainer (A) counterclockwise, push it against the socket holder bracket (B), then slide the socket holder to remove the shift cable (C) from the socket holder bracket.



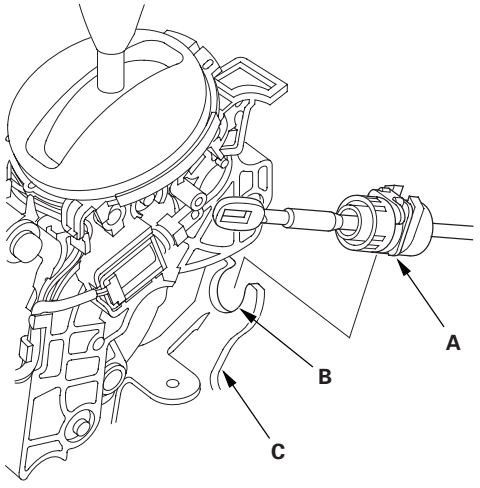
5. While holding the socket holder (A), rotate the socket holder retainer (B) fully counterclockwise, and press in the socket holder lock (C) between the socket holder and the socket holder retainer enough.



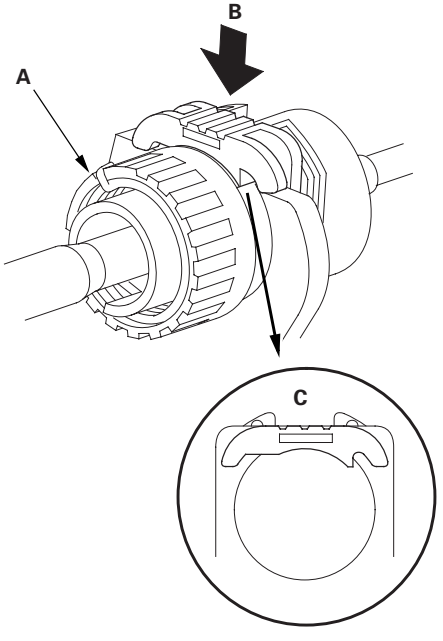
(cont'd)

Shift Cable Adjustment (cont'd)

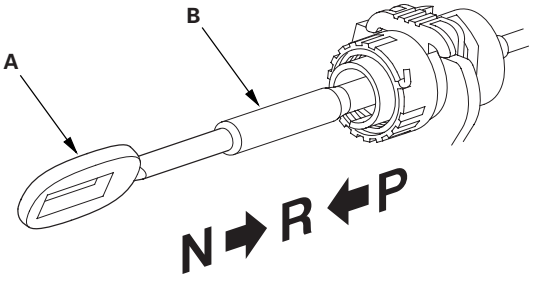
6. Align the socket holder (A) with the slot (B) in the socket holder bracket (C), then slide the socket holder into the socket holder bracket.



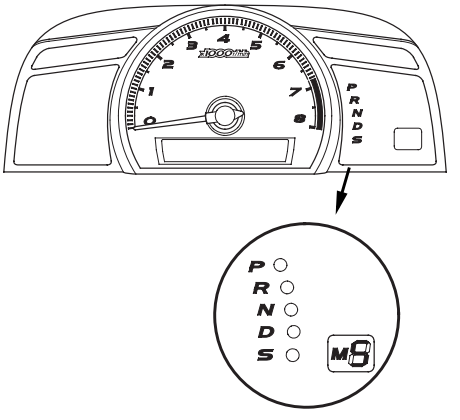
7. Rotate the socket holder retainer (A) clockwise, and push the socket holder lock (B). Rotate the holder retainer counterclockwise until the retainer stops at the stop (C) of the socket holder lock to secure the shift cable.



8. Push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) to adjust the shift cable.

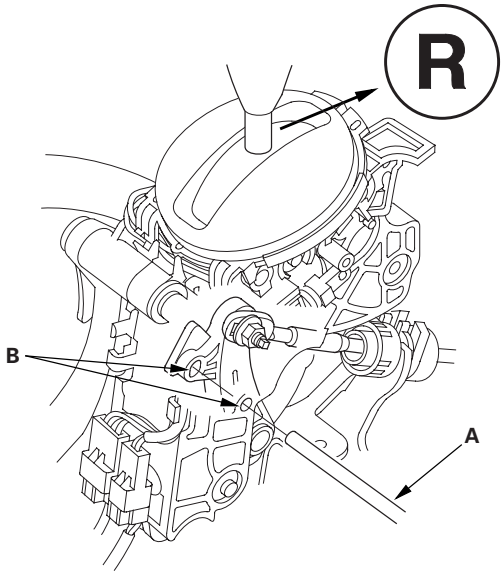


9. Turn the ignition switch to ON (II), and check that the R position indicator comes on.



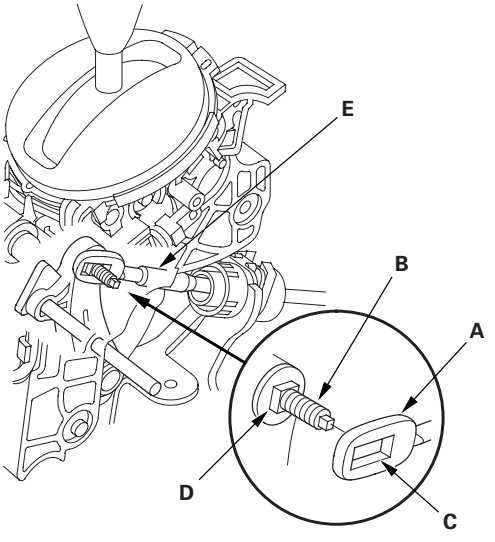
10. Turn the ignition switch to LOCK (0).

11. Place the shift lever in R, then insert a 6.0 mm (0.24 in.) pin (A) into the positioning holes (B) on the shift lever bracket, through the positioning hole on the shift lever, and into the positioning hole on the bracket. Use only a 6.0 mm pin that is free of burrs.



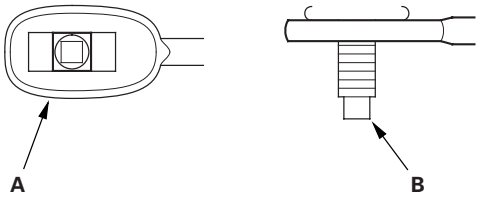
12. Check that the shift lever is secured in R.

13. Install the shift cable end (A) over the mounting stud (B) by aligning its square hole (C) with the square fitting (D) at the bottom of the stud. Do not install the shift cable by holding the shift cable guide (E).

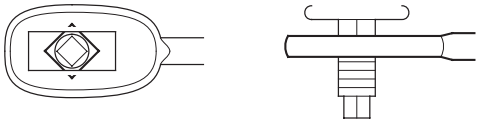


14. Check that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



Improperly Installed:



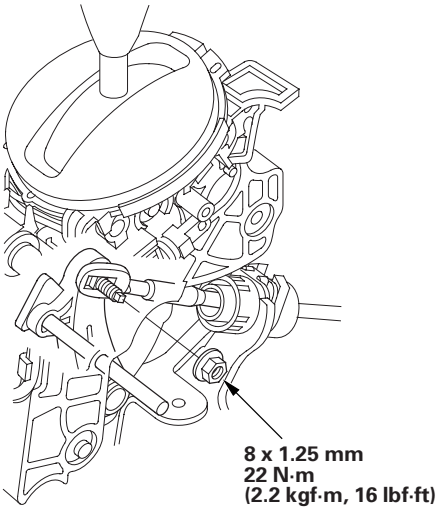
Cable end rides on the bottom of the mounting stud.

15. If improperly installed, align the square fitting with the square hole by rotating the mounting stud.

(cont'd)

Shift Cable Adjustment (cont'd)

16. Install and tighten the nut.



17. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.

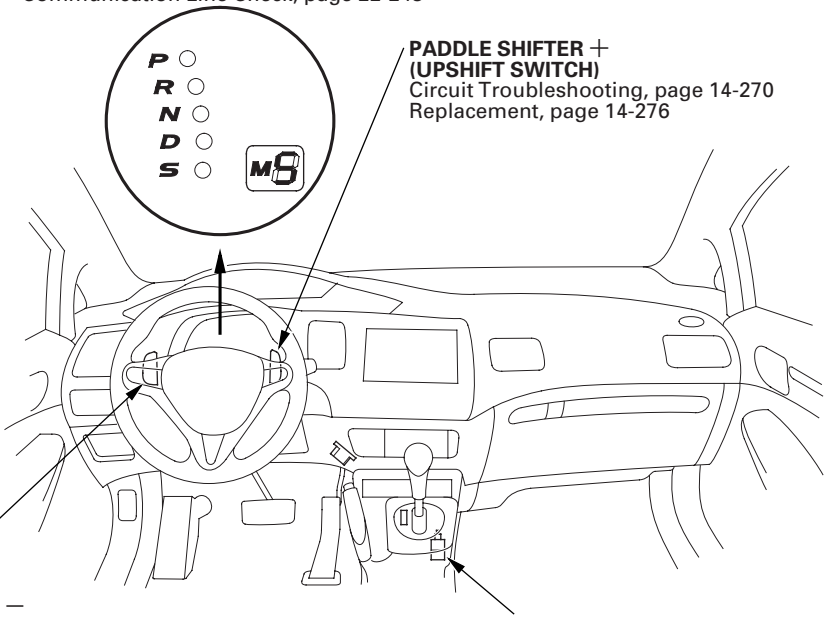
18. Turn the ignition switch to ON (II). Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.

19. Shift to P, and check that the shift lock works properly. Push the shift lock release, and check that the shift lever releases.

20. Install the center console (see page 20-92).

Component Location Index

A/T GEAR POSITION INDICATOR
SHIFT INDICATOR, M INDICATOR
F-CAN Communication Circuit
Troubleshooting, page 22-265
Gauge Control Module Self-diagnostic Function
Indicator Drive Circuit Check, page 22-242
Communication Line Check, page 22-243



PADDLE SHIFTER +
(UPSHIFT SWITCH)
Circuit Troubleshooting, page 14-270
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PADDLE SHIFTER −
(DOWNSHIFT SWITCH)
Circuit Troubleshooting, page 14-273
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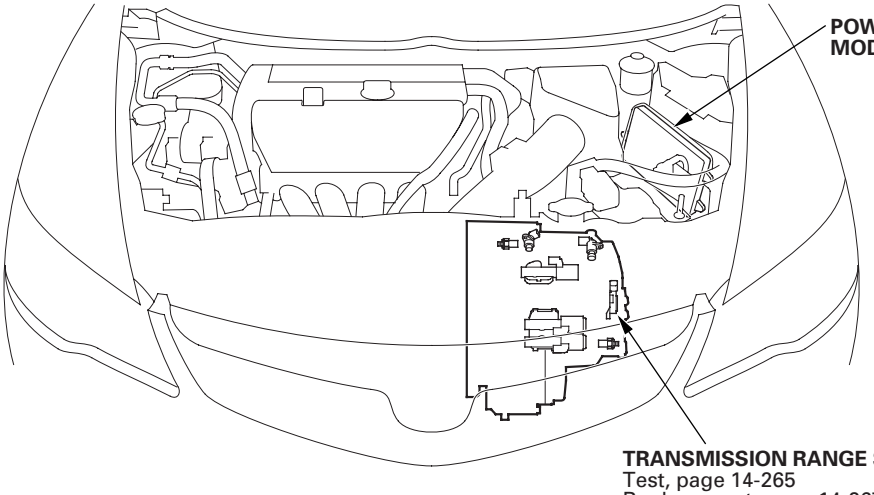
A/T GEAR POSITION INDICATOR
PANEL LIGHT HARNESS
Replacement, page 14-269



POWERTRAIN CONTROL
MODULE (PCM)

TRANSMISSION RANGE SWITCH
Test, page 14-265
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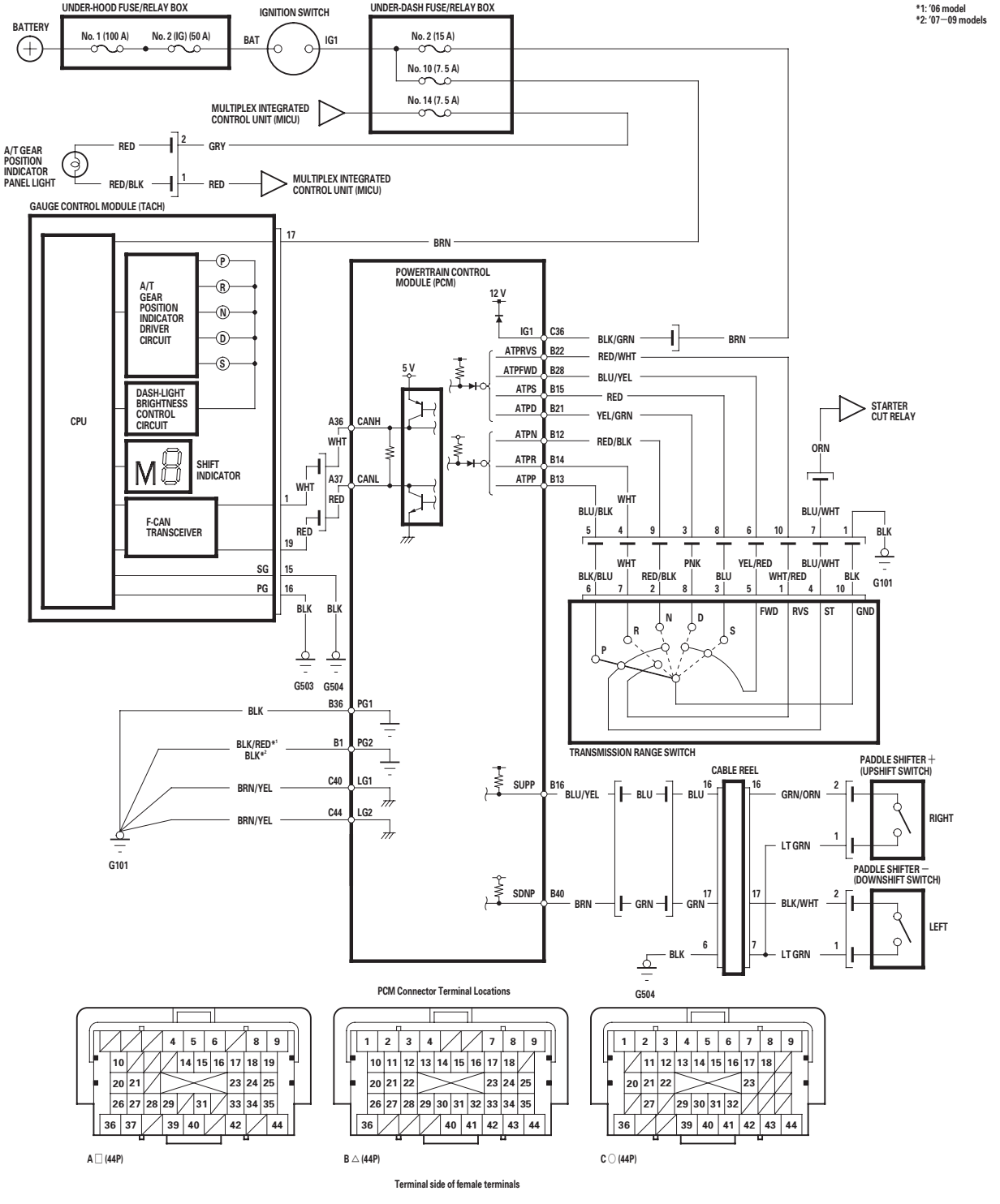
A/T Gear Position Indicator

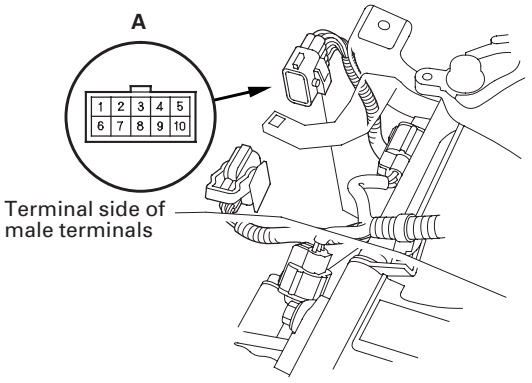
Circuit Diagram



Transmission Range Switch Test

1. Remove the intake air duct (see page 11-348) and the air cleaner assembly (see page 11-345).

2. Disconnect the transmission range switch subharness connector (A).



3. Check for continuity between the terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.

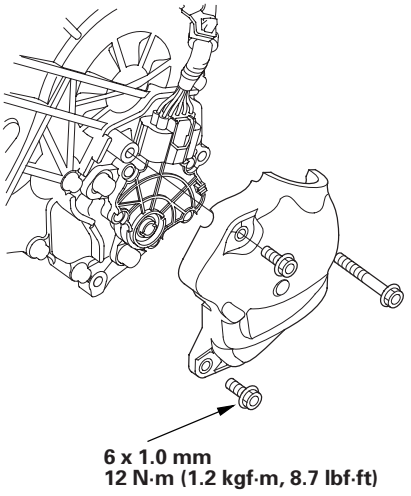
Transmission Range Switch Subharness Connector

Position	Connector Terminal/Signal									
	1	2	3	4	5	6	7	8	9	10
	GND	—	ATP D	ATP R	ATP P	ATP FWD	ATP NP	ATP S	ATP N	ATP RVS
P	○				○		○			
R	○			○						○
N	○						○		○	
D	○		○			○				
S	○					○		○		

4. Transmission range switch test has completed if the test results are OK, go to step 12. If there is no continuity between any terminals, go to step 5.

5. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

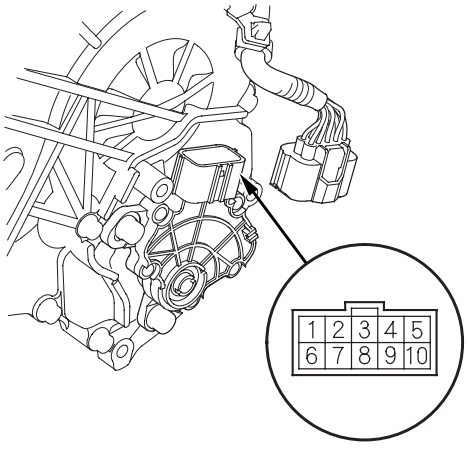
6. Remove the transmission range switch cover.



(cont'd)

Transmission Range Switch Test (cont'd)

7. Disconnect the transmission range switch connector.



8. Check for continuity between the terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

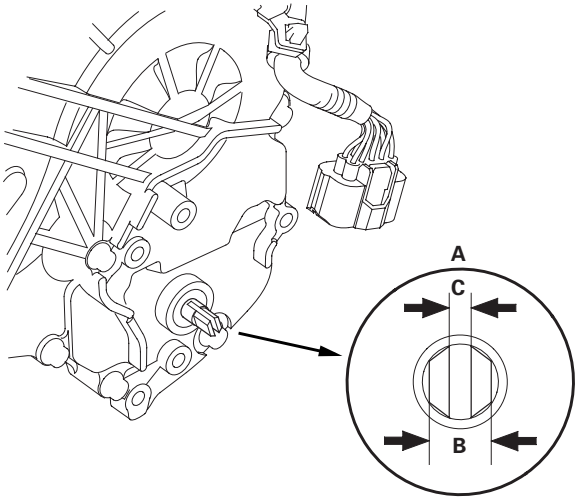
Transmission Range Switch Connector

Position	Connector Terminal/Signal									
	1	2	3	4	5	6	7	8	9	10
	ATP RVS	ATP N	ATP S	ATP NP	ATP FWD	ATP P	ATP R	ATP D	—	GND
P				○		○				○
R	○						○			○
N		○		○						○
D					○			○		○
S			○		○					○

9. If the transmission range switch test is OK, replace the faulty transmission range switch harness, then go to step 12. If there is no continuity between any terminals, go to step 10.

10. Remove the transmission range switch, and check the end of the selector control shaft (A).

Selector Control Shaft:
Width (B): 6.1—6.2 mm (0.240—0.244 in.)
End Gap (C): 1.8—2.0 mm (0.07—0.08 in.)



11. If the measurement at the end of the selector control shaft is within the standard, replace the transmission range switch. If the measurement is out of the standard, repair the selector control shaft end, and recheck the transmission range switch continuity.

12. Check the connector for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

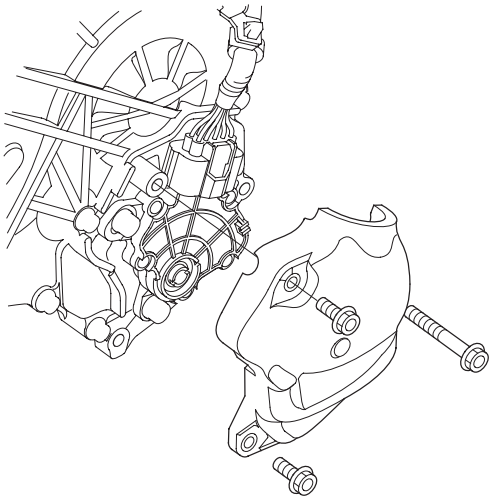
13. Install the removed parts in the reverse order of removal.

Transmission Range Switch Replacement

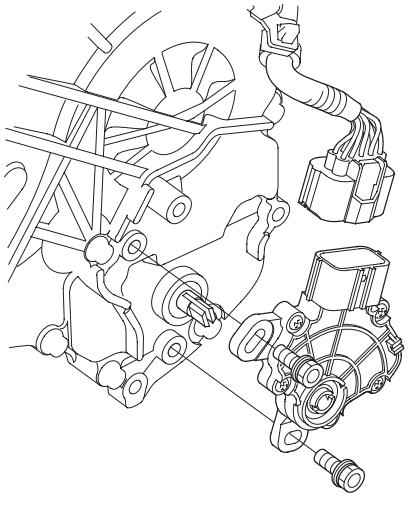
1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

2. Move the shift lever to N.

3. Remove the transmission range switch cover.

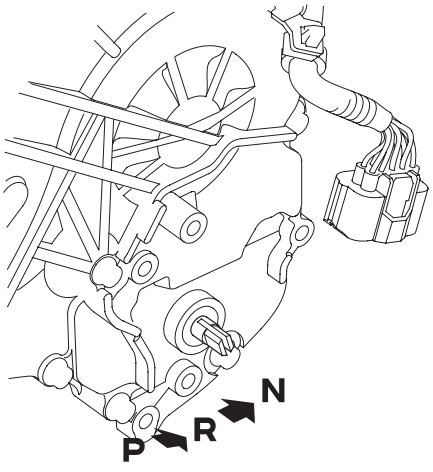


4. Remove the transmission range switch.



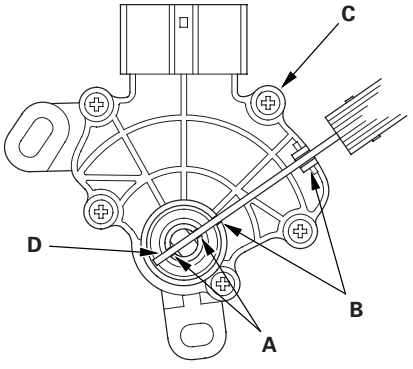
5. Make sure the control shaft is in the N position. If necessary, move the shift lever to N from P.

   NOTE: Do not use the selector control shaft to adjust the shift position. If the control shaft tips are squeezed together it will cause a faulty signal or position due to play between the selector control shaft and the transmission range switch.



6. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold the switch in the N position.

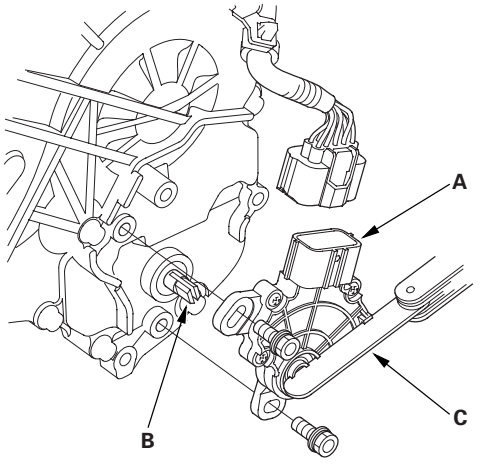
   NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the switch in the N position.



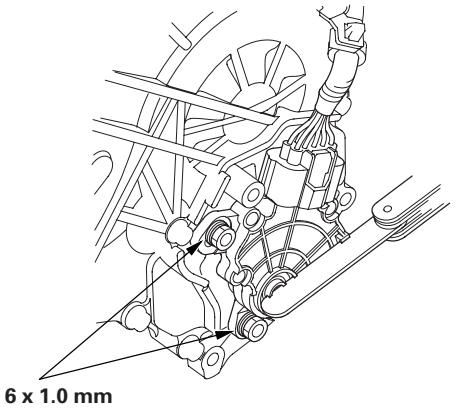
(cont'd)

Transmission Range Switch Replacement (cont'd)

7. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position with the 2.0 mm (0.08 in.) blade (C).



8. Tighten the bolts on the transmission range switch while you continue to holding the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

9. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.

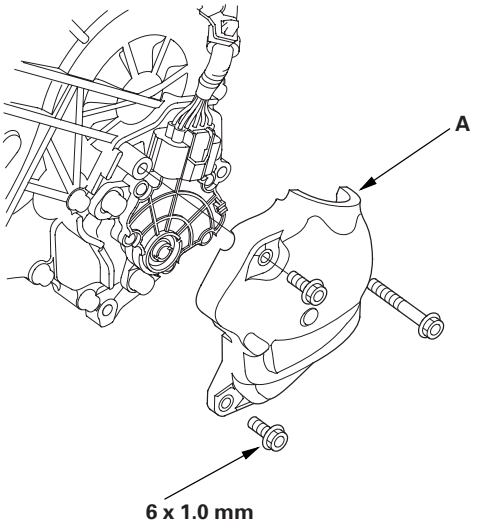
10. Turn the ignition switch to ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.

11. Check that the engine will start with the shift lever in P and N, and will not start in any other shift lever position.

12. Check that the back-up lights come on when the shift lever is in R.

13. Allow the front wheels to rotate freely, then start the engine, and check the shift lever operation.

14. Install the transmission range switch cover (A).

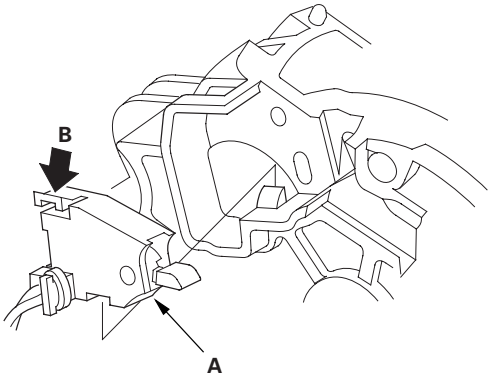


6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

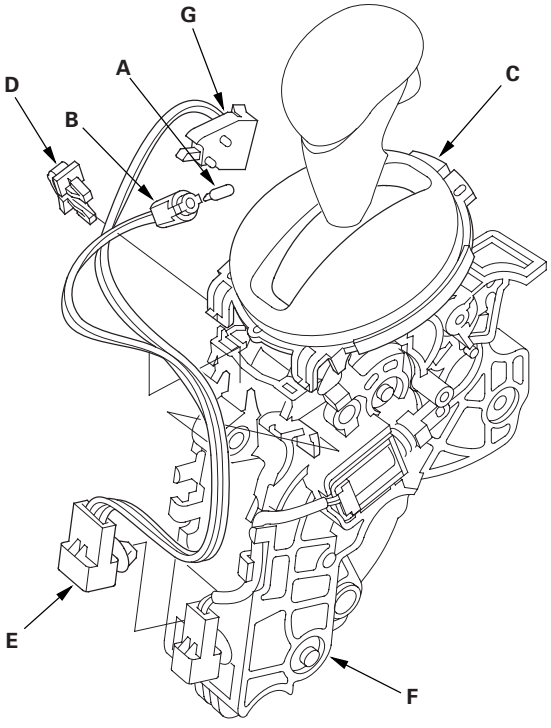
A/T Gear Position Indicator Panel Light Harness/Park Pin Switch Replacement

NOTE: The A/T gear position indicator light and the park pin switch are not available separately. Replace the A/T gear position indicator light and the park pin switch as a set.

1. Remove the shift lever assembly (see page 14-254).
2. Loosen the A/T gear position indicator panel (see page 14-256).
3. Remove the park pin switch (A) while pressing the park pin switch lock (B).



4. Remove the A/T gear position indicator panel light bulb (A) and the socket (B) from the indicator panel (C), and remove the light bulb from the socket.

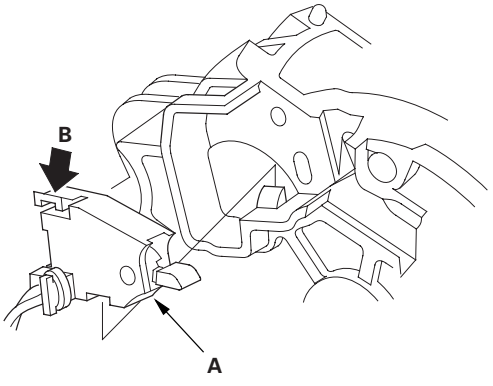


5. Remove the harness clamp (D), and remove the park pin switch/A/T gear position indicator panel light connector (E) from the shift lever assembly/ bracket base (F).
6. Install a new park pin switch (G) on the shift lever.
7. Install the A/T gear position indicator panel light bulb in a new socket, and install it in the indicator panel.
8. Clamp the harnesses together with the harness clamp, then install the harness clamp on the shift lever bracket base.
9. Route the harnesses along the harness guides, and install a new connector in the bracket base.
10. Install the A/T gear position indicator panel (see page 14-256).
11. Install the shift lever assembly (see page 14-255).
12. Install the center console (see page 20-92).

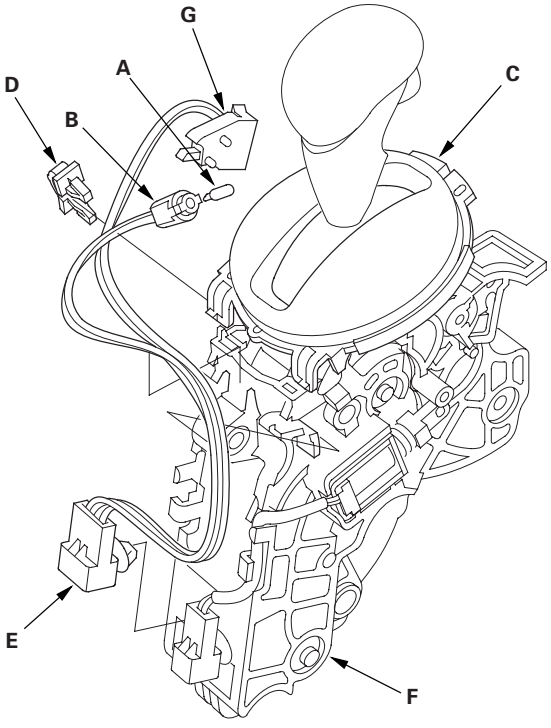
A/T Gear Position Indicator Panel Light Harness/Park Pin Switch Replacement

NOTE: The A/T gear position indicator light and the park pin switch are not available separately. Replace the A/T gear position indicator light and the park pin switch as a set.

1. Remove the shift lever assembly (see page 14-254).
2. Loosen the A/T gear position indicator panel (see page 14-256).
3. Remove the park pin switch (A) while pressing the park pin switch lock (B).



4. Remove the A/T gear position indicator panel light bulb (A) and the socket (B) from the indicator panel (C), and remove the light bulb from the socket.



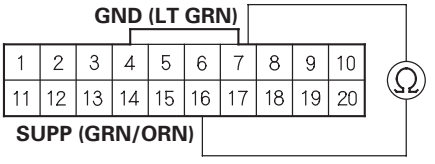
5. Remove the harness clamp (D), and remove the park pin switch/A/T gear position indicator panel light connector (E) from the shift lever assembly/ bracket base (F).
6. Install a new park pin switch (G) on the shift lever.
7. Install the A/T gear position indicator panel light bulb in a new socket, and install it in the indicator panel.
8. Clamp the harnesses together with the harness clamp, then install the harness clamp on the shift lever bracket base.
9. Route the harnesses along the harness guides, and install a new connector in the bracket base.
10. Install the A/T gear position indicator panel (see page 14-256).
11. Install the shift lever assembly (see page 14-255).
12. Install the center console (see page 20-92).

Paddle Shifter + (Upshift Switch) Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

1. Remove the steering wheel (see page 17-6).
2. Check for continuity between cable reel subharness 20P connector terminals No. 7 and No. 16 when pressing the paddle shifter + (upshift switch) and when the switch is released.

CABLE REEL SUBHARNESS 20P CONNECTOR



Wire side of female terminals

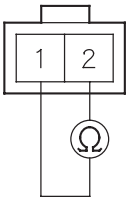
Is there continuity when pressing the paddle shifter + (upshift switch) and no continuity when the switch released?

YES—Go to step 5.

NO—Go to step 3.

3. Disconnect the paddle shifter + (upshift switch) connector.
4. Check for continuity between the paddle shifter + (upshift switch) connector terminals when pressing the switch and when the switch is released.

PADDLE SHIFTER +
(UPSHIFT SWITCH) CONNECTOR



Terminal side of male terminals

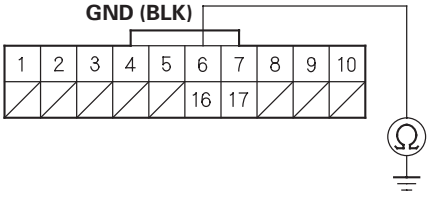
Is there continuity when pressing the switch and no continuity when the switch released?

YES—Replace the steering switch harness (see page 17-7). ■

NO—Replace the paddle shifter + (upshift switch) (see page 14-276). ■

5. Remove the cable reel (see page 24-200).
6. Check for continuity between cable reel 20P connector terminal No. 6 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

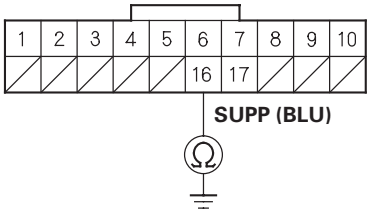
Is there continuity?

YES—Go to step 7.

NO—Repair open in the wire between cable reel 20P connector terminal No. 6 and body ground (G504), or repair poor body ground (G504). ■

7. Check for continuity between cable reel 20P connector terminal No. 16 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there continuity?

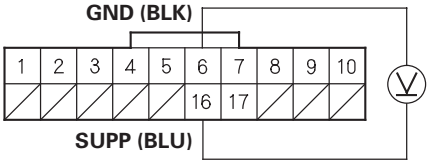
YES—Repair short to body ground in the wire between cable reel 20P connector terminal No. 16 and PCM connector terminal B16. ■

NO—Go to step 8.

8. Turn the ignition switch to ON (II), and shift to S.

9. Measure the voltage between cable reel 20P connector terminals No. 6 and No. 16.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there about battery voltage in neutral position and no voltage when pressing the paddle shifter + (upshift switch)?

YES—Replace the cable reel (see page 24-200). ■

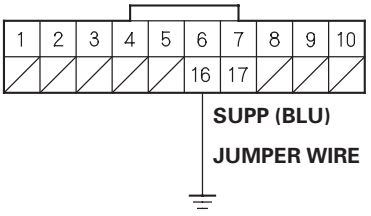
NO—Go to step 10.

(cont'd)

Paddle Shifter + (Upshift Switch) Circuit Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (44P).
13. Connect cable reel 20P connector terminal No. 16 and body ground with a jumper wire.

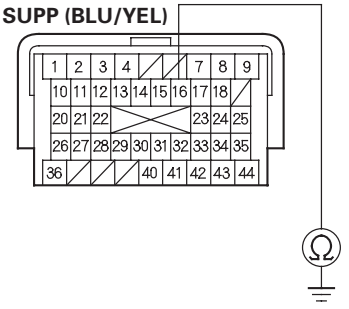
CABLE REEL 20P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminal B16 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Check for poor connections or loose terminals between cable reel 20P connector terminal No. 16 and PCM connector terminal B16. If the connection is OK, update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

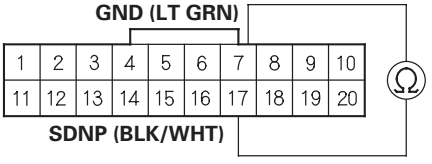
NO—Repair open in the wire between PCM connector terminal B16 and the cable reel 20P connector. ■

Paddle Shifter - (Downshift Switch) Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

1. Remove the steering wheel (see page 17-6).
2. Check for continuity between cable reel subharness 20P connector terminals No. 7 and No. 17 when pressing the paddle shifter — (downshift switch) and when the switch is released.

CABLE REEL SUBHARNESS 20P CONNECTOR



Wire side of female terminals

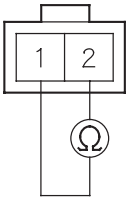
Is there continuity when pressing the paddle shifter — (downshift switch) and no continuity when the switch released?

YES—Go to step 5.

NO—Go to step 3.

3. Disconnect the paddle shifter — (downshift switch) connector.
4. Check for continuity between the paddle shifter — (downshift switch) connector terminals when pressing the switch and when the switch is released.

PADDLE SHIFTER — (DOWNSHIFT SWITCH) CONNECTOR



Terminal side of male terminals

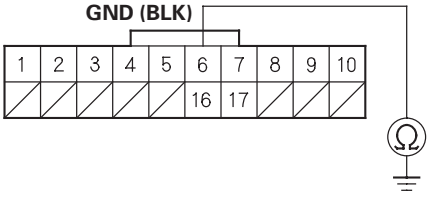
Is there continuity when pressing the switch and no continuity when the switch released?

YES—Replace the steering switch harness (see page 17-7). ■

NO—Replace the paddle shifter — (downshift switch) (see page 14-277). ■

5. Remove the cable reel (see page 24-200).
6. Check for continuity between cable reel 20P connector terminal No. 6 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 7.

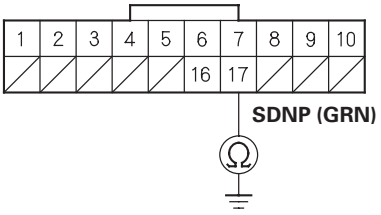
NO—Repair open in the wire between cable reel 20P connector terminal No. 6 and body ground (G504), or repair poor body ground (G504). ■

(cont'd)

Paddle Shifter - (Downshift Switch) Circuit Troubleshooting (cont'd)

7. Check for continuity between cable reel 20P connector terminal No. 17 and body ground.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there continuity?

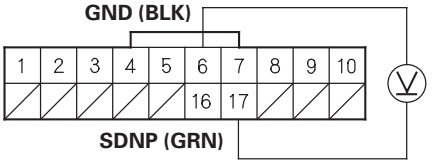
YES—Repair short to body ground in the wire between cable reel 20P connector terminal No. 17 and PCM connector terminal D15. ■

NO—Go to step 8.

8. Turn the ignition switch to ON (II), and shift to S.

9. Measure the voltage between cable reel 20P connector terminals No. 6 and No. 17.

CABLE REEL 20P CONNECTOR



Wire side of female terminals

Is there about 5 V in neutral position and no voltage when pressing the paddle shifter — (downshift switch)?

YES—Replace the cable reel (see page 24-200). ■

NO—Go to step 10.

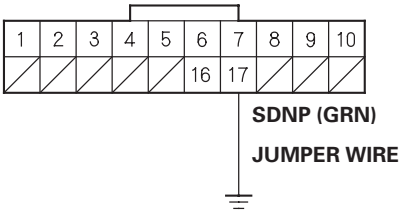
10. Turn the ignition switch to LOCK (0).

11. Jump the SCS line with the HDS.

12. Disconnect PCM connector B (44P).

13. Connect cable reel 20P connector terminal No. 17 and body ground with a jumper wire.

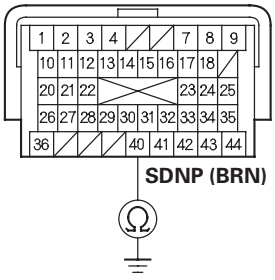
CABLE REEL 20P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminal B40 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

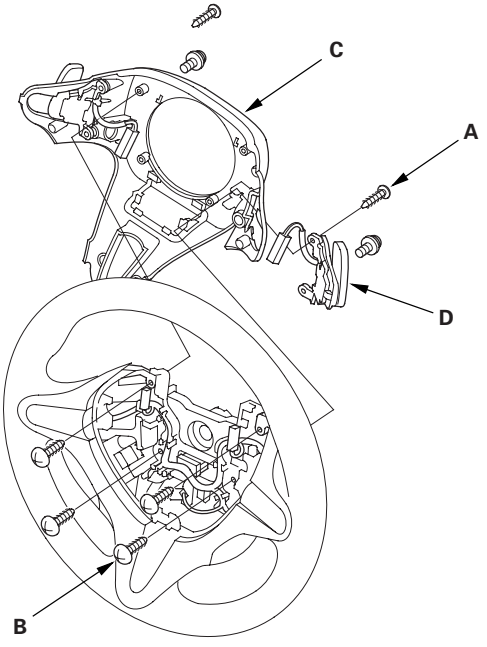
YES—Check for poor connections or loose terminals between cable reel 20P connector terminal No. 17 and PCM connector terminal B40. If the connection is OK, update the PCM if it does not have the latest software (see page 11-227), or subsitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

NO—Repair open in the wire between PCM connector terminal B40 and the cable reel 20P connector. ■

Paddle Shifter + (Upshift Switch) Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

1. Remove the steering wheel (see page 17-6).
2. Remove the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch) connectors from the connector holder, and disconnect the connectors.
3. Remove the screws (A) securing the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch).

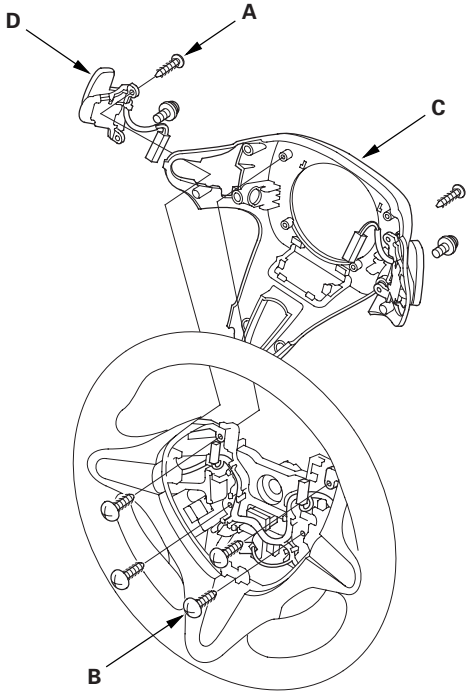


4. Remove the screws (B) securing the steering wheel rear cover (C), then remove the steering wheel rear cover.
5. Remove the paddle shifter + (upshift switch) (D) from the rear cover.
6. Install a new paddle shifter + (upshift switch) in the steering wheel rear cover.
7. Install the steering wheel rear cover, and secure the rear cover with the screws.
8. Secure the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch) with the screws.
9. Connect the paddle shifter + (upshift switch) and the paddle shifter − (downshift switch) connector, and install the connectors in the connector holder.
10. Install the steering wheel (see page 17-8).

Paddle Shifter - (Downshift Switch) Replacement

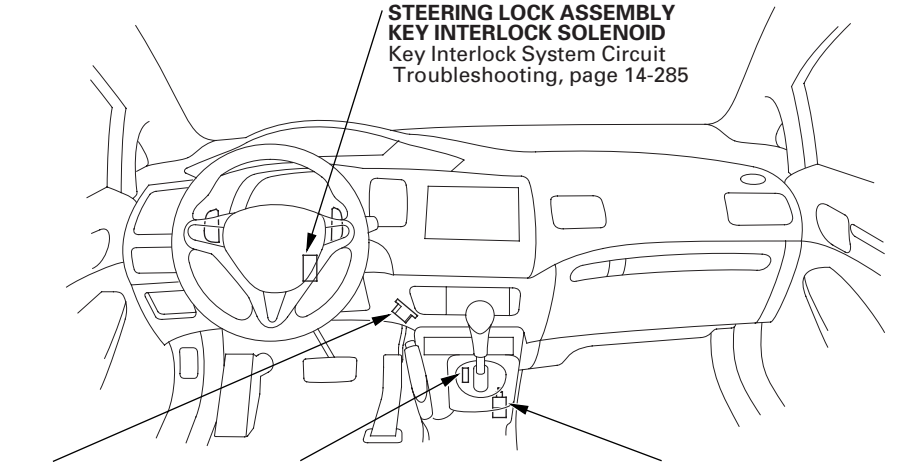
SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

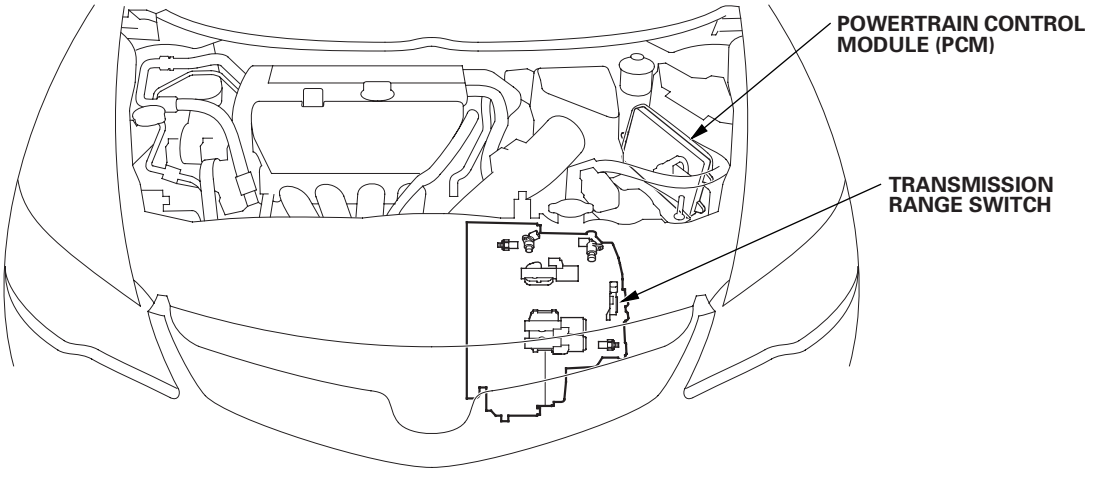
1. Remove the steering wheel (see page 17-6).
2. Remove the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch) connectors from the connector holder, and disconnect the connectors.
3. Remove the screws (A) securing the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch).



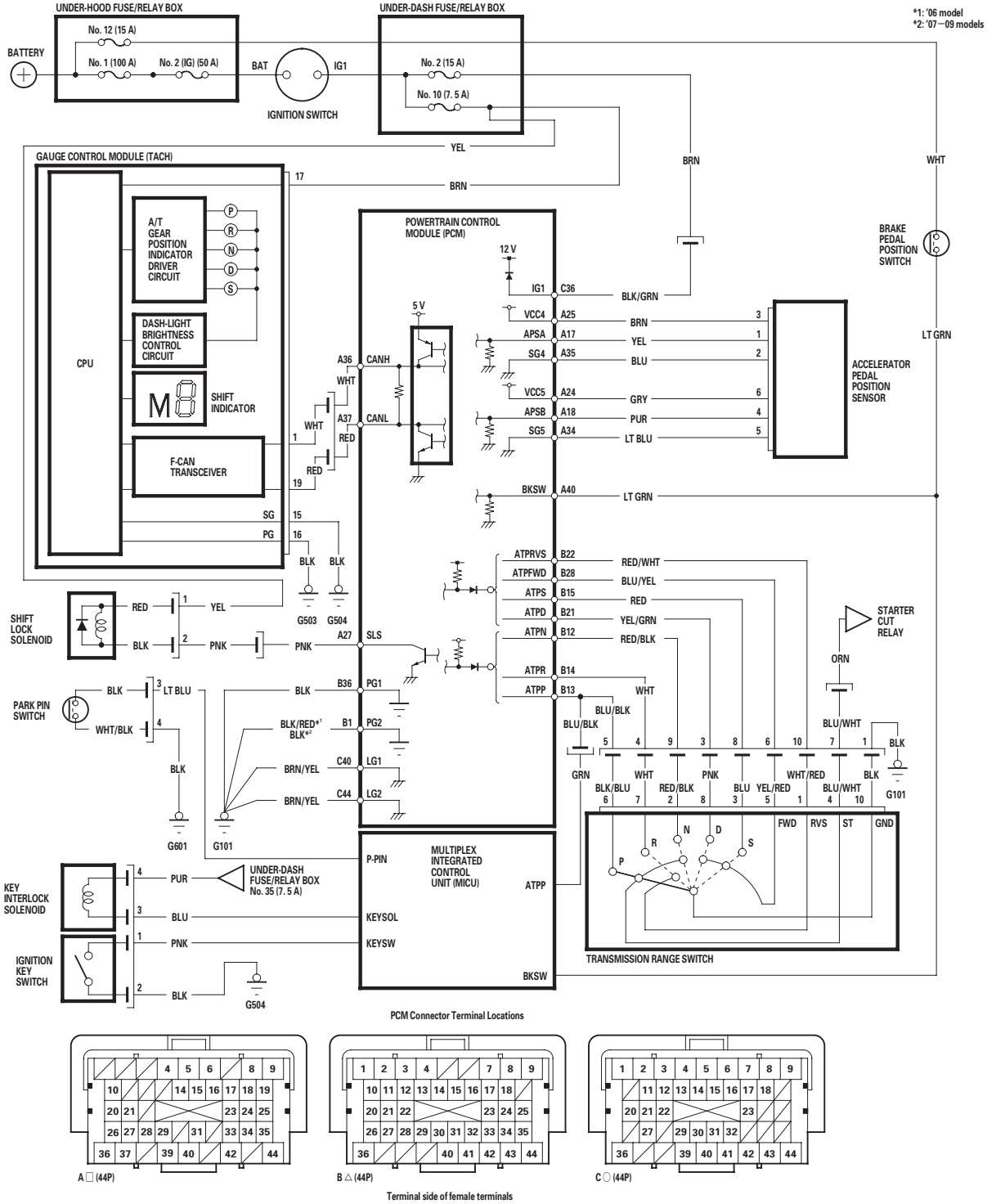
4. Remove the screws (B) securing the steering wheel rear cover (C), then remove the steering wheel rear cover.
5. Remove the paddle shifter — (downshift switch) (D) from the rear cover.
6. Install a new paddle shifter — (downshift switch) in the steering wheel rear cover.
7. Install the steering wheel rear cover, and secure the rear cover with the screws.
8. Secure the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch) with the screws.
9. Connect the paddle shifter + (upshift switch) and the paddle shifter — (downshift switch) connector, and install the connectors in the connector holder.
10. Install the steering wheel (see page 17-8).

Component Location Index



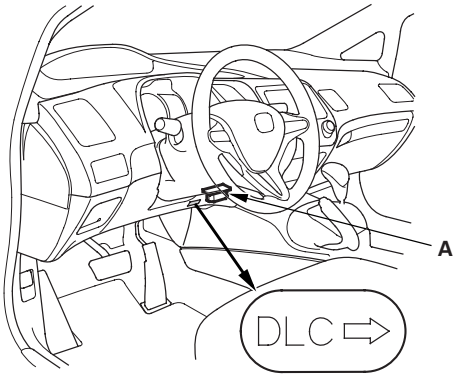


Circuit Diagram



Shift Lock System Circuit Troubleshooting

1. Connect the HDS to the DLC located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

   Does the shift lock solenoid work properly?

   YES—Go to step 16.

   NO—Go to step 5.

4. Turn the ignition switch to LOCK (0).

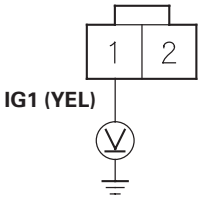
5. Remove the center console (see page 20-92).

6. Disconnect the shift lock solenoid connector.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

   Is there about battery voltage?

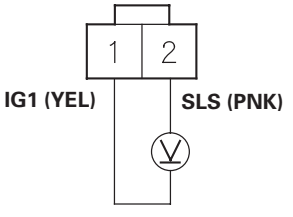
   YES—Go to step 9.

   NO—Check for a blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the shift lock solenoid connector and the under-dash fuse/relay box. ■

9. Shift the shift lever to P, and press the brake pedal. Do not press the accelerator.

10. Measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2 while pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

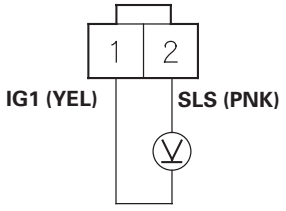
   Is there battery voltage?

   YES—Go to step 11.

   NO—Go to step 12.

11. Release the brake pedal, and measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2. The shift lever must be in P.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there about battery voltage?

YES—Repair short to body ground in the wire between PCM connector terminal A27 and the shift lock solenoid. ■

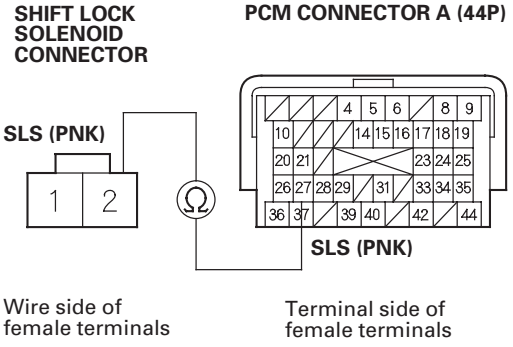
NO—Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see page 14-287). ■

12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect PCM connector A (44P).

15. Check for continuity between PCM connector terminal A27 and shift lock solenoid connector terminal No. 2.



Is there continuity?

YES—Check for poor connections or loose terminals between shift lock solenoid connector terminal No. 2 and PCM connector terminal A27. If the connection is OK, update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

NO—Repair open in the wire between PCM connector terminal A27 and the shift lock solenoid connector. ■

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

16. Monitor the Brake Switch in the Data List with the HDS, and press the brake pedal.

    Is the Brake Switch ON?

    YES—Go to step 21.

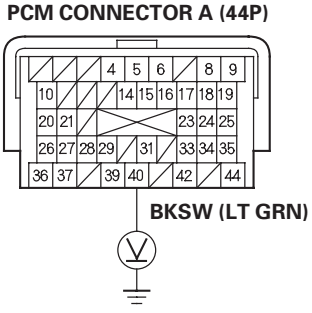
    NO—If the brake lights come on, go to step 17. If the brake lights do not work, repair the faulty brake light circuit.

17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect PCM connector A (44P).

20. Measure the voltage between PCM connector terminal A40 and body ground when pressing the brake pedal and when the brake pedal is released.



Terminal side of female terminals

    Is there about battery voltage when pressing the brake pedal, and no voltage when the pedal is released?

    YES—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228).■

    NO—Repair open in the wire between PCM connector terminal A40 and the brake pedal position switch.■

21. Monitor the A/T P Switch in the Data List with the HDS with the shift lever in P.

    Is the A/T P Switch ON?

    YES—Go to step 33.

    NO—Go to step 22.

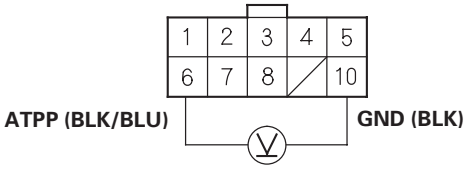
22. Turn the ignition switch to LOCK (0).

23. Disconnect the transmission range switch connector.

24. Turn the ignition switch to ON (II).

25. Measure the voltage between transmission range switch connector terminals No. 6 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there more than 5 V?

YES—Go to step 26.

NO—Go to step 27.

26. Inspect the transmission range switch (see page 14-265).

Is the switch OK?

YES—Check for poor connections or loose terminals at the transmission range switch connector.

NO—Replace the transmission range switch (see page 14-267). ■

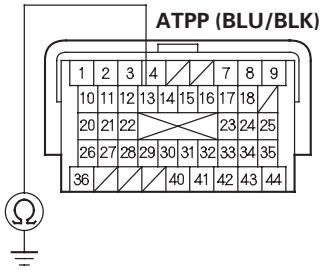
27. Turn the ignition switch to LOCK (0).

28. Jump the SCS line with the HDS.

29. Disconnect PCM connector B (44P).

30. Check for continuity between PCM connector terminal B13 and body ground.

PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

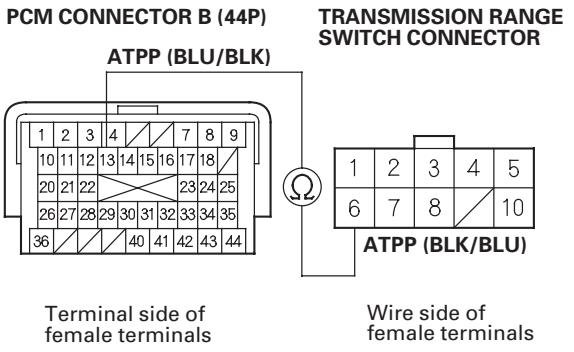
YES—Repair short to body ground in the wire between PCM connector terminal B13 and the transmission range switch connector. ■

NO—Go to step 31.

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

31. Check for continuity between PCM connector terminal B13 and transmission range switch connector terminal No. 6.

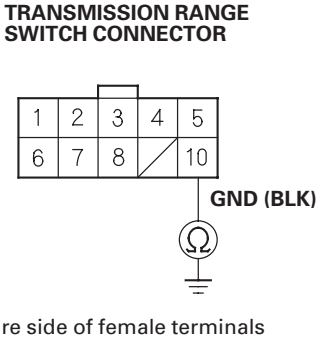


Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between PCM connector terminal B13 and the transmission range switch connector. ■

32. Check for continuity between transmission range switch connector terminal No. 10 and body ground.



Is there continuity?

YES—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

NO—Repair open in the wire between transmission range switch connector terminal No. 10 and body ground (G101), or repair poor body ground (G101). ■

33. Check the APP SENSOR in the Data List with the HDS. Do not press the accelerator.

Is the accelerator pedal position sensor opening 11 % or above, or the sensor voltage 0.90 V or above?

YES—Check the APP sensor (see page 11-268). ■

NO—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

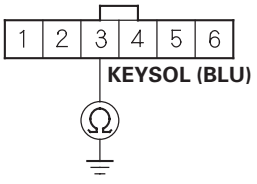
1. Turn the ignition switch to ACCESSORY (I). The shift lever must be in P.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

   Can the ignition switch be turned to LOCK (0)?

   YES—Go to step 4.

   NO—Replace the ignition key cylinder/steering lock assembly (see page 17-14). ■
4. Turn the ignition switch to LOCK (0).
5. Move the shift lever out of P.
6. Check for continuity between steering lock assembly connector terminal No. 3 and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the key interlock solenoid and the MICU. ■

NO—Go to step 7.

7. Remove the shift lever assembly (see page 14-254).

(cont'd)

33. Check the APP SENSOR in the Data List with the HDS. Do not press the accelerator.

Is the accelerator pedal position sensor opening 11 % or above, or the sensor voltage 0.90 V or above?

YES—Check the APP sensor (see page 11-268). ■

NO—Reconnect all connectors, then update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-228). ■

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repair or service.

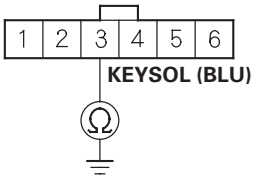
1. Turn the ignition switch to ACCESSORY (I). The shift lever must be in P.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition switch can be turned to the LOCK (0) position.

   Can the ignition switch be turned to LOCK (0)?

   YES—Go to step 4.

   NO—Replace the ignition key cylinder/steering lock assembly (see page 17-14). ■
4. Turn the ignition switch to LOCK (0).
5. Move the shift lever out of P.
6. Check for continuity between steering lock assembly connector terminal No. 3 and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the key interlock solenoid and the MICU. ■

NO—Go to step 7.

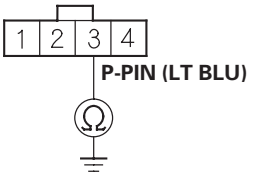
7. Remove the shift lever assembly (see page 14-254).

(cont'd)

Key Interlock System Circuit Troubleshooting (cont'd)

8. Check for continuity between park pin switch/A/T gear position indicator panel light connector terminal No. 3 and body ground.

**PARK PIN SWITCH/
A/T GEAR POSITION INDICATOR
PANEL LIGHT CONNECTOR**



Wire side of female terminals

Is there continuity?

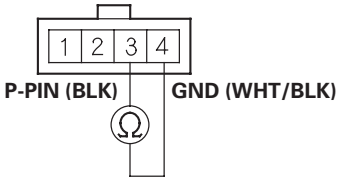
YES—Repair short to body ground in the wire between park pin switch/A/T gear position indicator panel light connector terminal No. 3 and the MICU. ■

NO—Go to step 9.

9. Shift the shift lever to P.

10. Check for continuity between park pin switch/A/T gear position indicator panel light connector terminals No. 3 and No. 4. Do not push the shift lever button.

**PARK PIN SWITCH/
A/T GEAR POSITION INDICATOR
PANEL LIGHT CONNECTOR**



Terminal side of male terminals

Is there continuity?

YES—Faulty park pin switch, replace the park pin switch (see page 14-269). ■

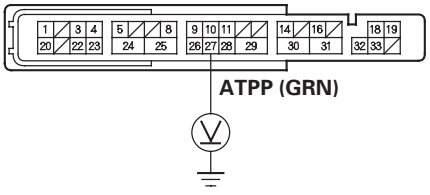
NO—Go to step 11.

11. Disconnect under-dash fuse/relay box connector F (34P).

12. Turn the ignition switch to ON (II).

13. Measure the voltage between the No. 27 terminal of under-dash fuse/relay box connector F (34P) and body ground.

**UNDER-DASH FUSE/RELAY BOX
CONNECTOR F (34P)**



Wire side of female terminals

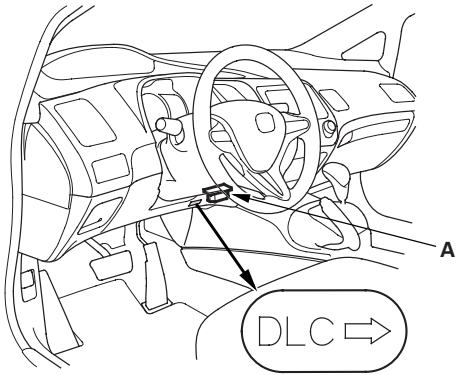
Is there no voltage when the shift lever is in P, and is there voltage when the shift lever shifts out of P?

YES—Substitute a known-good MICU, and recheck. ■

NO—Repair or short in the wire between PCM connector terminal B13, transmission range switch, and MICU. ■

Shift Lock Solenoid Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-204).

3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

4. Check that the shift lever can be moved out of P when Shift Lock Solenoid is ON. Move the shift lever back in P, and check it locks when Shift Lock Solenoid is OFF.

5. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.

6. If the shift lock solenoid does not work properly, go to the shift lock system troubleshooting (see page 14-280).

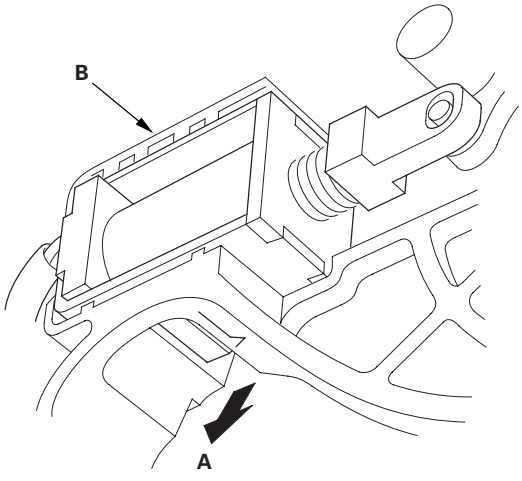
Shift Lock Solenoid Replacement

NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the shift lever assembly (see page 14-254).

2. Remove the shift lock solenoid connector.

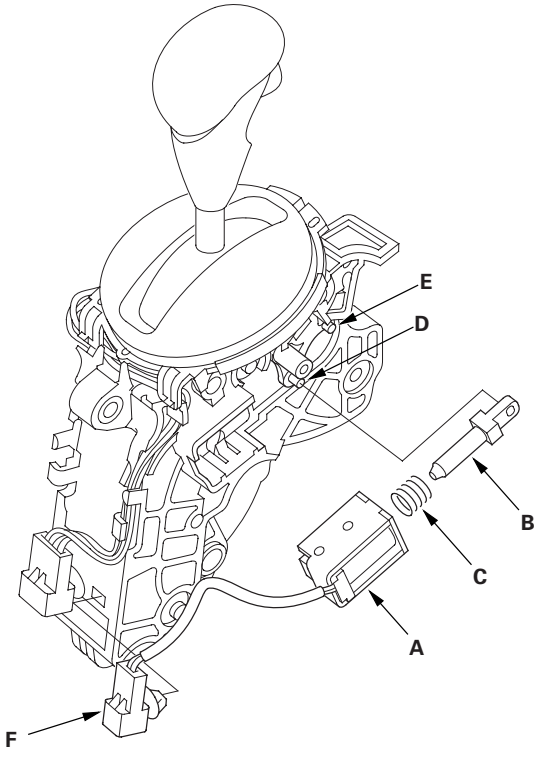
3. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).



(cont'd)

Shift Lock Solenoid Replacement (cont'd)

4. Replace the shift lock solenoid (A), the solenoid plunger (B), and the plunger spring (C) assembly.



5. Apply silicone grease to the tip (D) of the shift lock stop (E), and install a new shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

6. Route the shift lock solenoid harness in the guide, and install the connector (F) on the bracket base.

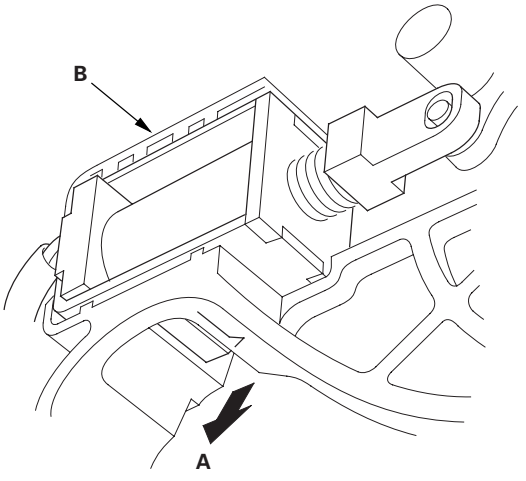
7. Install the shift lever assembly (see page 14-255).

Shift Lock Stop, Shift Lock Stop Cushion Replacement

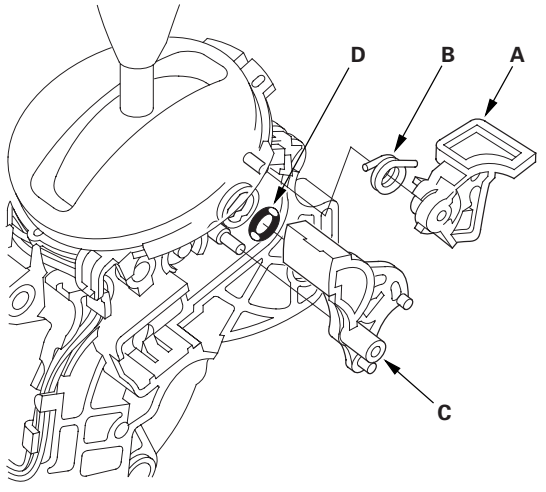
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the shift lever assembly (see page 14-254).

2. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).



3. Remove the shift lock release (A) and the release spring (B).

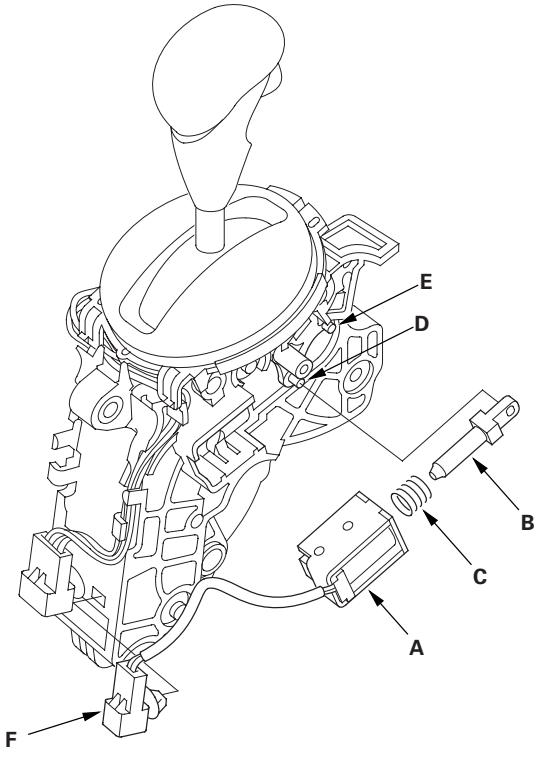


4. Remove the shift lock stop (C) and the stop cushion (D), and replace the shift lock stop or the stop cushion.

5. Install the shift lock stop cushion on the shift lock stop.

Shift Lock Solenoid Replacement (cont'd)

4. Replace the shift lock solenoid (A), the solenoid plunger (B), and the plunger spring (C) assembly.



5. Apply silicone grease to the tip (D) of the shift lock stop (E), and install a new shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

6. Route the shift lock solenoid harness in the guide, and install the connector (F) on the bracket base.

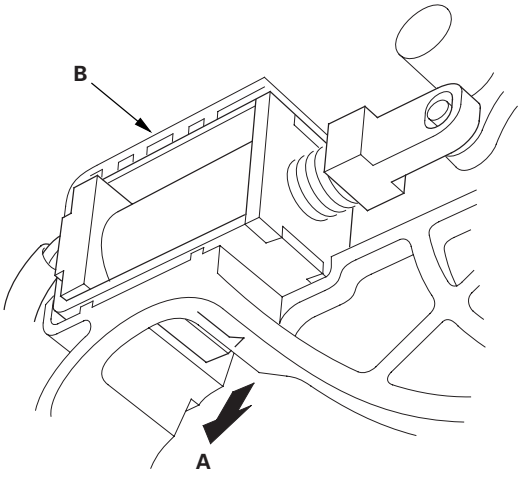
7. Install the shift lever assembly (see page 14-255).

Shift Lock Stop, Shift Lock Stop Cushion Replacement

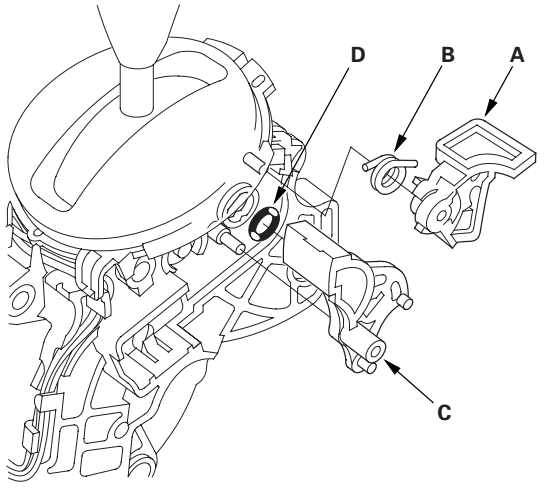
NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the shift lever assembly (see page 14-254).

2. Release the shift lock solenoid lock (A), then remove the shift lock solenoid (B).



3. Remove the shift lock release (A) and the release spring (B).



4. Remove the shift lock stop (C) and the stop cushion (D), and replace the shift lock stop or the stop cushion.

5. Install the shift lock stop cushion on the shift lock stop.

6. Apply silicone grease to the pin on the shift lever bracket base, and install the shift lock stop over the pin.

7. Install the shift lock release spring and the shift lock release, apply silicone grease to shift lock release mounting tip if necessary.

8. Apply silicone grease to the tip of the shift lock stop, and install the shift lock solenoid assembly by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop.

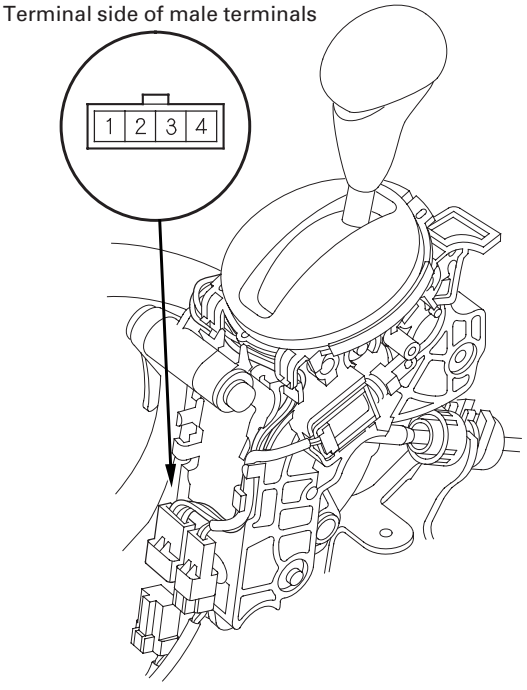
9. Route the shift lock solenoid harness in the guide.

10. Install the shift lever assembly (see page 14-255).

Park Pin Switch Test

1. Remove the center console (see page 20-92).

2. Move the shift lever to P, and check for continuity between park pin switch/A/T gear position indicator panel light connector terminals No. 3 and No. 4. There should be no continuity.



3. Shift out of P, and check for continuity between connector terminals No. 3 and No. 4. There should be continuity.

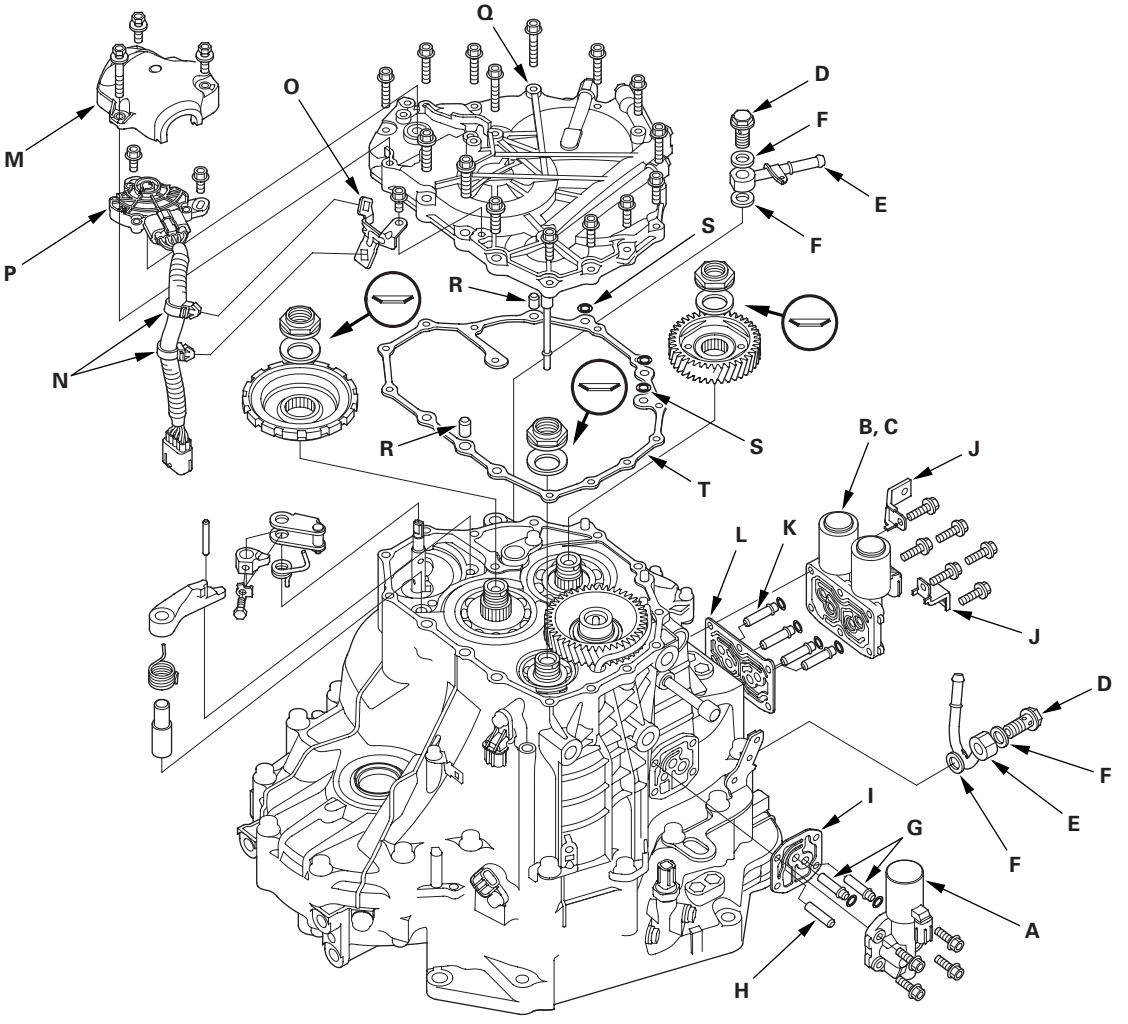
4. If the park pin switch tests OK, install the center console (see page 20-92).
If the park pin switch fails the test, replace the park pin switch (see page 14-269).

Transmission End Cover

End Cover Removal

Special Tools Required
Mainshaft holder 07GAB-PF50101

1. Remove the banjo bolts (D), the ATF cooler lines (E), and the sealing washers (F).



2. Remove A/T clutch pressure control solenoid valve A, the ATF joint pipes (G), the ATF pipe (H), and the gasket (I).

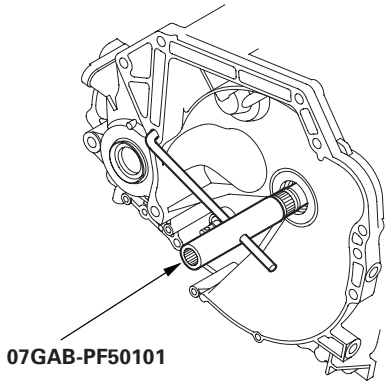
3. Remove A/T clutch pressure control solenoid valves B and C, the harness clamp brackets (J), the ATF joint pipes (K), and the gasket (L).

4. Remove the transmission range switch cover (M).

5. Remove the transmission range switch harness clamps (N) from the clamp bracket (O), then remove the transmission range switch (P).

6. Remove the end cover (Q), the dowel pins (R), the O-rings (S), and the end cover gasket (T).

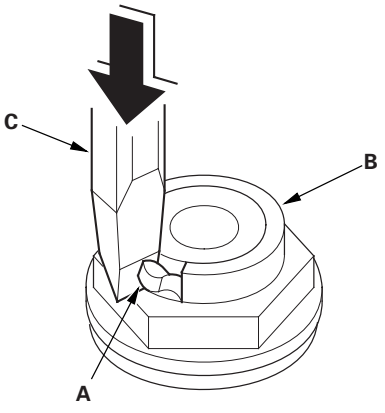
7. Install the mainshaft holder onto the mainshaft.



8. Engage the park pawl with the park gear.

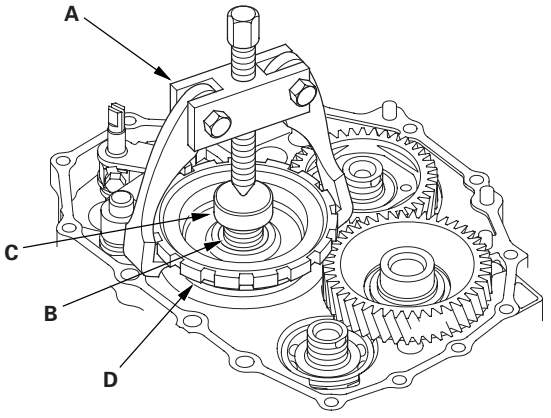
9. Cut the lock tab (A) of the each shaft locknut (B) using a chisel (C). Then remove the locknuts and the conical spring washers from each shaft.

   NOTE:
   - Countershaft and secondary shaft locknuts have left-hand threads.
   - Keep all of the chiseled particles out of the transmission.
   - Clean the old mainshaft and countershaft locknuts; they are used to install the press fit idler gear on the mainshaft, and the park gear on the countershaft.

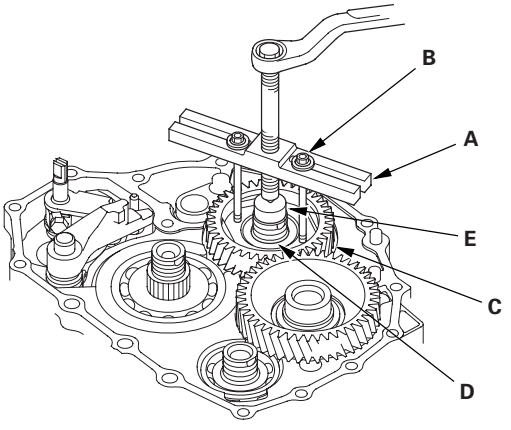


10. Remove the mainshaft holder from the mainshaft.

11. Set a two-jaw (or three-jaw) puller (A) on the countershaft (B) with a spacer (C) between the puller and the countershaft, then remove the park gear (D).



12. Install a puller (A) with two 6 x 1.0 mm bolts (B) on the mainshaft idler gear (C). Set a spacer (D) between the puller and the mainshaft, then remove the mainshaft idler gear.



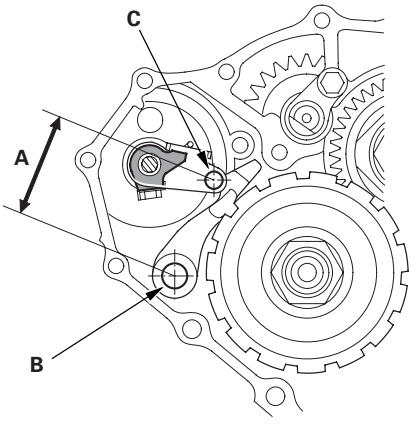
13. Remove the park pawl, the park pawl spring, the park pawl shaft, and the stop shaft.

14. Remove the park lever from the selector control shaft.

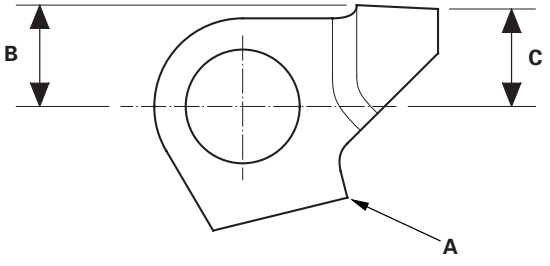
Park Lever Stop Inspection and Adjustment

1. Set the park lever in the P position.
2. Measure the distance (A) between the park pawl shaft (B) and the park lever roller pin (C).

   Standard: 57.7—58.7 mm (2.27—2.31 in.)



3. If the distance is out of standard, select and install the appropriate park lever stop (A) from the table.



PARK LEVER STOP

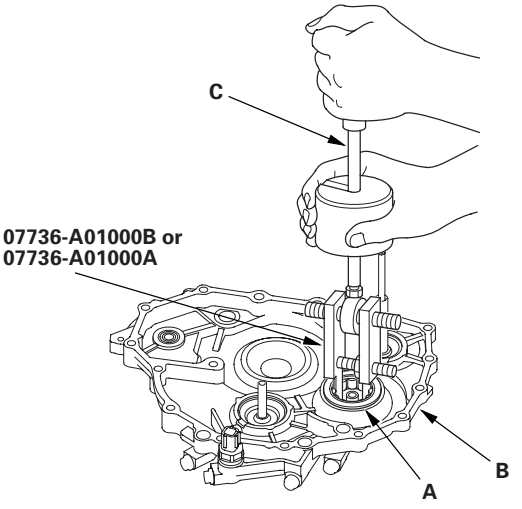
Mark	Part Number	B	C
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-003	10.60 mm (0.417 in.)	10.30 mm (0.406 in.)

4. After replacing the park lever stop, make sure the distance is within tolerance.

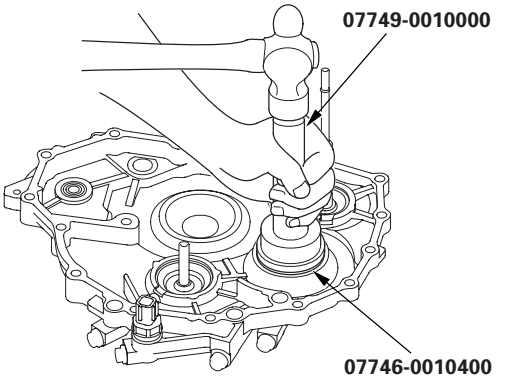
Idler Gear Shaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Remove the idler gear shaft bearing (A) from the end cover (B) using the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (C).



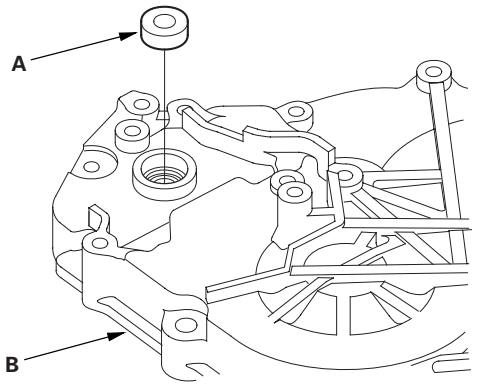
2. Install a new bearing in the end cover using the driver and the 52 x 55 mm attachment.



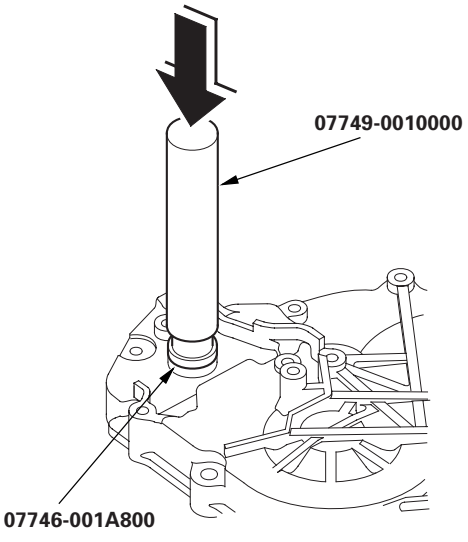
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-001A800

1. Remove the oil seal (A) from the end cover (B).



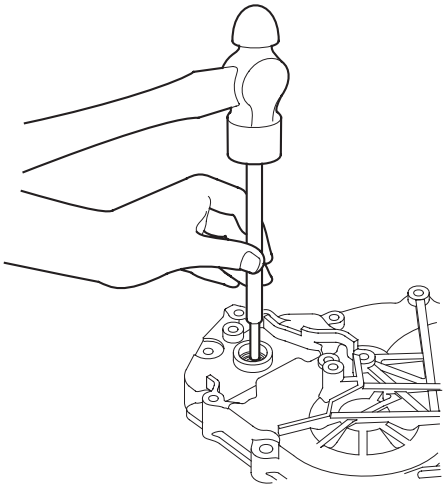
2. Install a new oil seal flush to the end cover using the driver and the 22 x 24 mm attachment.



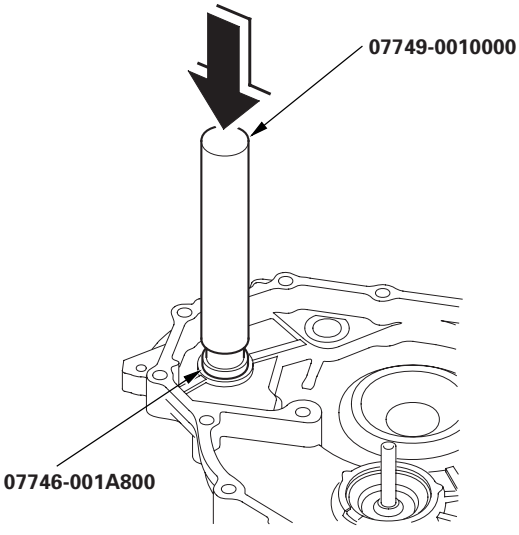
Selector Control Shaft Bearing Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-001A800

1. Remove the oil seal from the end cover, then remove the bearing.



2. Install a new bearing flush to the end cover using the driver and the 22 x 24 mm attachment.

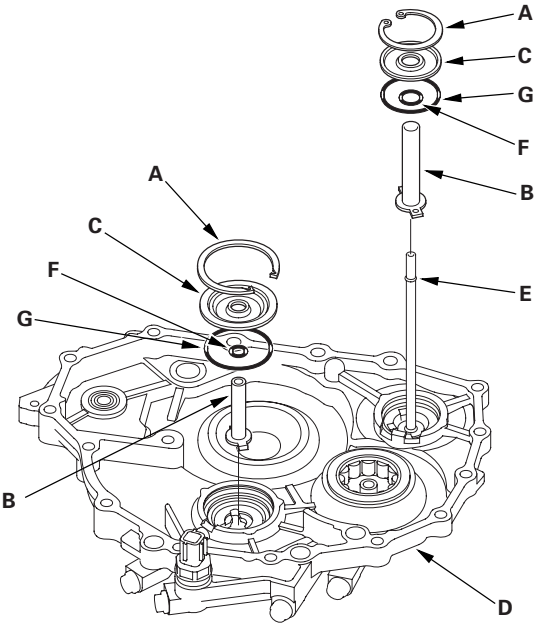


3. Install a new oil seal.

ATF Feed Pipe Replacement

1. Remove the snap rings (A), the ATF feed pipes (B), and the feed pipe flanges (C) from the end cover (D).

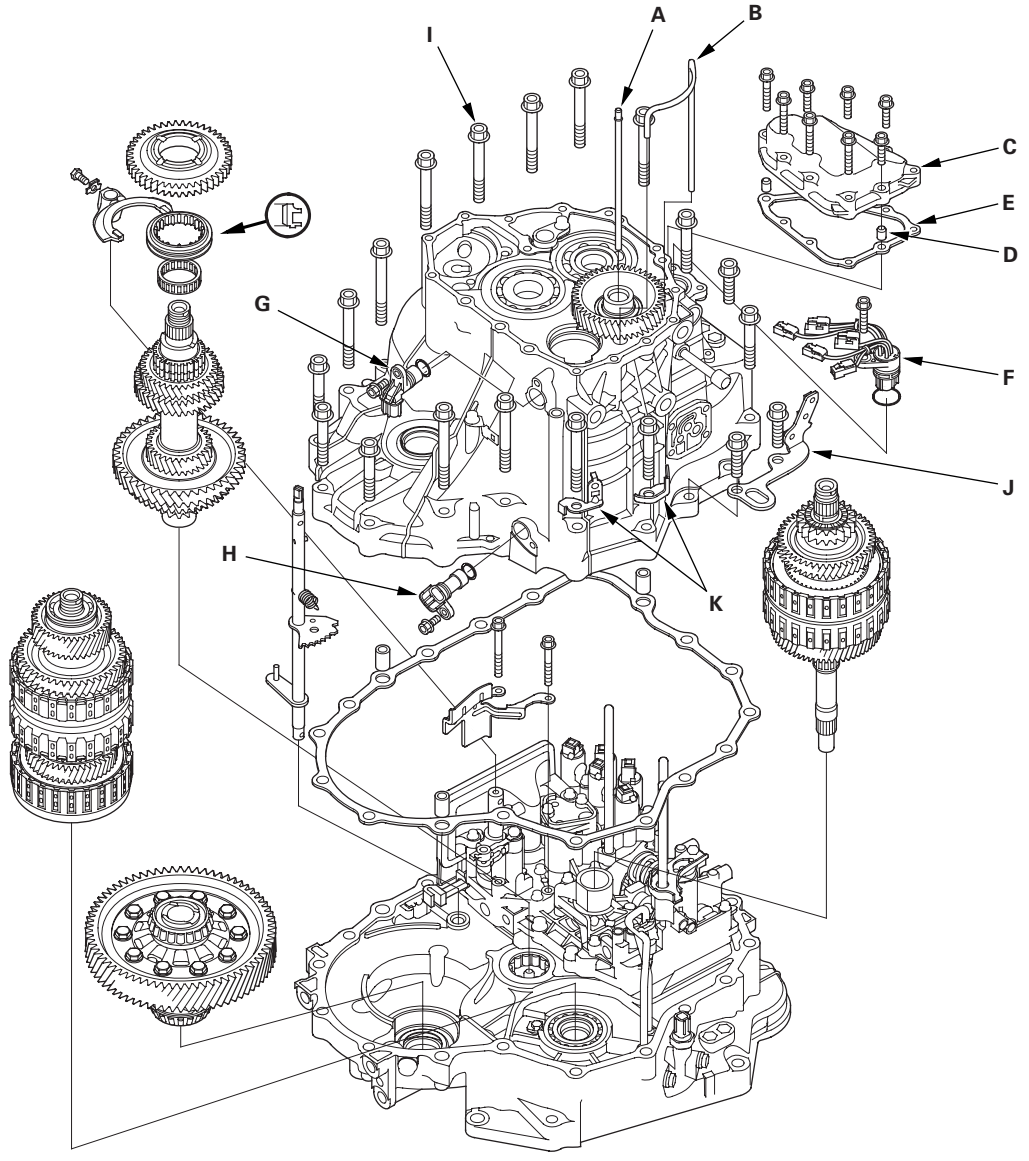
   NOTE: Replace the end cover, if the 1st clutch ATF feed pipe (E) replacement is required.



2. Install new O-rings (F) over the ATF feed pipes.
3. Install the ATF feed pipes in the end cover by aligning the feed pipe tabs with the indentations in the end cover.
4. Install new O-rings (G) in the end cover, then install the feed pipe flanges over the ATF feed pipes.
5. Secure the ATF feed pipes and the feed pipe flanges with the snap rings.

Housing and Shaft Assembly Removal

1. Remove the ATF feed pipe (A) from the idler gear shaft, and remove the ATF lubrication pipe (B) from the transmission housing.



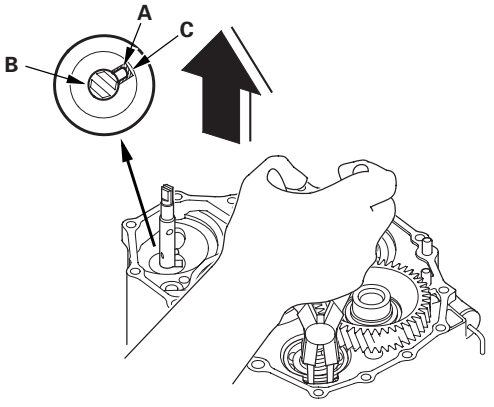
2. Remove the shift solenoid valve cover (C), the dowel pins (D), and the gasket (E).
3. Disconnect the connectors from the shift solenoid valves, and remove the shift solenoid wire harness (F).
4. Remove the input shaft (mainshaft) speed sensor (G) and the output shaft (countershaft) speed sensor (H).
5. Remove the transmission housing mounting bolts (19 bolts) (I), the transmission hanger (J) and the harness clamp brackets (K).

(cont'd)

Housing and Shaft Assembly Removal (cont'd)

6. Align the spring pin (A) on the selector control shaft (B) with the transmission housing groove (C) by turning the selector control shaft with the control lever.

   NOTE: Do not squeeze the end of the selector control shaft tips together when turning the shaft.



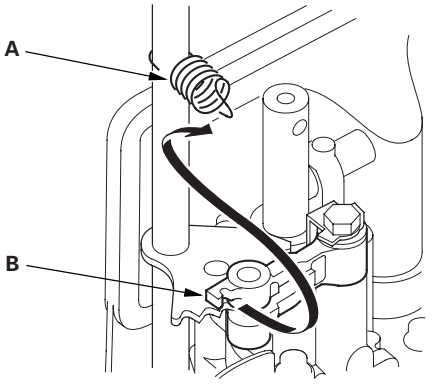
7. Use snap ring pliers to expand the snap ring of the secondary shaft bearing. Then lift the transmission housing. Release the snap ring pliers and remove the transmission housing.

8. Remove the countershaft reverse gear and the needle bearing.

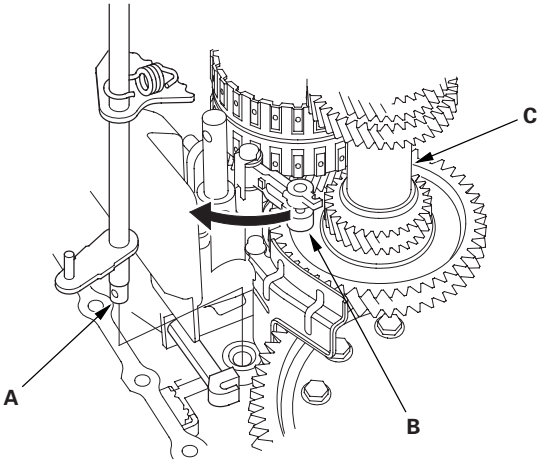
9. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector together.

10. Remove the control lever from the selector control shaft.

11. Unlock the detent spring (A) from the detent arm (B).

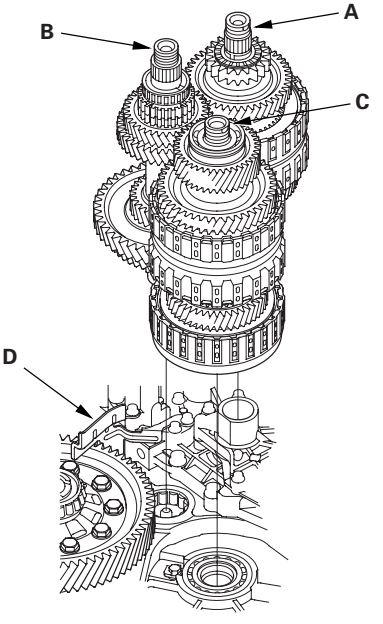


12. Remove the selector control shaft (A) from the torque converter housing.



13. Turn the detent arm (B) away from the countershaft (C).

14. Remove the mainshaft subassembly (A), the countershaft subassembly (B) and the secondary shaft subassembly (C) together. Do not bump the countershaft on the baffle plate (D).



15. Remove the baffle plate.

16. Remove the differential assembly.

Bearing Removal

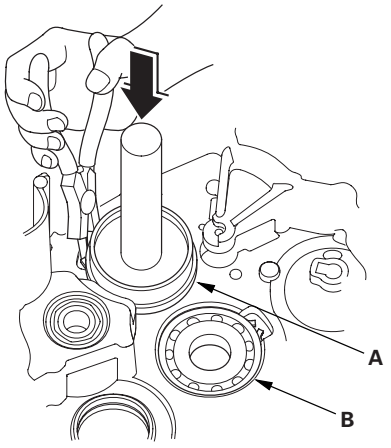
Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

1. Remove the idler gear shaft when removing the mainshaft bearing and the idler gear shaft bearing.

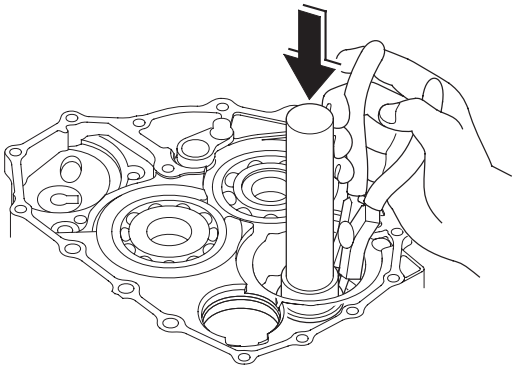
   NOTE: If you are only removing the countershaft bearing, the idler gear shaft removal is not needed.

2. To remove the mainshaft bearing (A) and the countershaft bearing (B) from the transmission housing, expand each snap ring using snap ring pliers, then push the bearing out using the driver and the 78 x 80 mm attachment.

   NOTE: Do not remove the snap ring unless it's necessary to clean the grooves in the housing.



3. Expand the snap ring of the idler gear shaft bearing using the snap ring pliers, then push the bearing out using the driver and the 42 x 47 mm attachment.

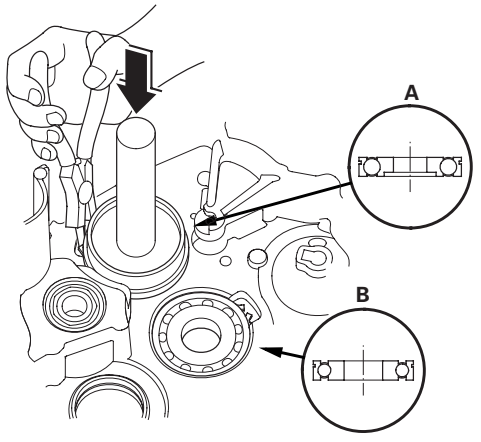


Bearing Installation

Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

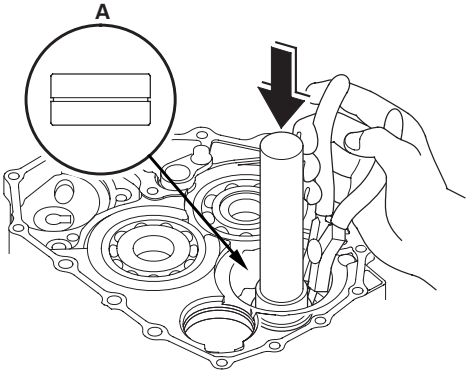
1. Install the bearings in the direction shown.

2. Expand each snap ring using snap ring pliers, and install the mainshaft bearing (A) and the countershaft bearing (B) part-way into the housing using the driver and the 78 x 80 mm attachment.



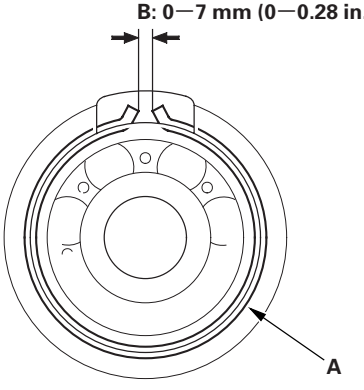
3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

4. Expand the snap ring of the idler gear shaft (A) using the snap ring pliers, and install the bearing part-way into the housing using the driver and the 42 x 47 mm attachment.



5. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

6. After installing the bearings check that the snap rings (A) are seated in the bearing and the housing grooves, and that the ring end gaps (B) are correct.



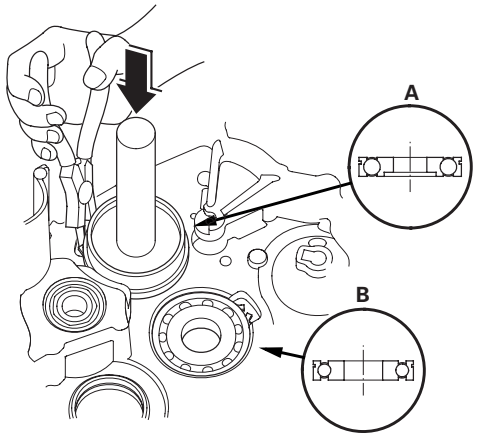
7. Install the idler shaft (see page 14-324).

Bearing Installation

Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

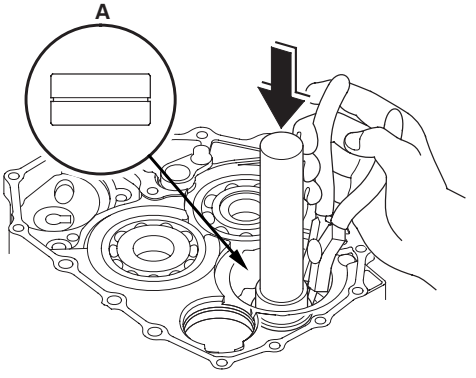
1. Install the bearings in the direction shown.

2. Expand each snap ring using snap ring pliers, and install the mainshaft bearing (A) and the countershaft bearing (B) part-way into the housing using the driver and the 78 x 80 mm attachment.



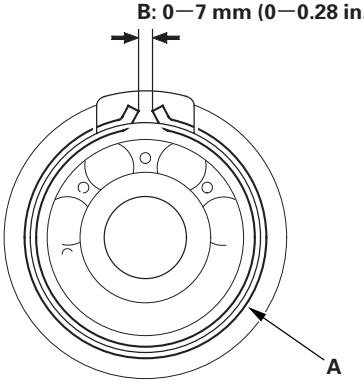
3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

4. Expand the snap ring of the idler gear shaft (A) using the snap ring pliers, and install the bearing part-way into the housing using the driver and the 42 x 47 mm attachment.



5. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

6. After installing the bearings check that the snap rings (A) are seated in the bearing and the housing grooves, and that the ring end gaps (B) are correct.

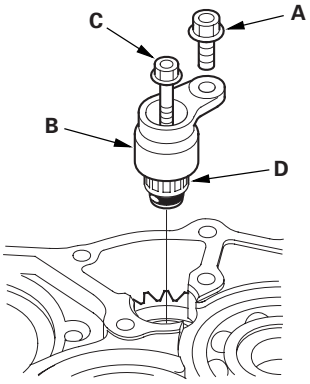


7. Install the idler shaft (see page 14-324).

Reverse Idler Gear Removal and Installation

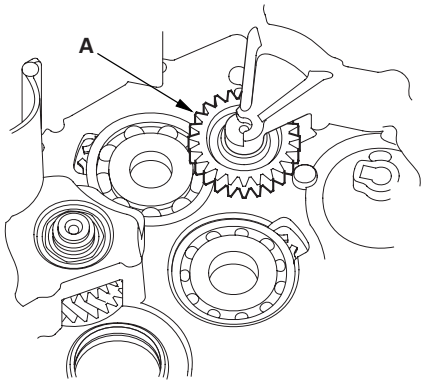
Removal

1. Remove the bolt (A) securing the reverse idler gear shaft holder (B).



2. Install a 5 x 0.8 mm bolt (C) in the reverse idler gear shaft (D), and pull it to remove the reverse idler gear shaft and the gear shaft holder together.

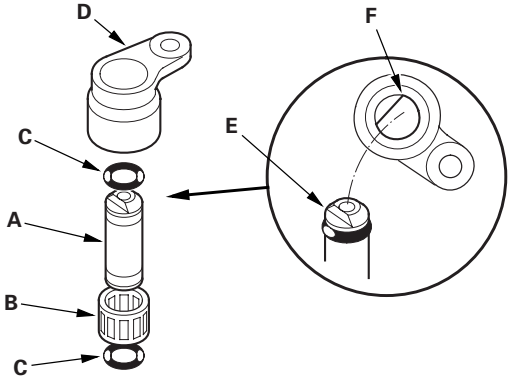
3. Remove the reverse idler gear (A).



Installation

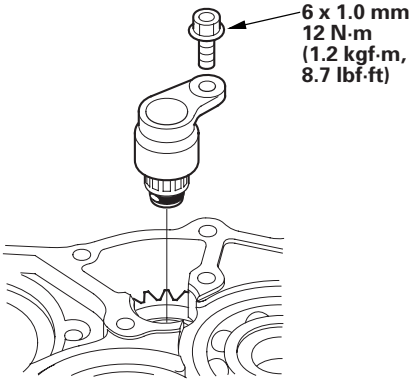
1. Install the reverse idler gear in the transmission housing.

2. Lightly coat the reverse idler gear shaft (A), the needle bearing (B), and new O-rings (C) with lithium grease.



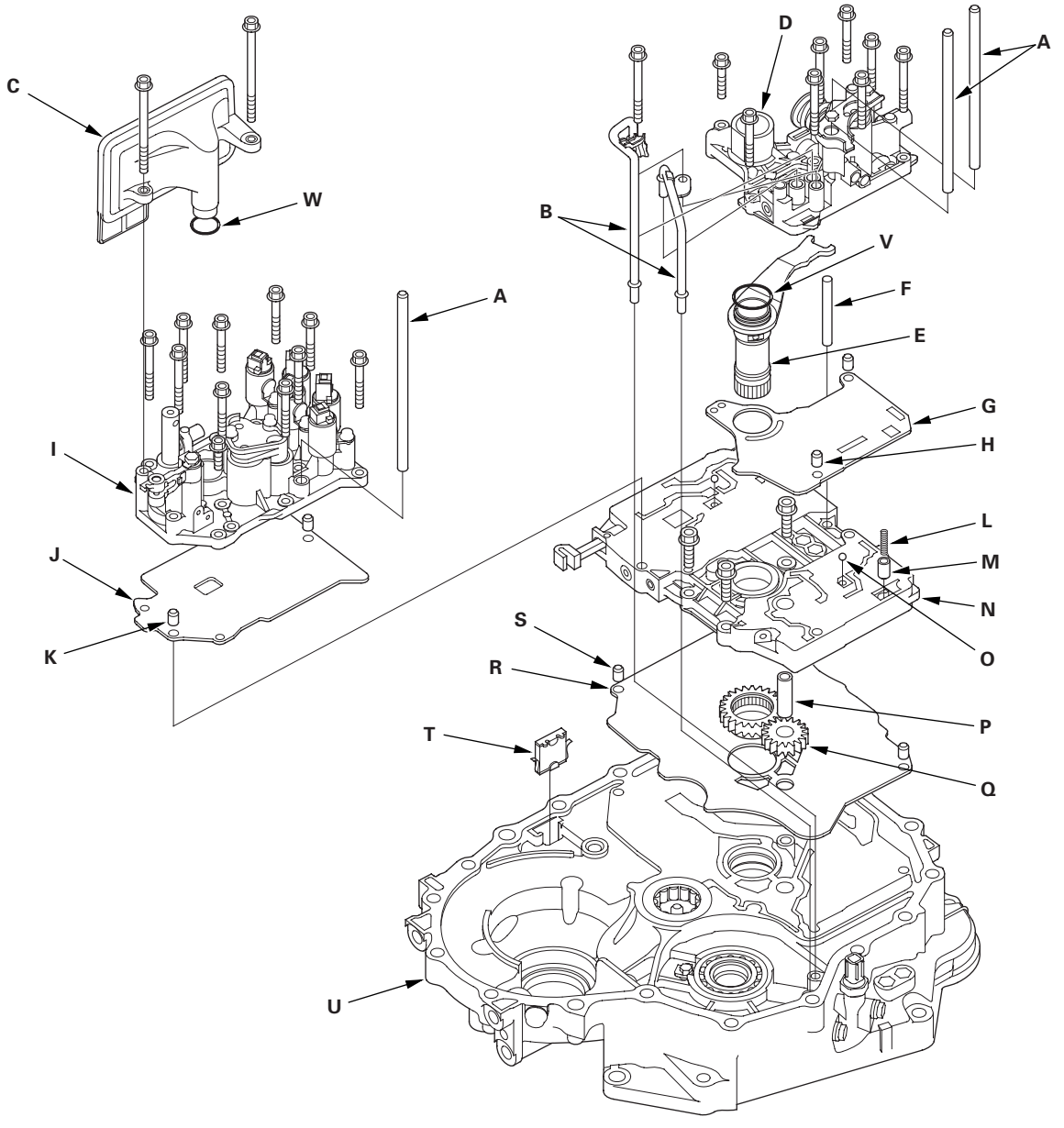
3. Assemble the O-rings and the needle bearing on the reverse idler gear shaft, then install the reverse idler gear shaft in the reverse idler gear shaft holder (D). Align the D-shaped cut out (E) of the shaft with the D-shaped area (F) of the holder.

4. Install the reverse idler gear shaft/holder assembly on the transmission housing.



Valve Body and ATF Strainer Removal

1. Remove the ATF feed pipes (A) and the ATF joint pipes (B).



2. Remove the ATF strainer (C).
3. Remove the regulator valve body (D) (eight bolts).
4. Remove the stator shaft (E) and the stator shaft stop (F), then remove the regulator separator plate (G) and the two dowel pins (H).
5. Remove the servo body (I) (11 bolts), then remove the servo separator plate (J) and the two dowel pins (K).

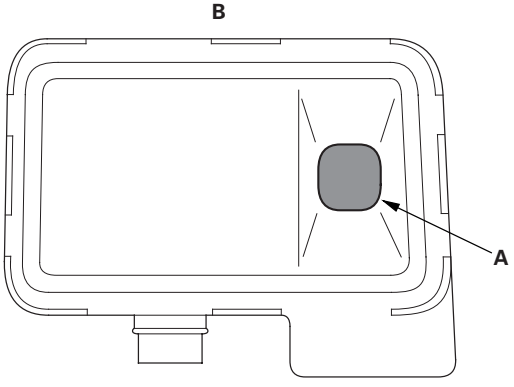
6. Remove the cooler check valve spring (L) and the cooler check valve (M), then remove the main valve body (N) (three bolts). Do not let the check balls (O) fall out.

7. Remove the ATF pump driven gear shaft (P), then remove the ATF pump gears (Q).

8. Remove the main separator plate (R) and the two dowel pins (S).

9. Remove the ATF magnet (T), clean and reinstall it in the torque converter housing (U).

10. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.



11. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

12. Remove the O-rings (V) (W) from the stator shaft and the ATF strainer. Install the new ones when installing the valve bodies.

Valve Body Repair

NOTE: This repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

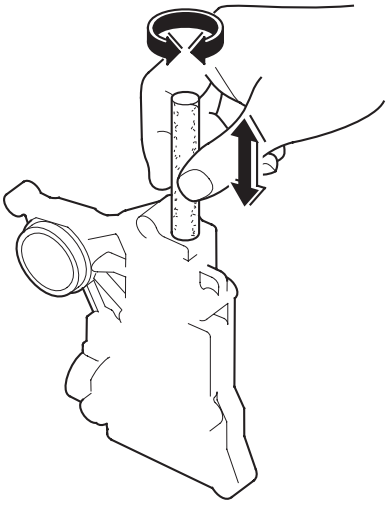
1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.

2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.

3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.

4. Roll up half a sheet of ATF-soaked #600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

   NOTE: The valve body is aluminum and does not require much polishing to remove any burrs.



(cont'd)

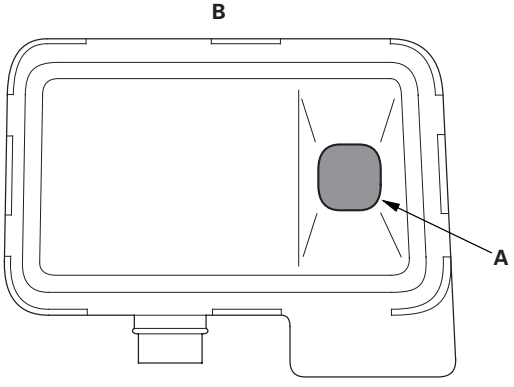
6. Remove the cooler check valve spring (L) and the cooler check valve (M), then remove the main valve body (N) (three bolts). Do not let the check balls (O) fall out.

7. Remove the ATF pump driven gear shaft (P), then remove the ATF pump gears (Q).

8. Remove the main separator plate (R) and the two dowel pins (S).

9. Remove the ATF magnet (T), clean and reinstall it in the torque converter housing (U).

10. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.



11. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

12. Remove the O-rings (V) (W) from the stator shaft and the ATF strainer. Install the new ones when installing the valve bodies.

Valve Body Repair

NOTE: This repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

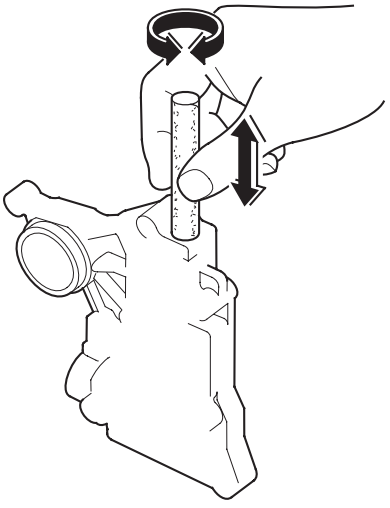
1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.

2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.

3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.

4. Roll up half a sheet of ATF-soaked #600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

   NOTE: The valve body is aluminum and does not require much polishing to remove any burrs.

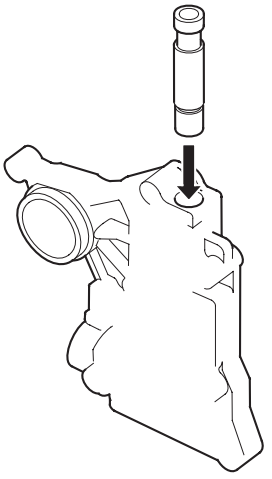


(cont'd)

Valve Body Repair (cont'd)

5. Remove the #600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.

6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat step 4, then retest. If the valve still sticks, replace the valve body.

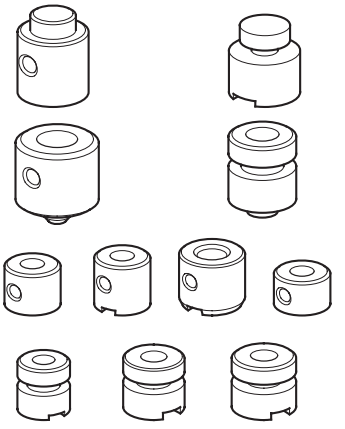


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

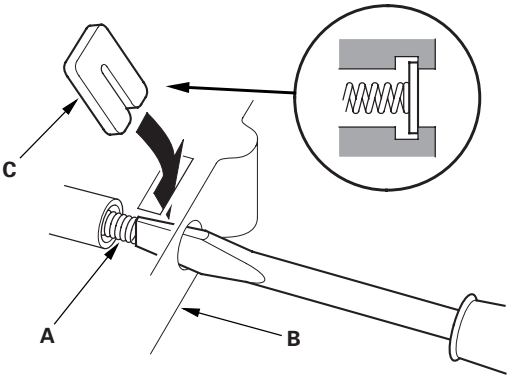
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.

2. Install the valves and the springs in the sequence shown for the main valve body (see page 14-303), the regulator valve body (see page 14-305), and the servo body (see page 14-306). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body.



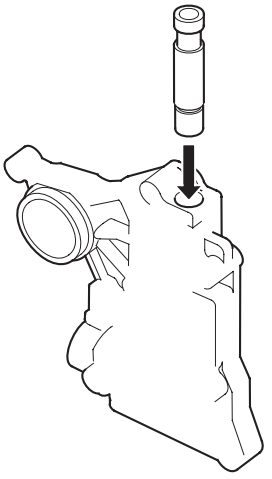
3. Install all the springs and the seats. Insert the spring (A) in the valve, then install the valve in the valve body (B). Push the spring in with a screwdriver, then install the spring seat (C).



Valve Body Repair (cont'd)

5. Remove the #600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.

6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat step 4, then retest. If the valve still sticks, replace the valve body.

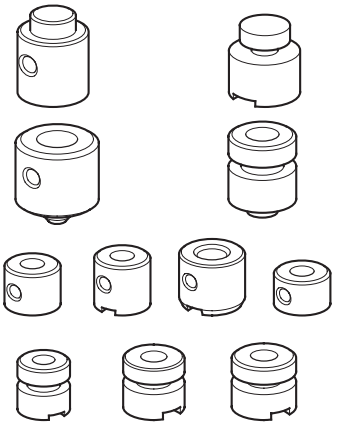


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

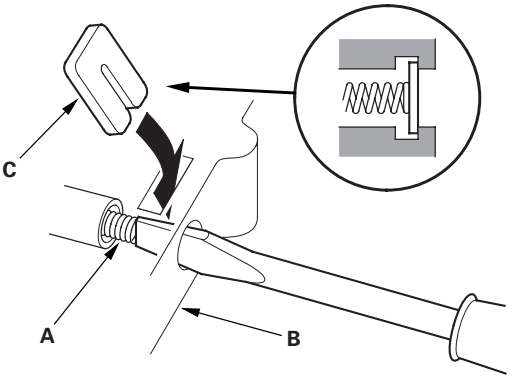
Valve Body Valve Installation

1. Coat all parts with ATF before assembly.

2. Install the valves and the springs in the sequence shown for the main valve body (see page 14-303), the regulator valve body (see page 14-305), and the servo body (see page 14-306). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body.

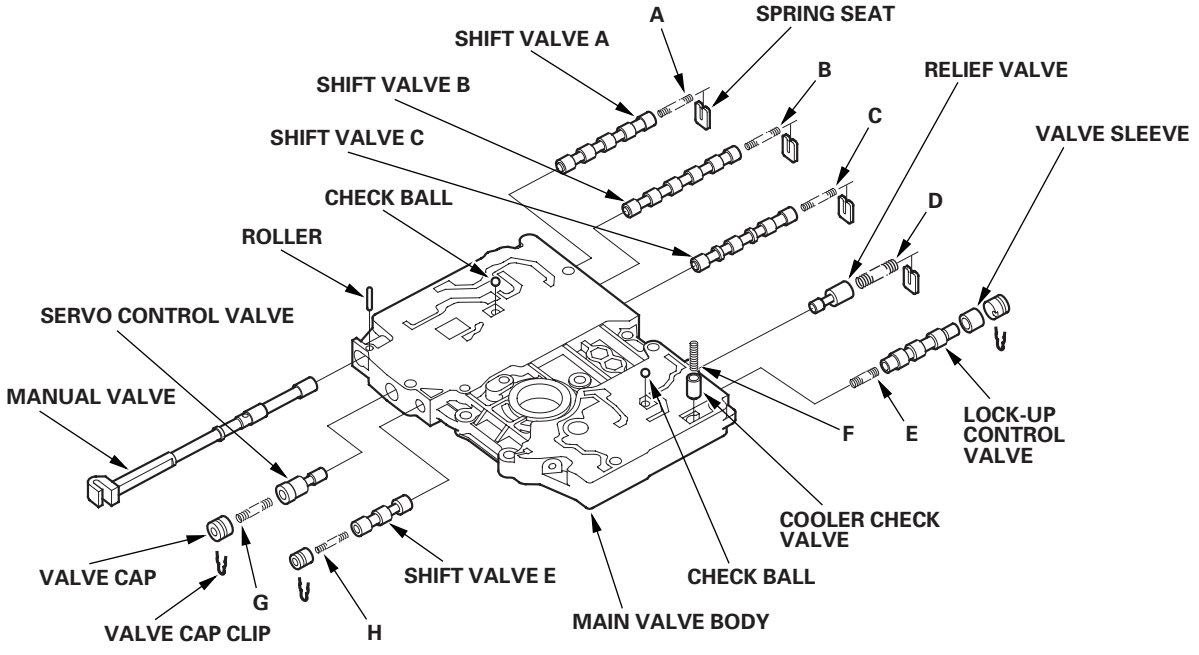


3. Install all the springs and the seats. Insert the spring (A) in the valve, then install the valve in the valve body (B). Push the spring in with a screwdriver, then install the spring seat (C).



Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the balls.
3. Inspect the valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, do the valve body repair procedure (see page 14-301).
5. Coat all parts with ATF during assembly.

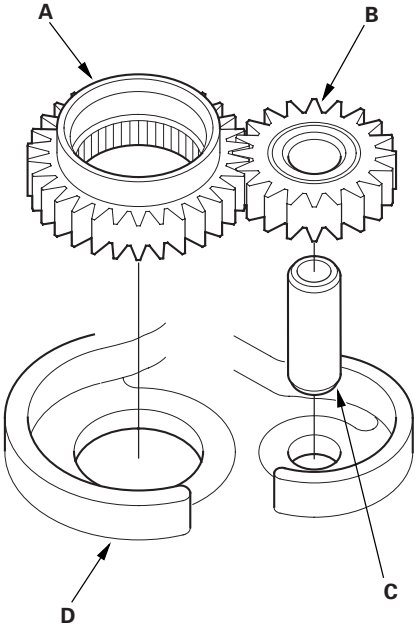


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve A spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
B	Shift valve B spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
C	Shift valve C spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
D	Relief valve spring	1.0 (0.039)	9.6 (0.378)	34.1 (1.343)	10.2
E	Lock-up control valve spring	0.65 (0.026)	7.1 (0.280)	23.1 (0.909)	12.7
F	Cooler check valve spring	0.85 (0.033)	6.6 (0.260)	27.0 (1.063)	11.3
G	Servo control valve spring	0.7 (0.028)	6.6 (0.260)	35.7 (1.406)	17.2
H	Shift valve E spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9

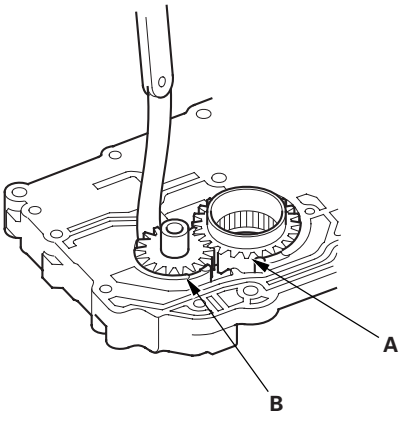
ATF Pump Inspection

1. Install the ATF pump drive gear (A), the driven gear (B), and the ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



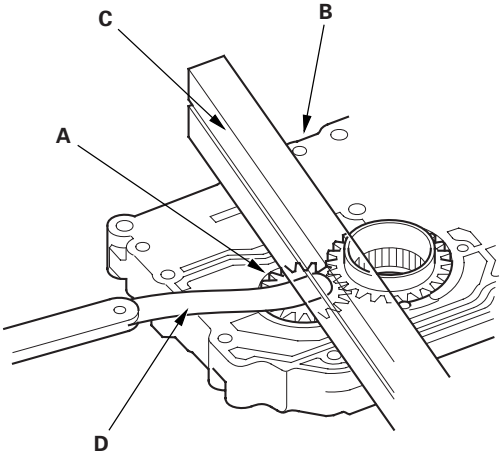
2. Measure the side clearance of the ATF pump drive gear (A) and the driven gear (B).

ATF Pump Gears Side (Radial) Clearance:
Standard (New):
ATF Pump Drive Gear:
0.210—0.265 mm (0.0083—0.0104 in.)
ATF Pump Driven Gear:
0.070—0.125 mm (0.0028—0.0049 in.)



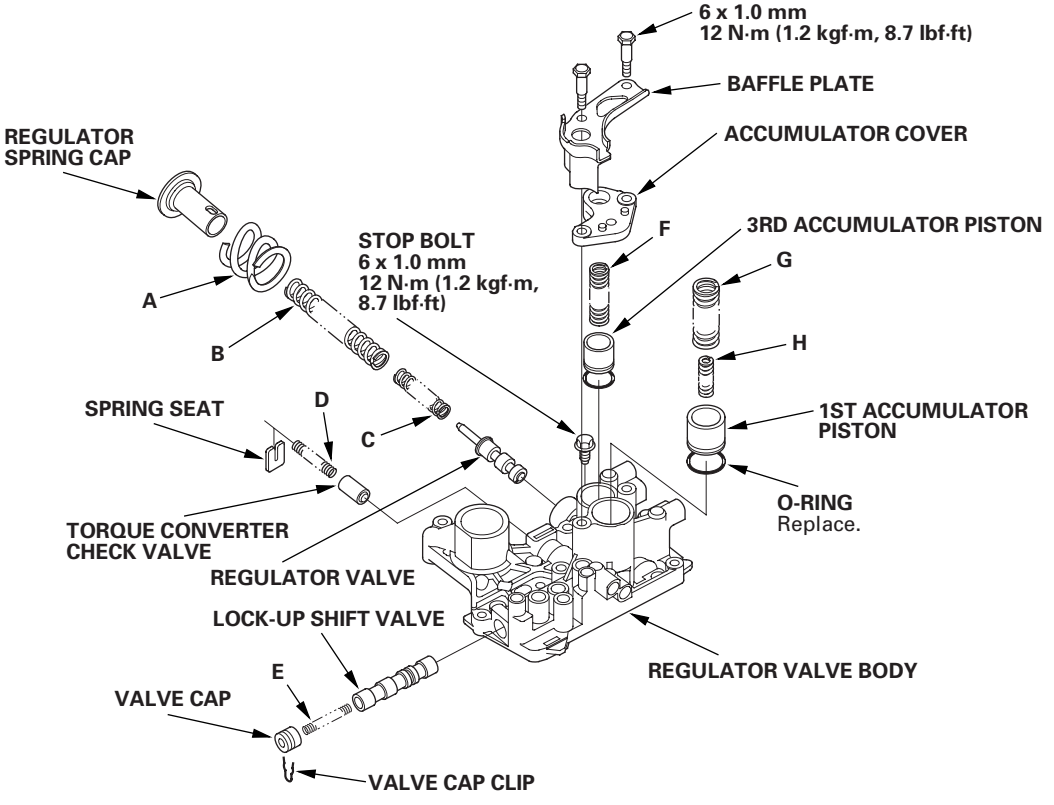
3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) using a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial) Clearance:
Standard (New): 0.03—0.06 mm (0.001—0.002 in.)
Service Limit: 0.07 mm (0.003 in.)



Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the valve body for scoring and damage.
3. Check all valves for free movement. If any fail to slide freely, do the valve body repair procedure (see page 14-301).
4. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded.
5. Coat all parts with ATF during assembly.
6. Replace the O-rings with new ones.
7. When reassembling the valve body, align the hole in the regulator spring cap with the hole in the valve body, then press the spring cap into the valve body, and tighten the stop bolt.

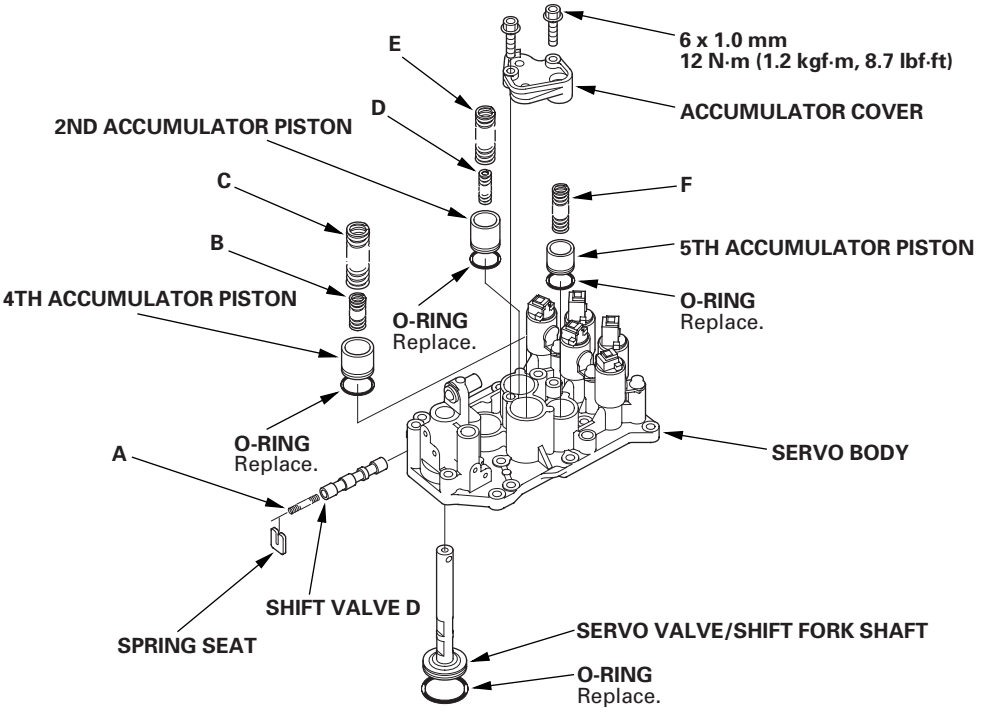


SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.92
B	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C	Regulator valve spring B	1.6 (0.063)	9.2 (0.362)	44.0 (1.732)	12.5
D	Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	33.8 (1.331)	12.2
E	Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
F	3rd accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9
G	1st accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
H	1st accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6

Servo Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, and dry them with compressed air. Blow out all passages.
2. Inspect the valve body for scoring and damage.
3. Check shift valve D for free movement. If any fail to slide freely, do the valve body repair procedure (see page 14-301).
4. When removing and installing the shift solenoid valves, refer to the shift solenoid valves removal and installation (see page 14-307).
5. Coat all parts with ATF during assembly.
6. Replace the O-rings with new ones.



SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve D spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
B	4th accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6
C	4th accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
D	2nd accumulator spring B	2.0 (0.079)	10.6 (0.417)	34.0 (1.339)	8.0
E	2nd accumulator spring A	2.2 (0.087)	16.6 (0.654)	48.2 (1.898)	8.5
F	5th accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9

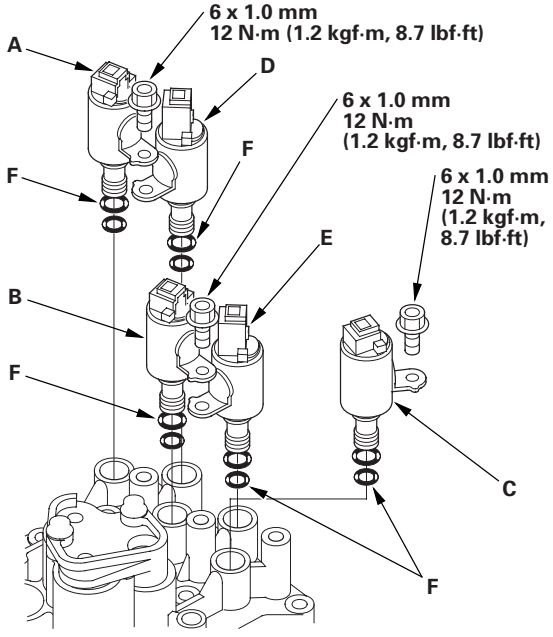
Shift Solenoid Valve Removal and Installation

NOTE:
- Do not hold the shift solenoid valve connector to remove and to install the shift solenoid valves. Hold the shift solenoid valve body.
- Do not install shift solenoid valve A before installing shift solenoid valve D, and do not install shift solenoid valve B before solenoid valve E. If solenoid valves A and B are installed before solenoid valves D and E, it may damage the hydraulic control system.

1. Remove the shift solenoid valves by holding the solenoid valve body.

2. Install new O-rings (two O-ring per shift solenoid valve) (F) on the shift solenoid valves.

   NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided with it.



3. Install shift solenoid valve D by holding the shift solenoid valve body; be sure to install mounting bracket contacts the servo body.

4. Install shift solenoid valve A by holding the shift solenoid valve body; be sure to install mounting bracket contacts the bracket on shift solenoid valve D.

5. Install shift solenoid valve E by holding the shift solenoid valve body; be sure to install mounting bracket contacts the servo body.

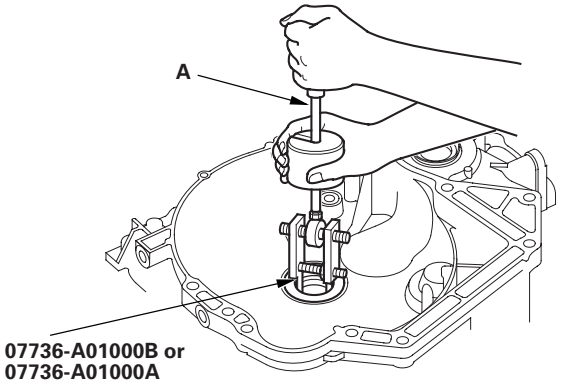
6. Install shift solenoid valve B by holding the shift solenoid valve body; be sure to install mounting bracket contacts the bracket on shift solenoid valve E.

7. Install shift solenoid valve C by holding the shift solenoid valve body; be sure to install mounting bracket contacts the servo body.

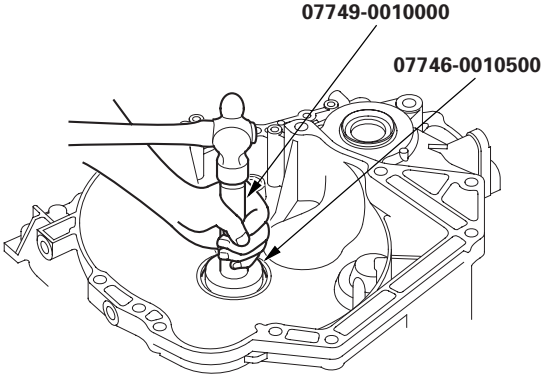
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

1. Remove the mainshaft bearing and the oil seal using the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (A).

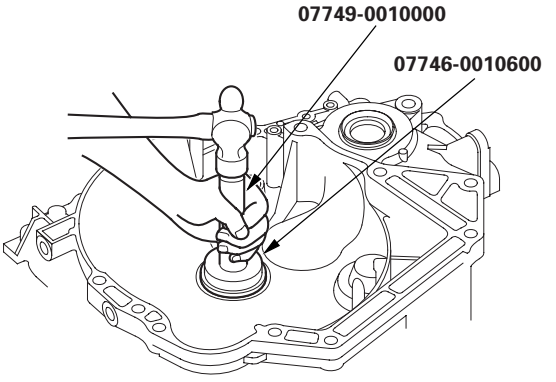


2. Install a new mainshaft bearing until it bottoms in the housing using the driver and the 62 x 68 mm attachment.



3. Install a new oil seal flush using the housing using the driver and the 72 x 75 mm attachment.

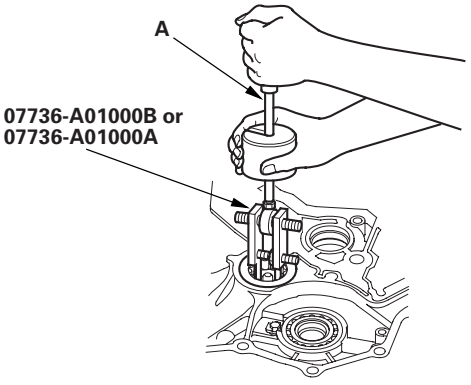
   NOTE: Do not drive the seal into the torque converter housing until it bottoms out; it will block the fluid return passage and cause transmission damage.



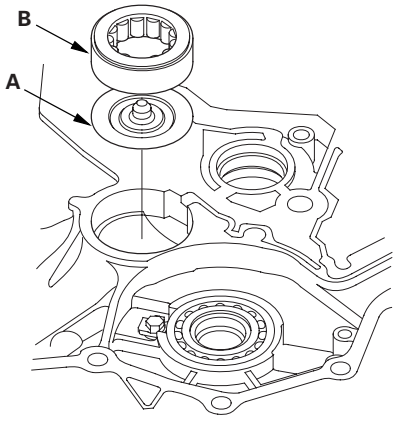
Countershaft Bearing Replacement

Special Tools Required
- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the countershaft bearing using the adjustable bearing puller and a commercially available 3/8 ''-16 slide hammer (A).

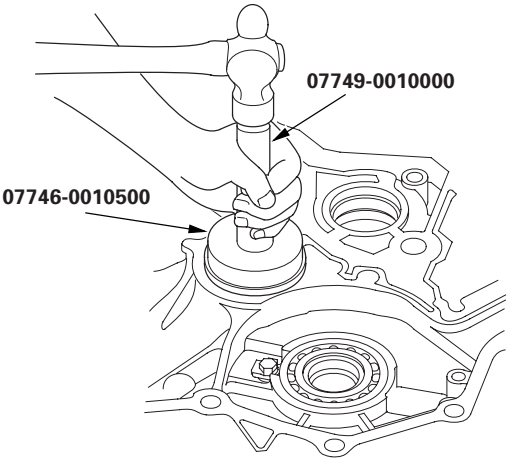


2. Remove the ATF guide plate (A), and check it for wear and damage. If the guide plate is worn or damaged, replace it.

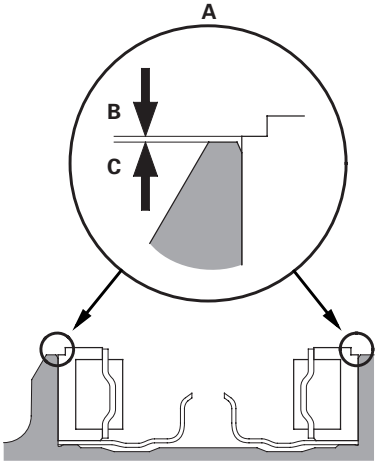


3. Install the ATF guide plate in the housing, and set a new countershaft bearing (B).

4. Install the bearing securely in the housing using the driver and the 62 x 68 mm attachment.



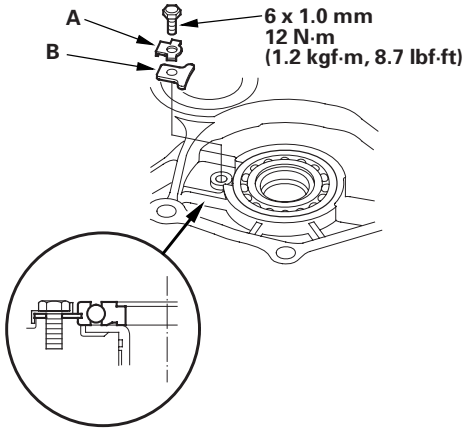
5. Make sure that the bearing outer race notch-cut (A) is installed at a height of 0—0.05 mm (0—0.002 in.) (B) above the housing surface (C). Do not install the bearing higher than 0.05 mm (0.002 in.) above the housing surface.



Secondary Shaft Bearing Replacement

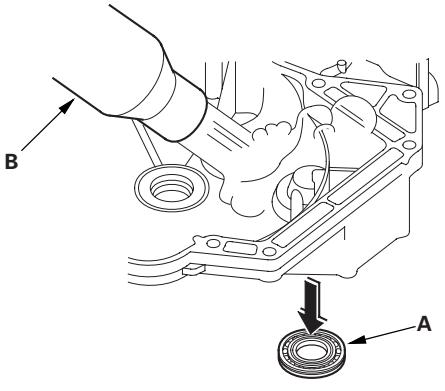
Special Tools Required
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the set plate bolt, then remove the lock washer (A) and the bearing set plate (B).

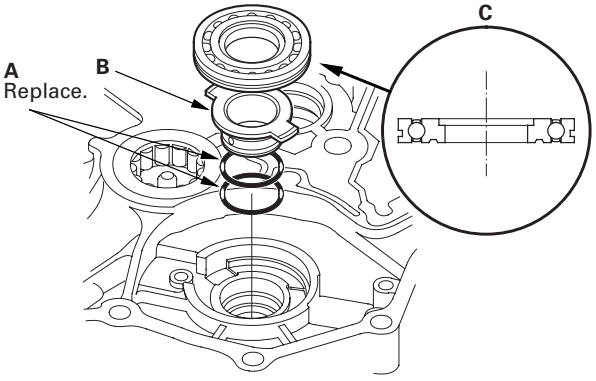


2. Remove the secondary shaft bearing (A) by heating the housing to about 100 ℃ (212 ℉) using a heat gun (B). Do not heat the housing more than 100 ℃ (212 ℉).

   NOTE: Let the housing cool to normal temperature before installing the bearing.

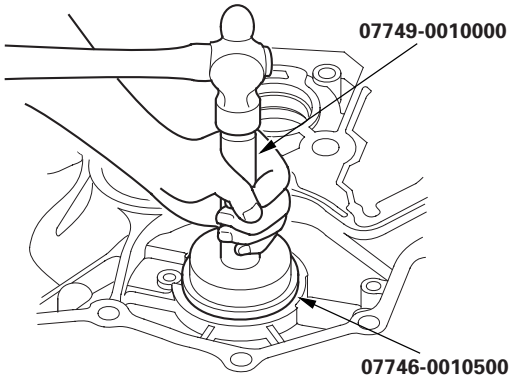


3. Install new O-rings (A) on the ATF guide collar (B), then install the ATF guide collar in the housing.



4. Install new secondary shaft bearing (C) in the direction shown.

5. Install the secondary shaft bearing using the driver and the 62 x 68 mm attachment, and install it securely in the housing.



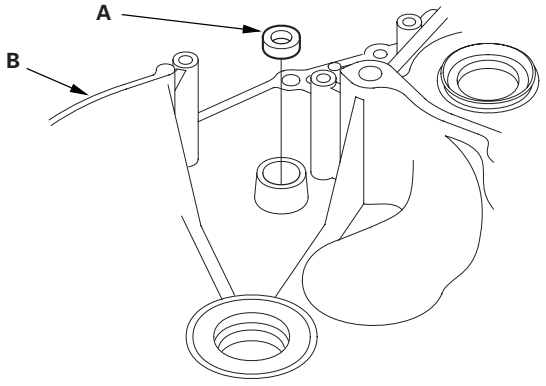
6. Check that the bearing groove aligns with the housing surface, then install the bearing set plate while aligning the bearing groove.

7. Install a new lock washer and the set plate bolt, then bend the lock tab of the lock washer against the bolt head.

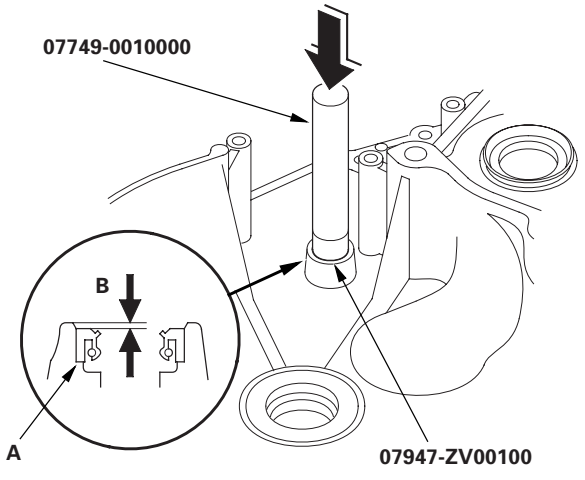
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07947-ZV00100

1. Remove the oil seal (A) from the torque converter housing (B).

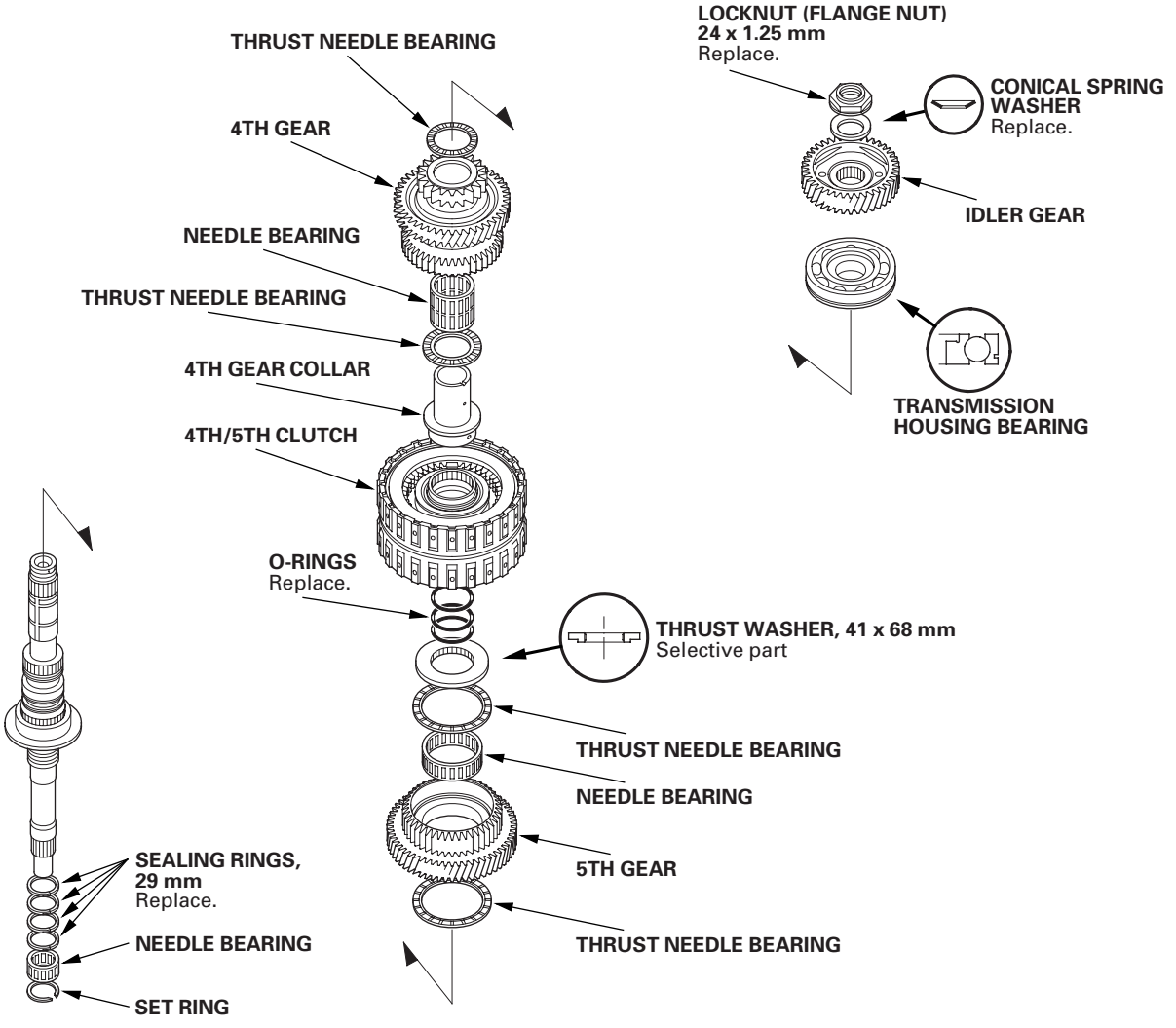


2. Install a new oil seal (A) in the torque converter housing to a depth (B) of 0.5—1.5 mm (0.02—0.06 in.) below the housing surface using the driver and the oil seal driver attachment.



Mainshaft Disassembly, Inspection, and Reassembly

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.



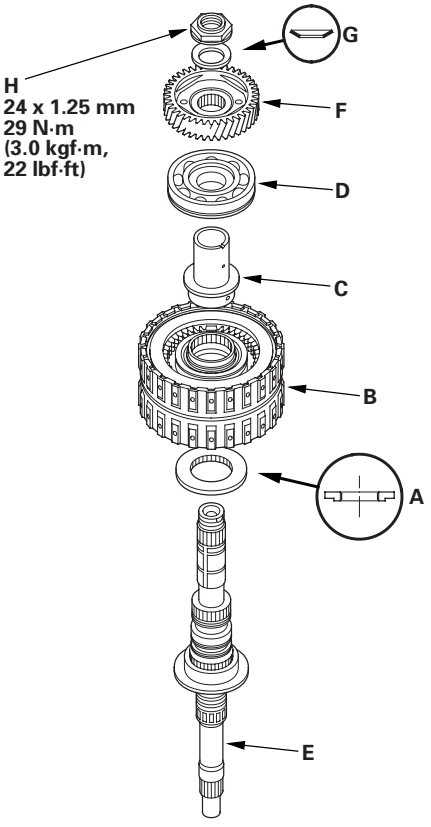
2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing new O-rings, wrap the shaft splines with tape to prevent the O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer and the 41 x 68 mm thrust washer in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission.
8. Check the clearance of 5th gear (see page 14-313).

Mainshaft 5th Gear Axial Clearance Inspection

'06-07 Models

1. Remove the mainshaft transmission housing bearing (see page 14-297).

2. Assemble the 41 x 68 mm thrust washer (A), the 4th/5th clutch (B), the 4th gear collar (C), and the transmission housing bearing (D) on the mainshaft (E). Do not install the O-rings during inspection.

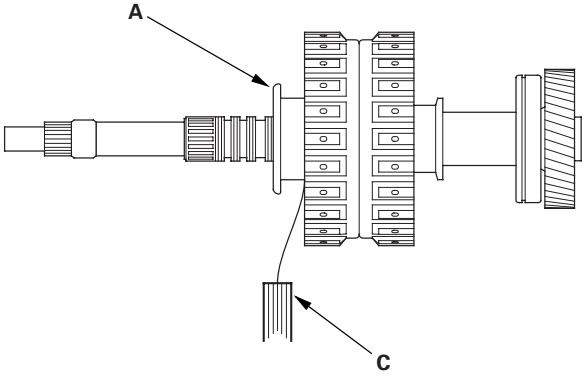


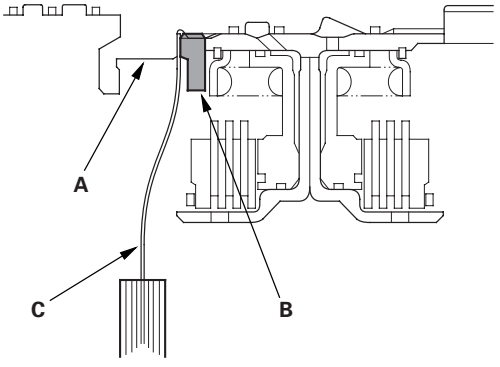
3. Install the idler gear (F) on the mainshaft by a press, then install the conical spring washer (G) and the locknut (H).

4. Tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

5. Measure the clearance between the mainshaft flange (A) and the 41 x 68 mm thrust washer (B) using a feeler gauge (C), in at least three places. Use the average as the actual clearance.

Standard: 0.03—0.11 mm (0.001—0.004 in.)

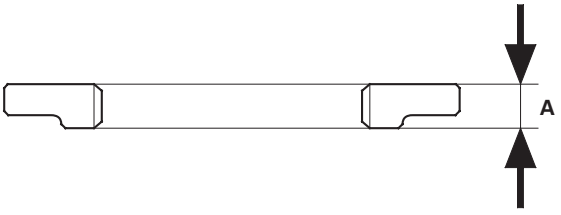




(cont'd)

Mainshaft 5th Gear Axial Clearance Inspection (cont'd)

6. If the clearance is out of standard, remove the 41 x 68 mm thrust washer and measure its thickness (A).



7. Select and install a new thrust washer, then recheck.

THRUST WASHER, 41 x 68 mm

No.	Part Number	Thickness
1	90414-PRP-000	6.35 mm (0.250 in.)
2	90415-PRP-000	6.40 mm (0.252 in.)
3	90416-PRP-000	6.45 mm (0.254 in.)
4	90417-PRP-000	6.50 mm (0.256 in.)
5	90418-PRP-000	6.55 mm (0.258 in.)
6	90419-PRP-000	6.60 mm (0.260 in.)

8. After replacing the thrust washer, make sure the clearance is within standard.

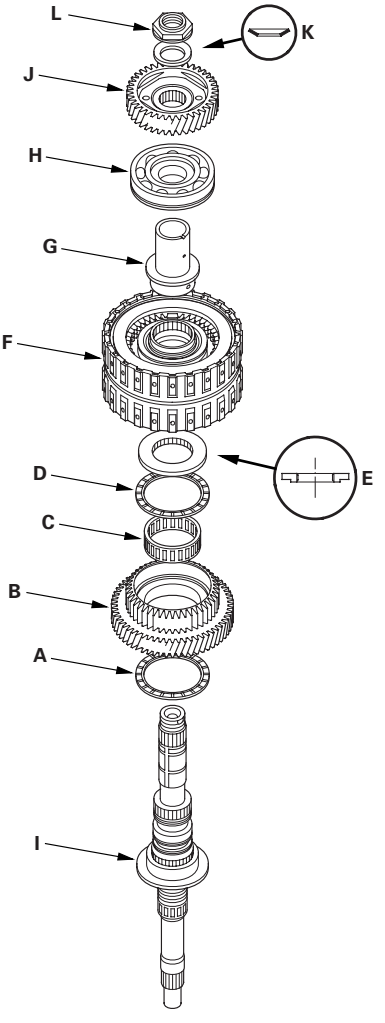
9. Disassemble the shaft and gears.

10. Reinstall the bearing in the transmission housing (see page 14-298).

'08-09 Models

1. Remove the mainshaft transmission housing bearing (see page 14-297).

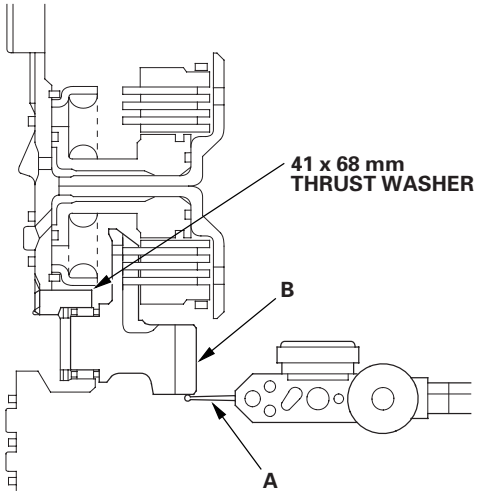
2. Install the thrust needle bearing (A), 5th gear (B), the needle bearing (C), the thrust needle bearing (D), the 41 x 68 mm thrust washer (E), the 4th/5th clutch (F), the 4th gear collar (G), and the transmission housing bearing (H) on the mainshaft (I). Do not install the O-rings during inspection.



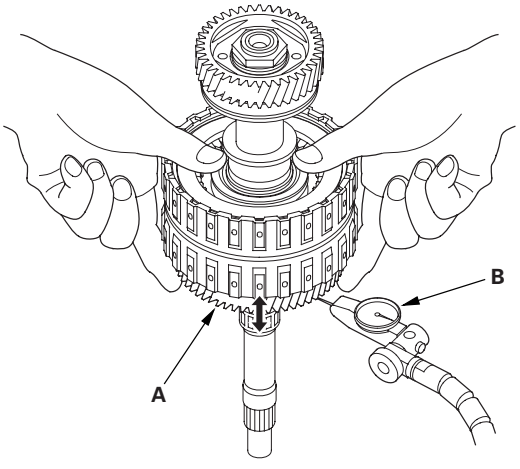
3. Install the idler gear (J) on the mainshaft by a press, then install the conical spring washer (K) and the locknut (L).

4. Tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

5. Set the dial indicator (A) on 5th gear (B).



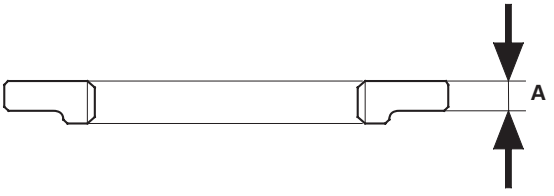
6. Lift 5th gear (A) up while holding the mainshaft, and use the dial indicator (B) to read the 5th gear axial clearance.



7. Measure the 5th gear axial clearance in at least three places while moving 5th gear. Use the average as the actual clearance.

   Standard: 0.04—0.10 mm (0.002—0.004 in.)

8. If the clearance is out of standard, remove the 41 x 68 mm thrust washer and measure its thickness (A).



9. Select and install a new thrust washer, then recheck.

THRUST WASHER, 41 x 68 mm

No.	Part Number	Thickness
1	90414-RCT-000	4.450 mm (0.1752 in.)
2	90415-RCT-000	4.475 mm (0.1762 in.)
3	90416-RCT-000	4.500 mm (0.1772 in.)
4	90417-RCT-000	4.525 mm (0.1781 in.)
5	90418-RCT-000	4.550 mm (0.1791 in.)
6	90419-RCT-000	4.575 mm (0.1801 in.)
7	90420-RCT-000	4.600 mm (0.1811 in.)
8	90421-RCT-000	4.625 mm (0.1821 in.)
9	90422-RCT-000	4.650 mm (0.1831 in.)
10	90423-RCT-000	4.675 mm (0.1841 in.)
11	90424-RCT-000	4.700 mm (0.1850 in.)
12	90425-RCT-000	4.725 mm (0.1860 in.)
13	90426-RCT-000	4.750 mm (0.1870 in.)
14	90427-RCT-000	4.775 mm (0.1880 in.)
15	90428-RCT-000	4.800 mm (0.1890 in.)

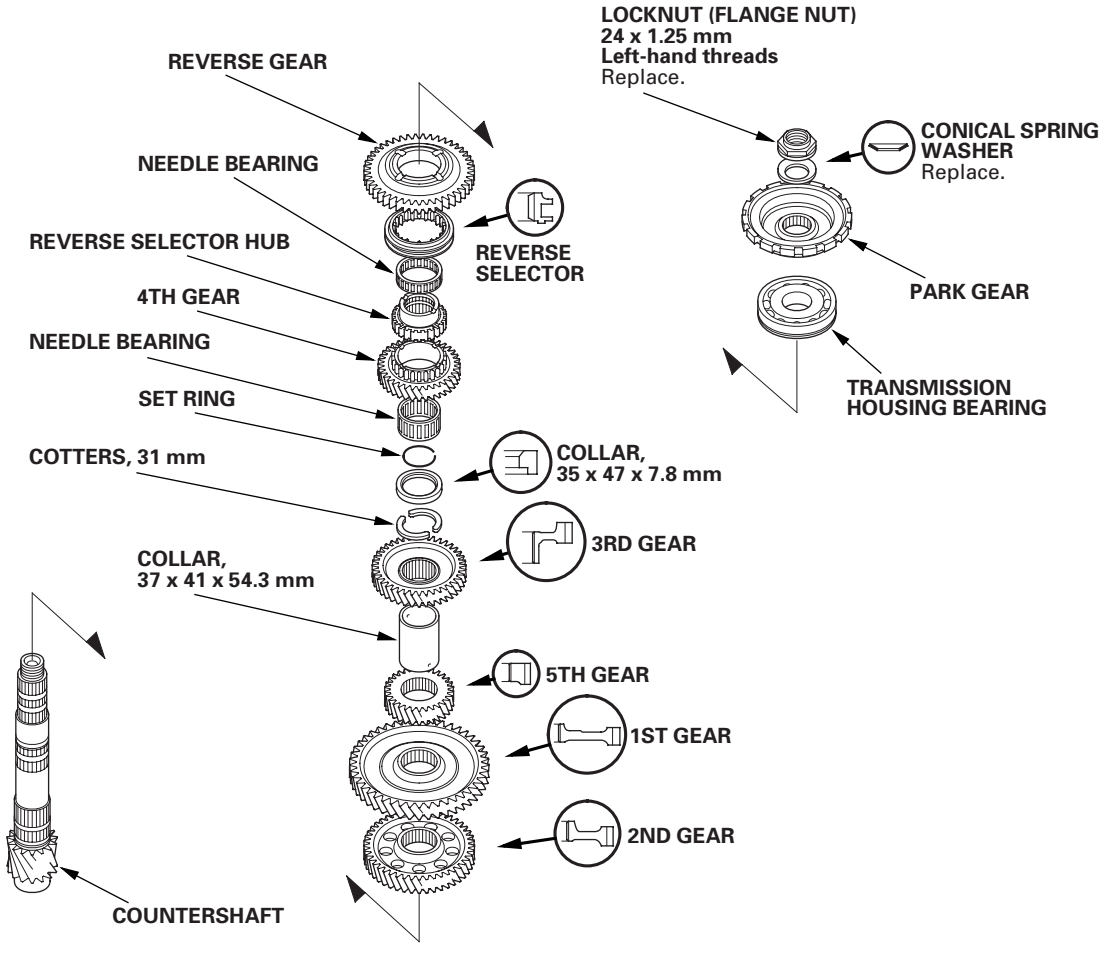
10. After replacing the thrust washer, make sure the clearance is within the standard.

11. Disassemble the installed parts from the mainshaft.

12. Reinstall the bearing in the transmission housing (see page 14-298).

Countershaft Disassembly, Inspection, and Reassembly

1. Inspect the needle bearing for galling and rough movement.

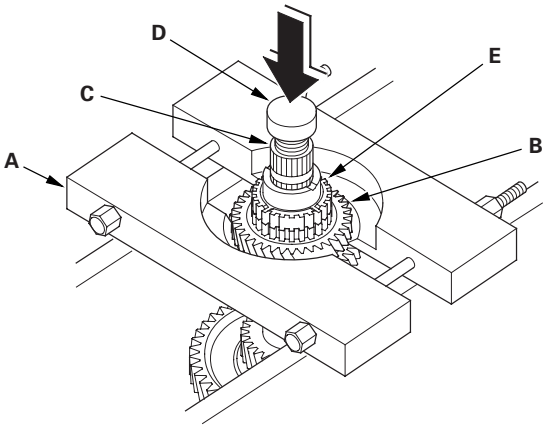


2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Lubricate all parts with ATF during assembly.
5. Install the conical spring washer, the reverse selector, 35 x 47 x 7.8 mm collar, and all gears in the direction shown.
6. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The countershaft locknut has left-hand threads.
7. Some reverse selector hubs and 3rd gear are press-fitted to the countershaft; special tools are needed to remove them (see page 14-317) and to install them (see page 14-318).

Countershaft Reverse Selector Hub and 3rd Gear Removal

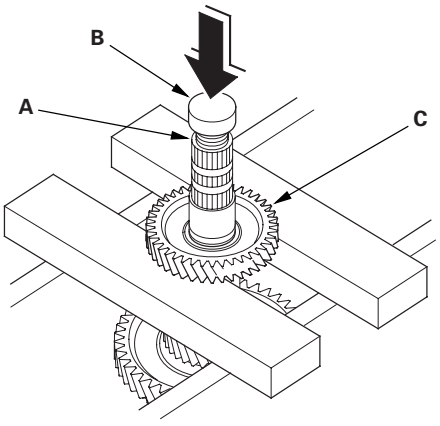
1. Install a commercially available bearing separator (A) on 4th gear (B). Set the countershaft (C) on a press with a spacer (D) between the press and the countershaft, and remove the reverse selector hub (E).

   NOTE: Some reverse selector hubs are not press-fitted, and can be removed without using the bearing separator and a press.



2. Remove the needle bearing, the set ring, the 35 x 47 x 7.8 mm collar, and the cotters.

3. Set the countershaft (A) on a press with a spacer (B) between the press and the countershaft, and remove 3rd gear (C).



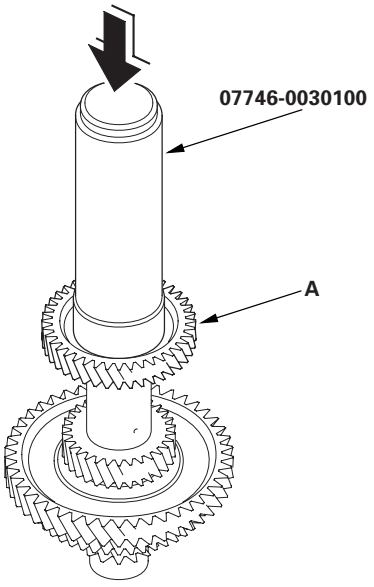
4. Remove the 37 x 41 x 54.3 mm collar, 5th gear, 1st gear, and 2nd gear.

Countershaft 3rd Gear and Reverse Selector Hub Installation

Special Tools Required
Driver handle, 40 mm I.D. 07746-0030100

1. Install 2nd gear, 1st gear, 5th gear, and the 37 x 41 x 54.3 mm collar on the countershaft.

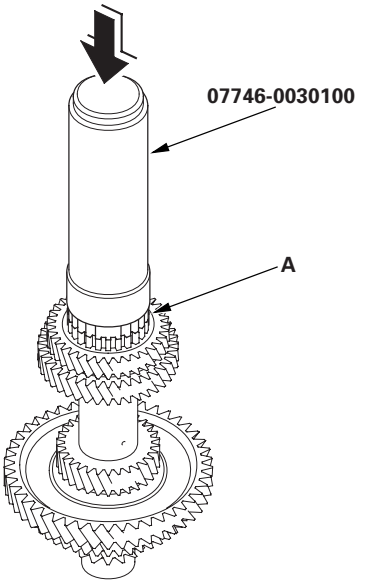
2. Slide 3rd gear (A) over the countershaft, and press it in place using the 40 mm I.D. driver handle and a press.



3. Install the cotters, the 35 x 47 x 7.8 mm collar, the set ring, the needle bearing, and 4th gear.

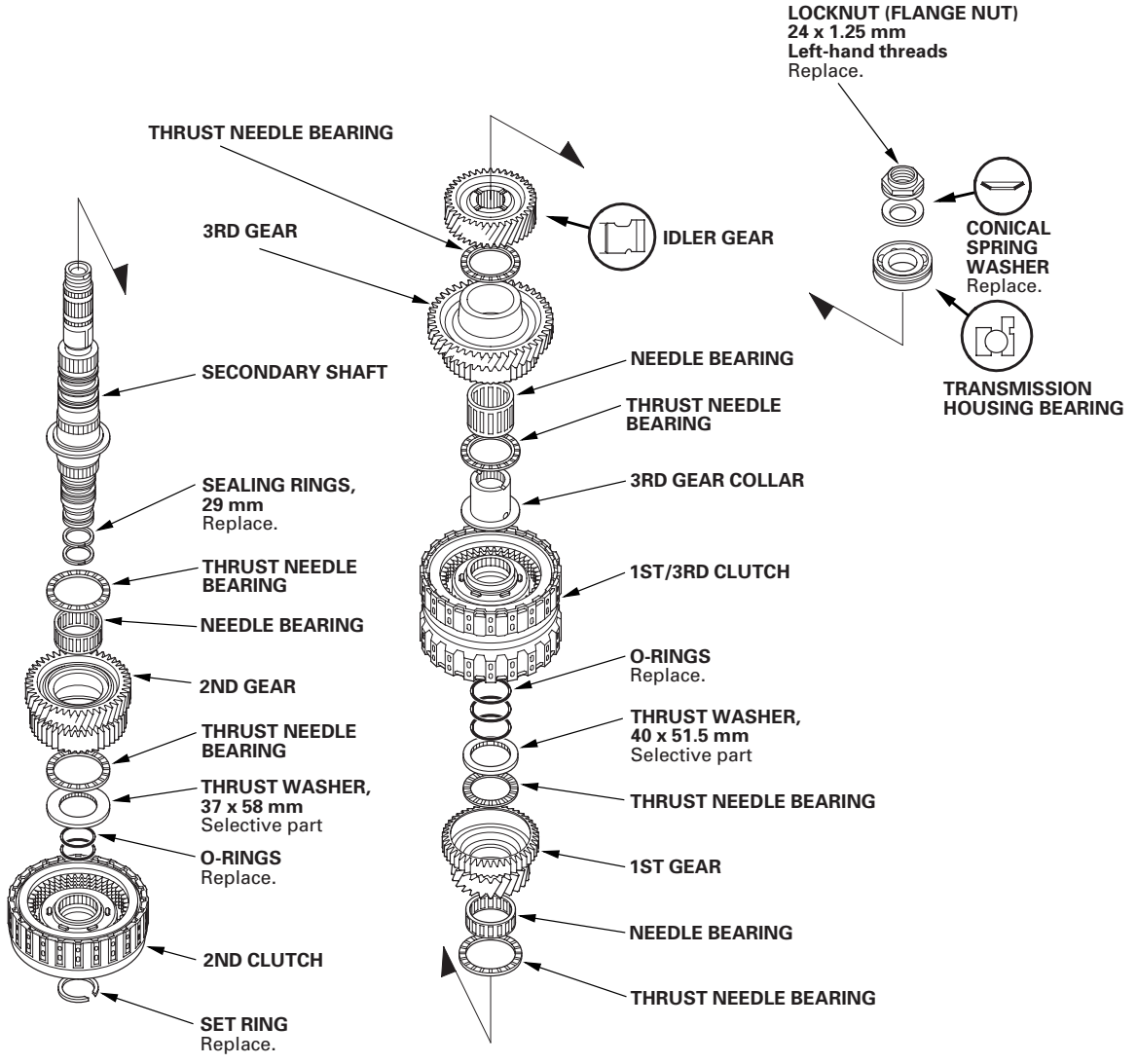
4. Slide the reverse selector hub (A) over the countershaft, then press it in place using the 40 mm I.D. driver handle and a press.

   NOTE: Some reverse selector hubs are not press-fitted and can be installed without using the 40 mm I.D. driver handle and a press.



Secondary Shaft Disassembly, Inspection, and Reassembly

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.



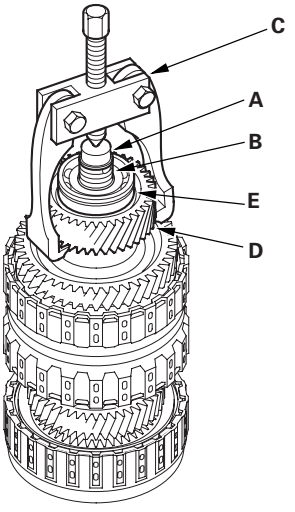
2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing new O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer and the idler gear in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The locknut has left-hand threads.
8. Check the clearance of 2nd gear (see page 14-321) and 1st gear (see page 14-322).

Secondary Shaft Ball Bearing, Idler Gear Removal and Installation

Special Tools Required
Attachment, 42 mm I.D. 07QAD-P0A0100

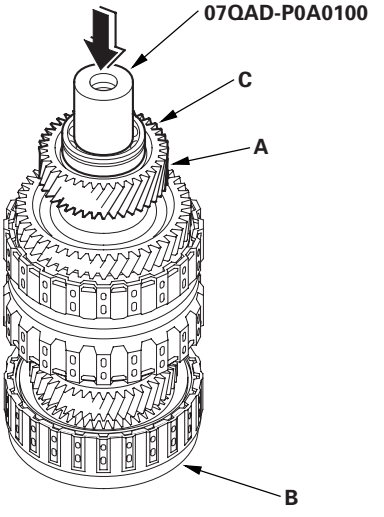
Removal

Place a spacer (A) on the secondary shaft (B), and set the puller (C) under the idler gear (D), then remove the idler gear and the ball bearing (E).



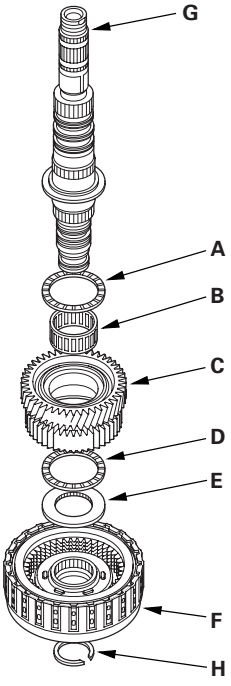
Installation

Install the idler gear (A) on the secondary shaft (B), and install the ball bearing (C) over the idler gear using the 42 mm I.D. attachment and a press.



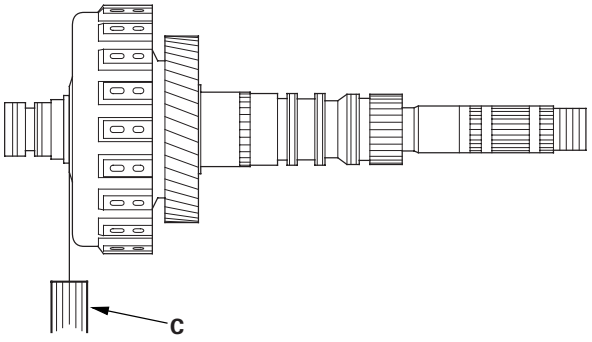
Secondary Shaft 2nd Gear Axial Clearance Inspection

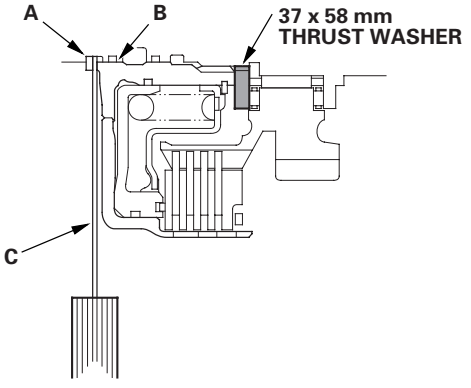
1. Install the thrust needle bearing (A), the needle bearing (B), 2nd gear (C), the thrust needle bearing (D), the 37 x 58 mm thrust washer (E), and the 2nd clutch (F) on the secondary shaft (G), then secure them with the set ring (H).



2. Measure the clearance between the snap ring (A) and the 2nd clutch guide (B) using a feeler gauge (C), in at least three places. Use the average as the actual clearance.

Standard: 0.04—0.12 mm (0.002—0.005 in.)





(cont'd)

Secondary Shaft 2nd Gear Axial Clearance Inspection (cont'd)

3. If the clearance is out of standard, remove the 37 x 58 mm thrust washer and measure its thickness.

4. Select and install a new thrust washer, then recheck.

THRUST WASHER, 37 x 58 mm

No.	Part Number	Thickness
1	90511-PRP-010	3.900 mm (0.154 in.)
2	90512-PRP-010	3.925 mm (0.155 in.)
3	90513-PRP-010	3.950 mm (0.156 in.)
4	90514-PRP-010	3.975 mm (0.156 in.)
5	90515-PRP-010	4.000 mm (0.157 in.)
6	90516-PRP-010	4.025 mm (0.158 in.)
7	90517-PRP-010	4.050 mm (0.159 in.)
8	90518-PRP-010	4.075 mm (0.160 in.)
9	90519-PRP-010	4.100 mm (0.161 in.)
10	90520-PRP-010	4.125 mm (0.162 in.)
11	90521-PRP-010	4.150 mm (0.163 in.)
12	90522-PRP-010	4.175 mm (0.164 in.)
13	90523-PRP-000	4.200 mm (0.165 in.)
14	90524-PRP-000	4.225 mm (0.166 in.)
15	90525-PRP-000	4.250 mm (0.167 in.)
16	90526-PRP-000	4.275 mm (0.168 in.)
17	90527-PRP-000	4.300 mm (0.169 in.)
18	90528-PRP-000	4.325 mm (0.170 in.)
19	90529-PRP-000	4.350 mm (0.171 in.)
20	90530-PRP-000	4.375 mm (0.172 in.)

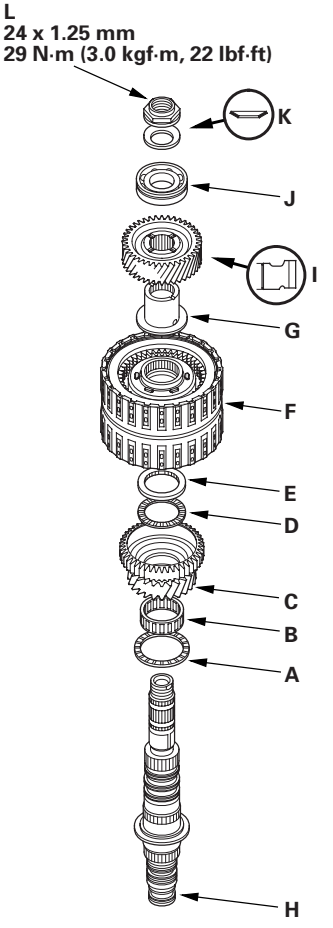
5. After replacing the thrust washer, make sure the clearance is within standard.

6. Disassemble the installed parts from the secondary shaft.

Secondary Shaft 1st Gear Axial Clearance Inspection

Special Tools Required
Attachment, 42 mm I.D. 07QAD-P0A0100

1. Install the thrust needle bearing (A), the needle bearing (B), 1st gear (C), the thrust needle bearing (D), the 40 x 51.5 mm thrust washer (E), the 1st/3rd clutch (F), and the 3rd gear collar (G) on the secondary shaft (H). Do not install the O-rings during inspection.



Secondary Shaft 2nd Gear Axial Clearance Inspection (cont'd)

3. If the clearance is out of standard, remove the 37 x 58 mm thrust washer and measure its thickness.

4. Select and install a new thrust washer, then recheck.

THRUST WASHER, 37 x 58 mm

No.	Part Number	Thickness
1	90511-PRP-010	3.900 mm (0.154 in.)
2	90512-PRP-010	3.925 mm (0.155 in.)
3	90513-PRP-010	3.950 mm (0.156 in.)
4	90514-PRP-010	3.975 mm (0.156 in.)
5	90515-PRP-010	4.000 mm (0.157 in.)
6	90516-PRP-010	4.025 mm (0.158 in.)
7	90517-PRP-010	4.050 mm (0.159 in.)
8	90518-PRP-010	4.075 mm (0.160 in.)
9	90519-PRP-010	4.100 mm (0.161 in.)
10	90520-PRP-010	4.125 mm (0.162 in.)
11	90521-PRP-010	4.150 mm (0.163 in.)
12	90522-PRP-010	4.175 mm (0.164 in.)
13	90523-PRP-000	4.200 mm (0.165 in.)
14	90524-PRP-000	4.225 mm (0.166 in.)
15	90525-PRP-000	4.250 mm (0.167 in.)
16	90526-PRP-000	4.275 mm (0.168 in.)
17	90527-PRP-000	4.300 mm (0.169 in.)
18	90528-PRP-000	4.325 mm (0.170 in.)
19	90529-PRP-000	4.350 mm (0.171 in.)
20	90530-PRP-000	4.375 mm (0.172 in.)

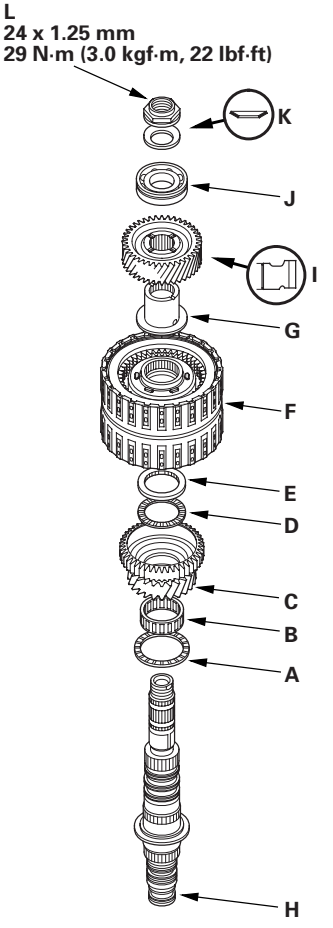
5. After replacing the thrust washer, make sure the clearance is within standard.

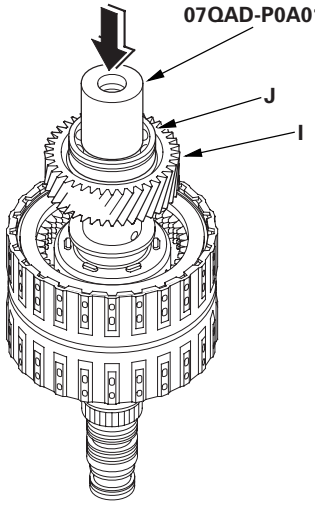
6. Disassemble the installed parts from the secondary shaft.

Secondary Shaft 1st Gear Axial Clearance Inspection

Special Tools Required
Attachment, 42 mm I.D. 07QAD-P0A0100

1. Install the thrust needle bearing (A), the needle bearing (B), 1st gear (C), the thrust needle bearing (D), the 40 x 51.5 mm thrust washer (E), the 1st/3rd clutch (F), and the 3rd gear collar (G) on the secondary shaft (H). Do not install the O-rings during inspection.

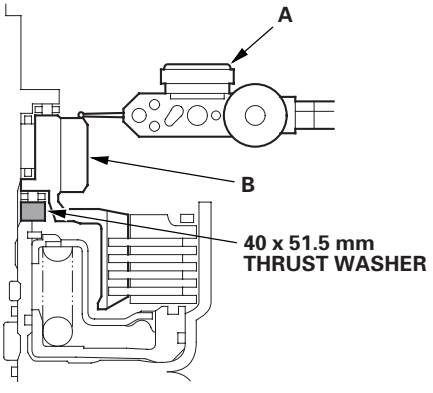




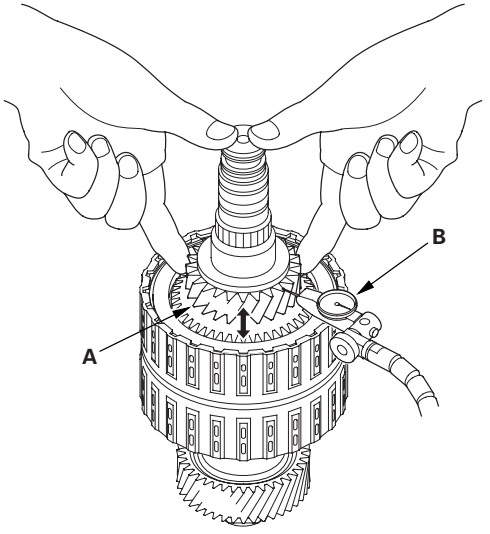
2. Install the idler gear (I), then install the ball bearing (J) on the idler gear using the 42 mm I.D. attachment and a press.

3. Install the conical spring washer (K) and the locknut (L), then tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).

4. Turn the secondary shaft assembly upside down, and set the dial indicator (A) on 1st gear (B).



5. Lift 1st gear (A) up while holding the secondary shaft, and use the dial indicator (B) to read the 1st gear axial clearance.



6. Measure the 1st gear axial clearance in at least three places while moving 1st gear. Use the average as the actual clearance.

Standard: 0.04—0.12 mm (0.002—0.005 in.)

(cont'd)

Secondary Shaft 1st Gear Axial Clearance Inspection (cont'd)

7. If the clearance is out of standard, remove the 40 x 51.5 mm thrust washer and measure its thickness.

8. Select and install a new thrust washer, then recheck.

THRUST WASHER, 40 x 51.5 mm ('06 Model)

No.	Part Number	Thickness
1	90503-PRP-000	4.80 mm (0.189 in.)
2	90504-PRP-000	4.85 mm (0.191 in.)
3	90505-PRP-000	4.90 mm (0.193 in.)
4	90506-PRP-000	4.95 mm (0.195 in.)
5	90507-PRP-000	5.00 mm (0.197 in.)
6	90508-PRP-000	5.05 mm (0.199 in.)

THRUST WASHER, 40 x 51.5 mm ('07-09 Models)

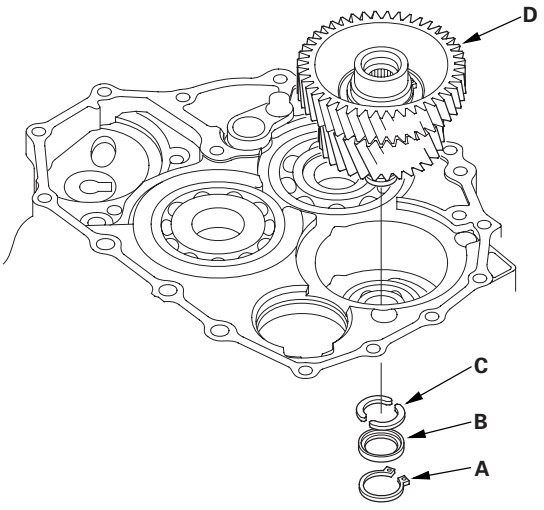
No.	Part Number	Thickness
1	90503-RCT-000	4.80 mm (0.189 in.)
2	90504-RCT-000	4.85 mm (0.191 in.)
3	90505-RCT-000	4.90 mm (0.193 in.)
4	90506-RCT-000	4.95 mm (0.195 in.)
5	90507-RCT-000	5.00 mm (0.197 in.)
6	90508-RCT-000	5.05 mm (0.199 in.)

9. After replacing the thrust washer, make sure the clearance is within standard.

10. Disassemble the installed parts from the secondary shaft.

Idler Gear Shaft Removal and Installation

1. Remove the snap ring (A), the cotter retainer (B), and the cotters (C). Do not distort the snap ring.



2. Remove the idler gear shaft/idler gear assembly (D) from the transmission housing.

3. Check the snap ring and the cotter retainer for wear and damage. Replace them if they are worn, distorted, or damaged.

4. Install the idler gear and the idler gear shaft in the reverse order of removal.

Secondary Shaft 1st Gear Axial Clearance Inspection (cont'd)

7. If the clearance is out of standard, remove the 40 x 51.5 mm thrust washer and measure its thickness.

8. Select and install a new thrust washer, then recheck.

THRUST WASHER, 40 x 51.5 mm ('06 Model)

No.	Part Number	Thickness
1	90503-PRP-000	4.80 mm (0.189 in.)
2	90504-PRP-000	4.85 mm (0.191 in.)
3	90505-PRP-000	4.90 mm (0.193 in.)
4	90506-PRP-000	4.95 mm (0.195 in.)
5	90507-PRP-000	5.00 mm (0.197 in.)
6	90508-PRP-000	5.05 mm (0.199 in.)

THRUST WASHER, 40 x 51.5 mm ('07-09 Models)

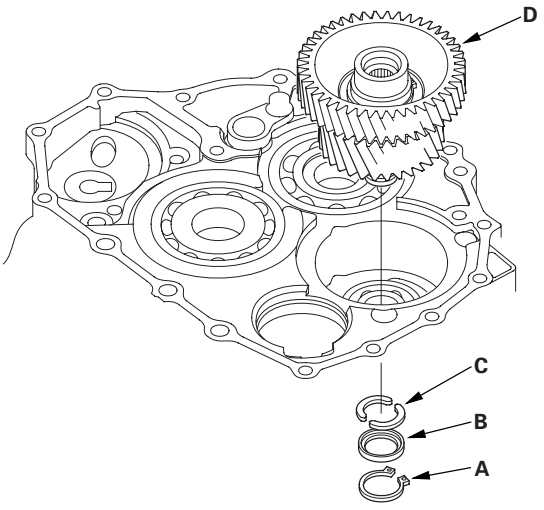
No.	Part Number	Thickness
1	90503-RCT-000	4.80 mm (0.189 in.)
2	90504-RCT-000	4.85 mm (0.191 in.)
3	90505-RCT-000	4.90 mm (0.193 in.)
4	90506-RCT-000	4.95 mm (0.195 in.)
5	90507-RCT-000	5.00 mm (0.197 in.)
6	90508-RCT-000	5.05 mm (0.199 in.)

9. After replacing the thrust washer, make sure the clearance is within standard.

10. Disassemble the installed parts from the secondary shaft.

Idler Gear Shaft Removal and Installation

1. Remove the snap ring (A), the cotter retainer (B), and the cotters (C). Do not distort the snap ring.



2. Remove the idler gear shaft/idler gear assembly (D) from the transmission housing.

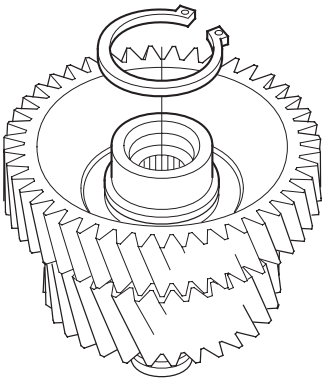
3. Check the snap ring and the cotter retainer for wear and damage. Replace them if they are worn, distorted, or damaged.

4. Install the idler gear and the idler gear shaft in the reverse order of removal.

Idler Gear/Idler Gear Shaft Replacement

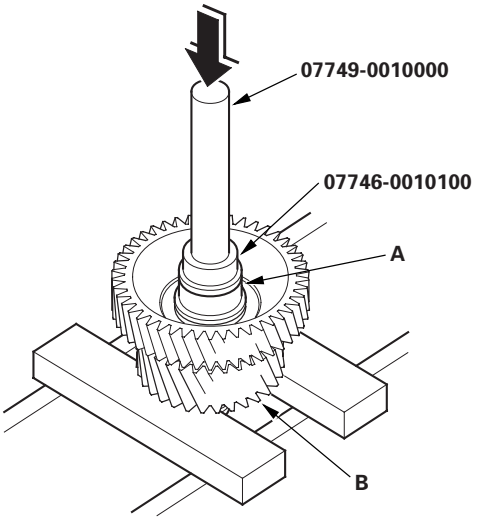
Special Tools Required
- Driver 07749-0010000
- Attachment, 32 x 35 mm 07746-0010100

1. Remove the snap ring from the idler gear/idler shaft assembly. Do not distort the snap ring.

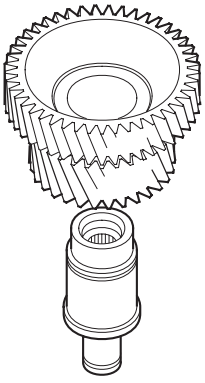


2. Check the snap ring for wear and damage. Replace it if it is worn, distorted, or damaged.

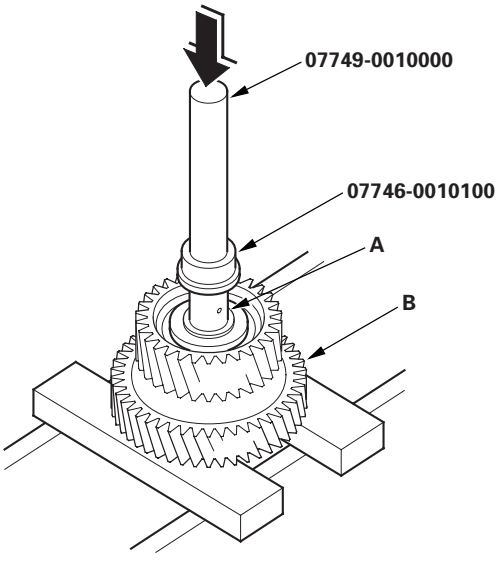
3. Remove the idler gear shaft (A) from the idler gear (B) using the driver, the 32 x 35 mm attachment, and a press.



4. Replace the idler gear and/or the idler gear shaft, and attach the idler gear shaft to the idler gear.



5. Install the idler gear shaft (A) in the idler gear (B) using the driver, the 32 x 35 mm attachment, and a press.

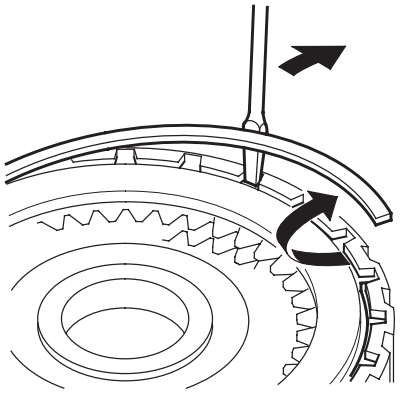


6. Install the snap ring.

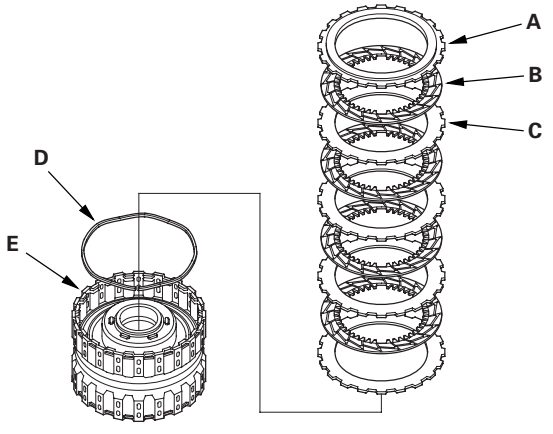
Clutch Disassembly

Special Tools Required
Clutch spring compressor set 07LAE-PX40000

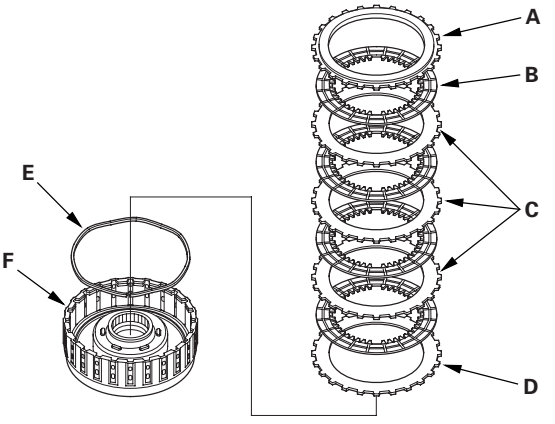
1. Remove the snap ring using a screwdriver.



2. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (4), and the waved spring (D) from the 1st clutch drum (E).

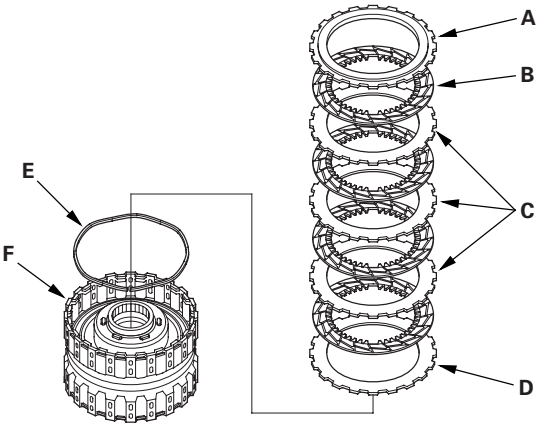


3. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (3), the clutch flat-plate (D), and the waved spring (E) from the 2nd clutch drum (F).



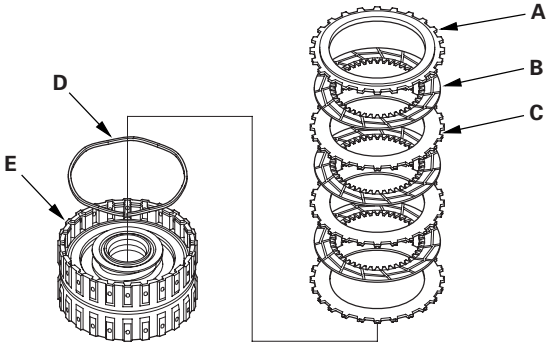
4. Make a reference mark on the clutch flat-plate.

5. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (3), the clutch flat-plate (D), and the waved spring (E) from the 3rd clutch drum (F).

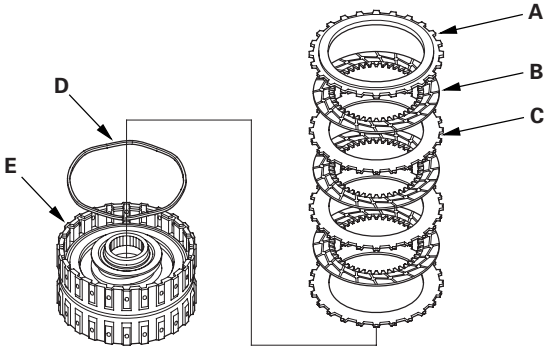


6. Make a reference mark on the clutch flat-plate.

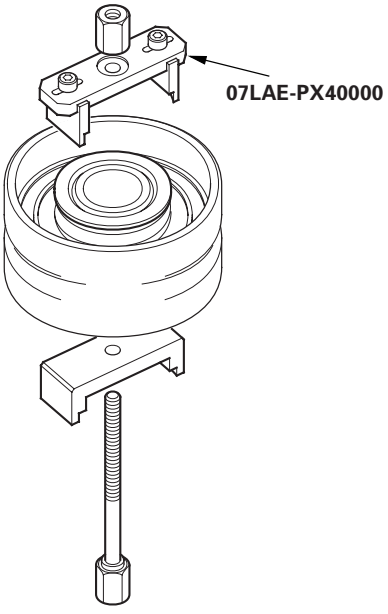
7. Remove the clutch end-plate (A), the clutch discs (B) (3), the clutch wave-plates (C) (3), and the waved spring (D) from the 4th clutch drum (E).



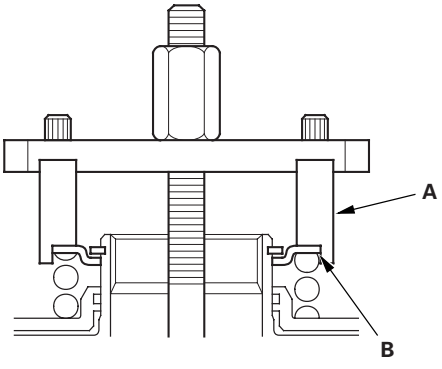
8. Remove the clutch end-plate (A), the clutch discs (B) (3), the clutch wave-plates (C) (3), and the waved spring (D) from the 5th clutch drum (E).



9. Install the clutch spring compressor set.



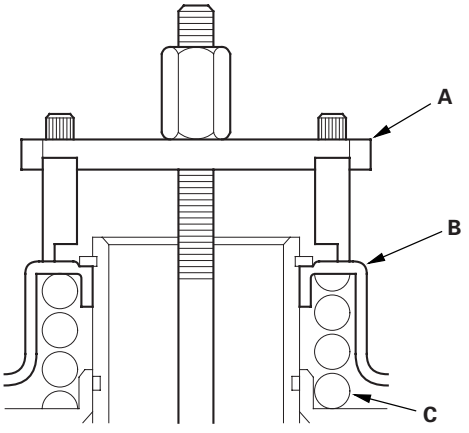
10. Be sure the clutch spring compressor set (A) is adjusted to have full contact with the spring retainer (B) on the 4th and 5th clutches.



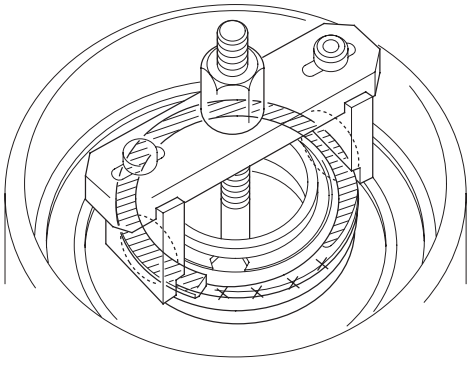
(cont'd)

Clutch Disassembly (cont'd)

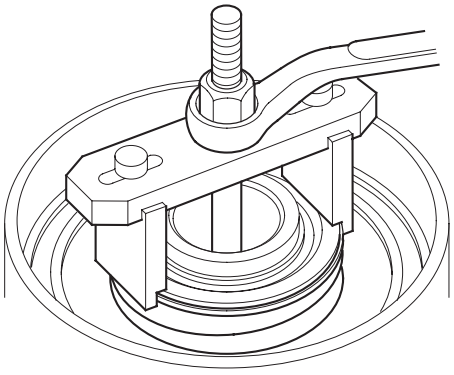
11. Set the clutch spring compressor set (A) on the spring retainer (B) of the 1st, 2nd, and 3rd clutches so that it pushes on the clutch return spring (C).



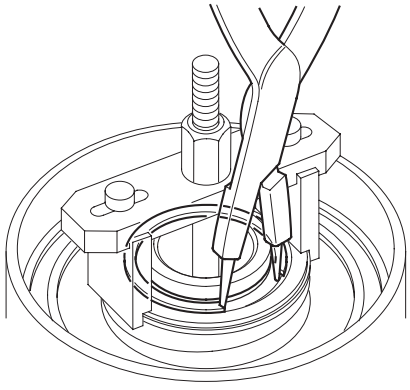
12. Check the placement of the clutch spring compressor set. If either end of the clutch spring compressor set is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



13. Compress the return spring until the snap ring can be removed.

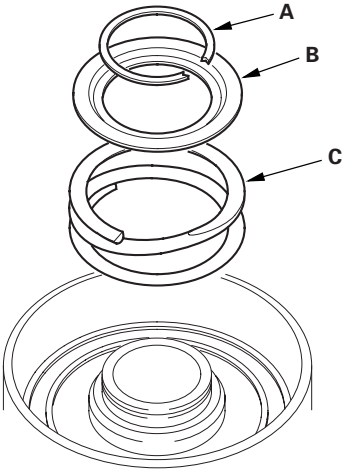


14. Remove the snap ring using snap ring pliers.

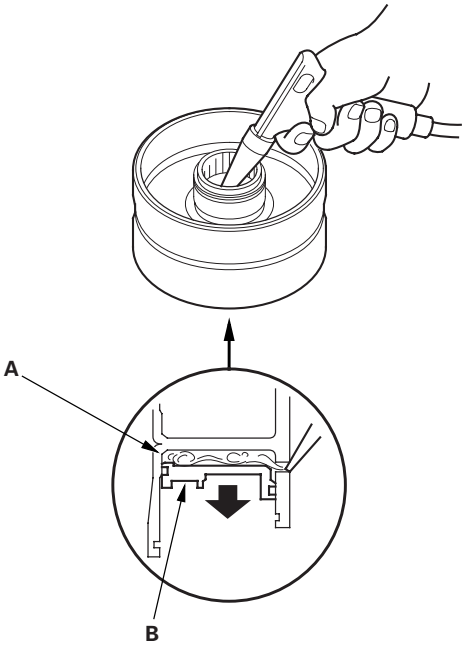


15. Remove the clutch spring compressor set.

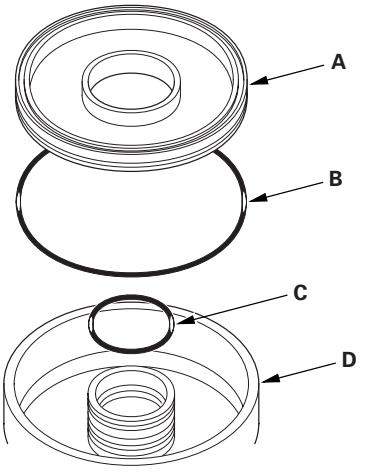
16. Remove the snap ring (A), the spring retainer (B), and the return spring (C).



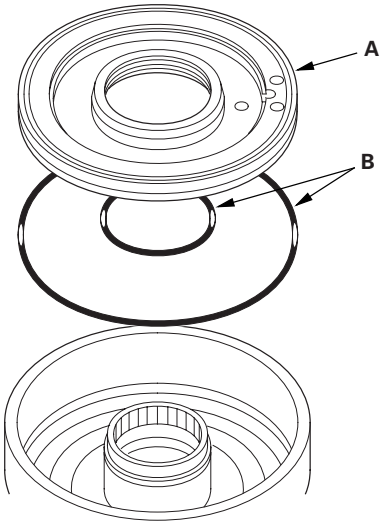
17. Wrap a shop rag around the clutch drum (A), and apply air pressure to the fluid passage to remove the piston (B). Place a finger tip on the other passage while applying air pressure.



18. 1st, 2nd, and 3rd clutches: Remove the piston (A), then remove the O-ring (B) from the clutch piston, and remove the O-ring (C) from each clutch drum (D).

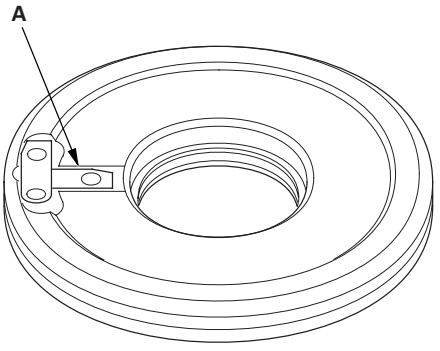


19. 4th and 5th clutches: Remove the piston (A), then remove the O-rings (B) from the clutch piston.



Clutch Inspection

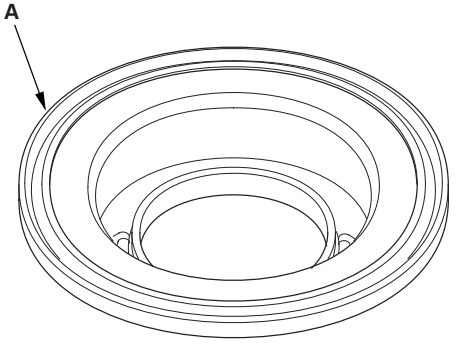
1. Inspect the 4th and 5th clutch pistons and the clutch piston check valves (A).



2. If the clutch piston check valve is loose or damaged, replace the clutch piston.

3. Check the spring retainer for wear and damage.

4. Check the oil seal (A) on the spring retainer of the 1st, 2nd, and 3rd clutches for wear, damage, and peeling.



5. If the oil seal is worn, damaged, or peeling, replace the spring retainer.

6. Inspect the clutch discs, the clutch plates, and the clutch end-plate for wear, damage, and discoloration.

Standard Thickness
Clutch Discs: 1.94 mm (0.076 in.)

Clutch Plates Standard Thickness:

1st Clutch	**(wave-plates):**	**2.0 mm (0.079 in.)**
2nd Clutch	**Wave-plates:**	**2.0 mm (0.079 in.)**
	Flat-plate:	**2.0 mm (0.079 in.)**
3rd Clutch	**Wave-plates:**	**2.0 mm (0.079 in.)**
	Flat-plates:	**2.0 mm (0.079 in.)**
4th Clutch	**(wave-plates):**	**2.3 mm (0.091 in.)**
5th Clutch	**(wave-plates):**	**2.3 mm (0.091 in.)**

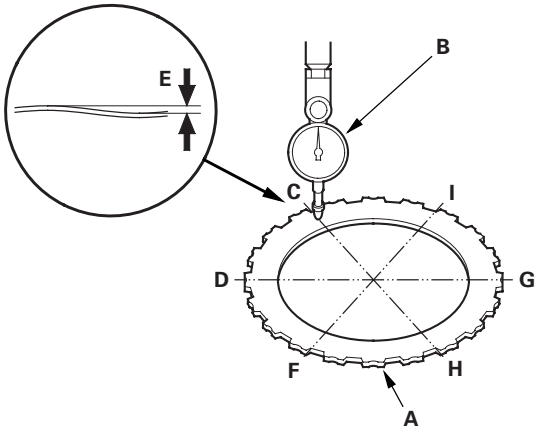
7. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clearance between the clutch end-plate and the top disc.

8. If any plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other wave-plates for a phase difference. If the clutch plate is replaced, inspect the clearance between the clutch end-plate and the top disc.

9. If the clutch end-plate is worn, damaged, or discolored, inspect the clearance between the clutch end-plate and the top disc, then replace the clutch end-plate.

Clutch Wave-plate Phase Difference Inspection

1. Place the clutch wave-plate (A) on a surface plate, and set a dial indicator (B) on the wave-plate.



2. Find the bottom (C) of a phase difference of the wave-plate, zero the dial indicator and make a reference mark on the bottom of the wave-plate.

3. Rotate the 2nd, 4th, and 5th clutch wave-plate about 60-degrees by holding it by its circumference, and rotate the 1st and 3rd clutch wave-plate about 72-degrees or 54-degrees apart from the bottom. The dial indicator should be at a top (D) of a phase difference. Do not rotate the wave-plate by holding its surface, always rotate it holding its edges.

4. Read the dial indicator. The dial indicator reads the phase difference (E) of the wave-plate between the bottom and the top.

   Standard: 0.07—0.20 mm (0.003—0.008 in.)

5. Rotate the 2nd, 4th, and 5th clutch wave-plate about 60-degrees from the top position, and rotate the 1st and 3rd clutch wave-plate 54-degrees or 72-degrees apart from the top. The dial indicator should be at the bottom of a phase difference (F and G). Zero the dial indicator.

6. Measure the phase difference at the other two tops (H and I) of the wave-plate by following steps 3 thru 5.

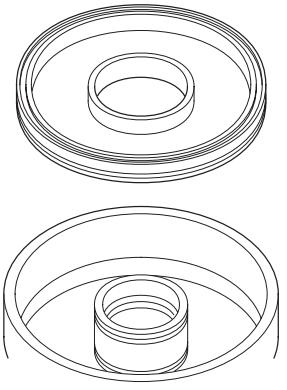
7. If two of the three measurements are within the standard, the wave-plate is OK. If two of the three measurements are out of the standard, replace the wave-plate.

Clutch Clearance Inspection

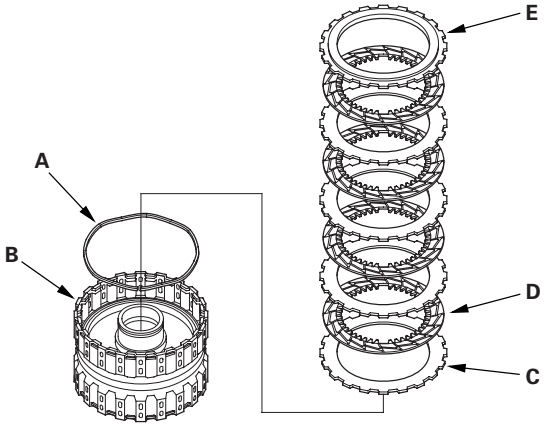
Special Tools Required
Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, the discs, the plates, and the end-plate for wear and damage (see page 14-330), and inspect the clutch wave-plate phase difference (see page 14-331), if necessary.

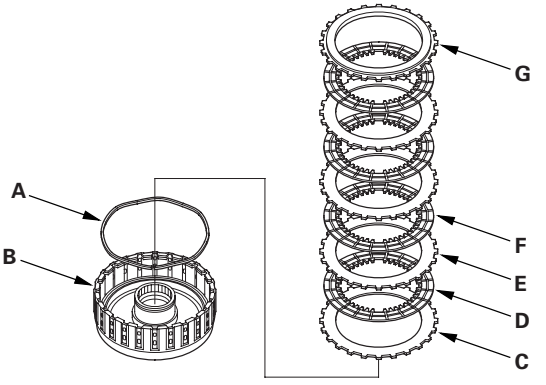
2. Install the clutch piston in the clutch drum. Do not install the O-rings during inspection.



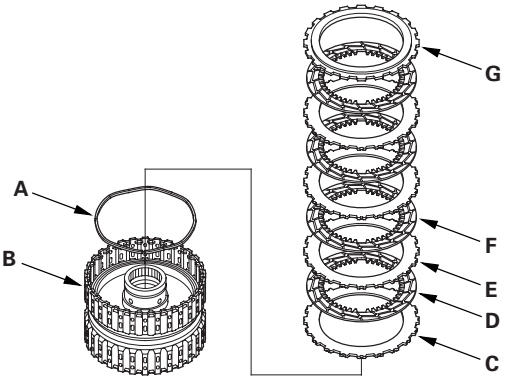
3. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (4), and the discs (D) (4), and install the clutch end-plate (E) with the flat side down on the top disc.



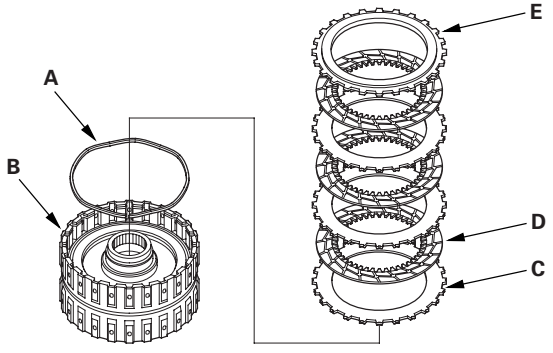
4. Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the disc.



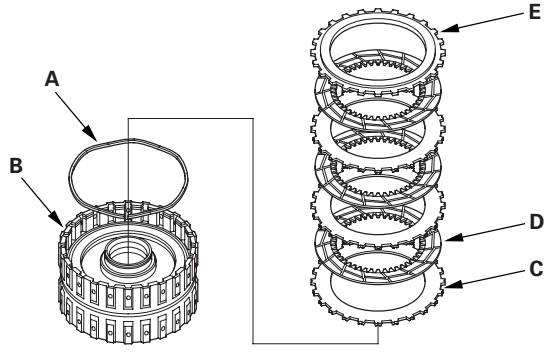
5. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the disc.



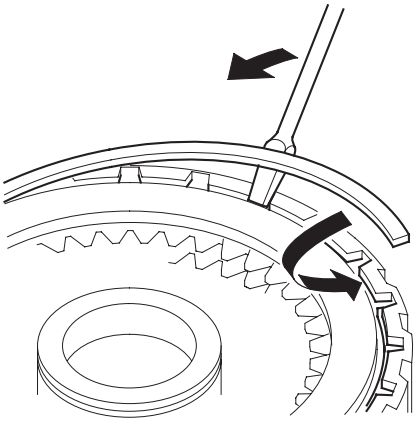
6. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (3), and the discs (D) (3), and install the clutch end-plate (E) with the flat side down on the top disc.



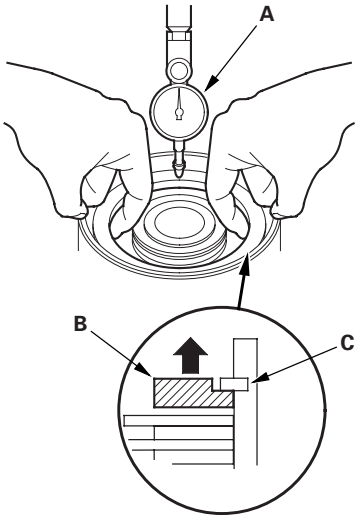
7. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (3), and the discs (D) (3), and install the clutch end-plate (E) with the flat side down on the top disc.



8. Install the snap ring using a screwdriver.



9. Set a dial indicator (A) on the clutch end-plate (B).

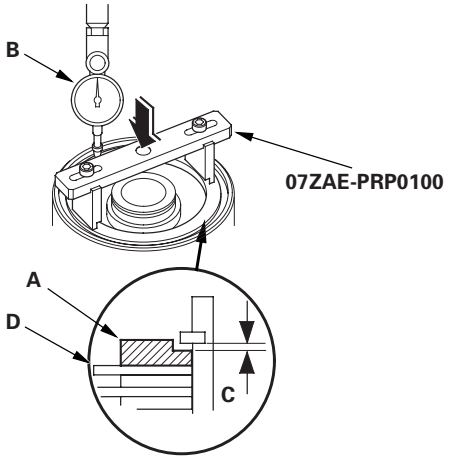


10. Zero the dial indicator with the clutch end-plate lifted up to the snap ring (C).

(cont'd)

Clutch Clearance Inspection (cont'd)

11. Release the clutch end-plate to lower the clutch end-plate, then put the clutch compressor attachment on the end-plate (A).

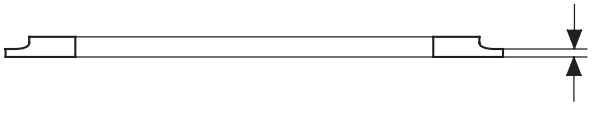


12. Press the clutch compressor attachment down with 150—160 N (15—16 kgf, 33—35 lbf) using a force gauge, and read the dial indicator (B).

13. The dial indicator reads the clearance (C) between the clutch end-plate and top disc (D). Take measurements in at least three places, and use average as the actual clearance.

Clearance between Clutch End-Plate and Top Disc
Service Limit:
1st Clutch: 1.23—1.43 mm (0.048—0.056 in.)
2nd Clutch: 0.75—0.95 mm (0.030—0.037 in.)
3rd Clutch: 0.83—1.03 mm (0.033—0.041 in.)
4th Clutch: 0.73—0.93 mm (0.029—0.037 in.)
5th Clutch: 0.73—0.93 mm (0.029—0.037 in.)

14. If the clearance is out of the service limit, select a new clutch end-plate from the following table.



1ST and 3RD CLUTCH END-PLATES

Mark	Part Number	Thickness
1	22551-PRP-003	2.3 mm (0.091 in.)
2	22552-PRP-003	2.4 mm (0.094 in.)
3	22553-PRP-003	2.5 mm (0.098 in.)
4	22554-PRP-003	2.6 mm (0.102 in.)
5	22555-PRP-003	2.7 mm (0.106 in.)
6	22556-PRP-003	2.8 mm (0.110 in.)
7	22557-PRP-003	2.9 mm (0.114 in.)
8	22558-PRP-003	3.0 mm (0.118 in.)
9	22559-PRP-003	3.1 mm (0.122 in.)
10	22560-PRP-003	3.2 mm (0.126 in.)
11	22561-PRP-003	3.3 mm (0.130 in.)
12	22562-PRP-003	3.4 mm (0.134 in.)

2ND CLUTCH END-PLATES

Mark	Part Number	Thickness
1	22571-PRP-003	2.6 mm (0.102 in.)
2	22572-PRP-003	2.7 mm (0.106 in.)
3	22573-PRP-003	2.8 mm (0.110 in.)
4	22574-PRP-003	2.9 mm (0.114 in.)
5	22575-PRP-003	3.0 mm (0.118 in.)
6	22576-PRP-003	3.1 mm (0.122 in.)
7	22577-PRP-003	3.2 mm (0.126 in.)
8	22578-PRP-003	3.3 mm (0.130 in.)
9	22579-PRP-003	3.4 mm (0.134 in.)

4TH and 5TH CLUTCH END-PLATES

Mark	Part Number	Thickness
1	22581-R91-003 or 22581-R93-003	2.1 mm (0.083 in.)
2	22582-R91-003 or 22582-R93-003	2.2 mm (0.087 in.)
3	22583-R91-003 or 22583-R93-003	2.3 mm (0.091 in.)
4	22584-R91-003 or 22584-R93-003	2.4 mm (0.094 in.)
5	22585-R91-003 or 22585-R93-003	2.5 mm (0.098 in.)
6	22586-R91-003 or 22586-R93-003	2.6 mm (0.102 in.)
7	22587-R91-003 or 22587-R93-003	2.7 mm (0.106 in.)
8	22588-R91-003 or 22588-R93-003	2.8 mm (0.110 in.)
9	22589-R91-003 or 22589-R93-003	2.9 mm (0.114 in.)

15. Install a new clutch end-plate, then recheck the clearance.

16. If the thickest clutch end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and the plates.

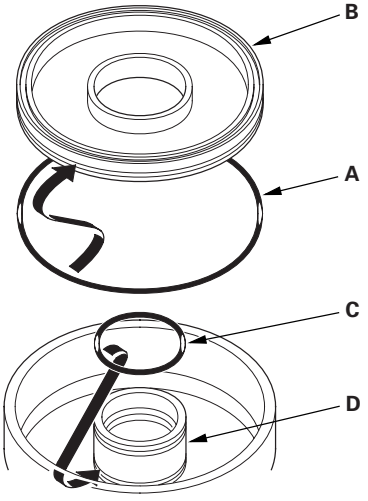
1st, 2nd, and 3rd Clutch Reassembly

Special Tools Required
Clutch spring compressor set 07LAE-PX40000

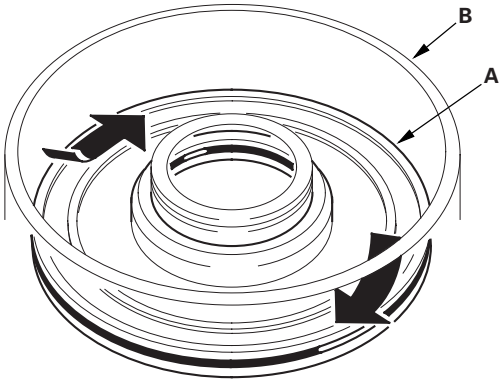
NOTE: Hold the spring compressor set in a vise with soft jaws. Be careful not to damage the clutch drum.

1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.

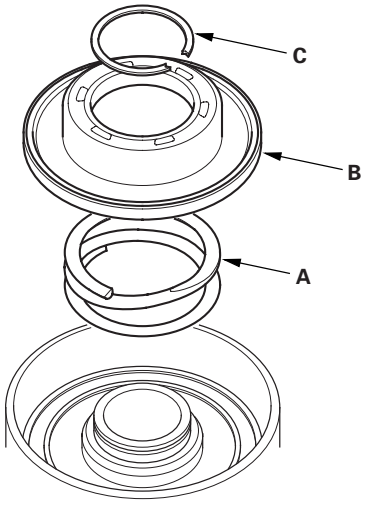
2. Install a new O-ring (A) in the 1st, 2nd, and 3rd clutch pistons (B), and install a new O-ring (C) on the clutch drums (D).



3. Install the clutch piston (A) in the clutch drum (B) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



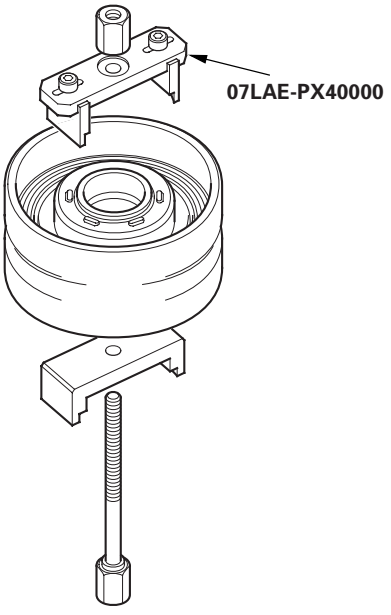
4. Set the return spring (A) and the spring retainer (B) on the clutch piston, and position the snap ring (C) on the spring retainer.



(cont'd)

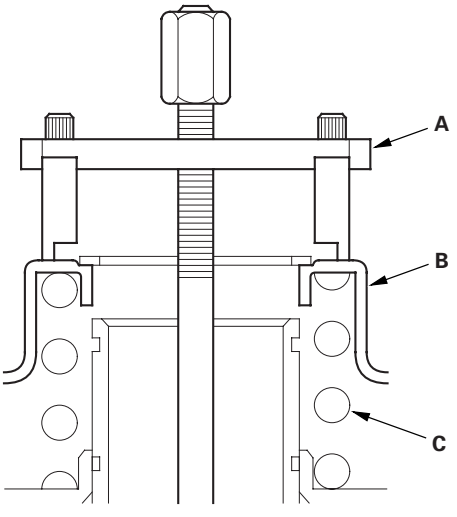
1st, 2nd, and 3rd Clutch Reassembly (cont'd)

5. Install the clutch spring compressor set.



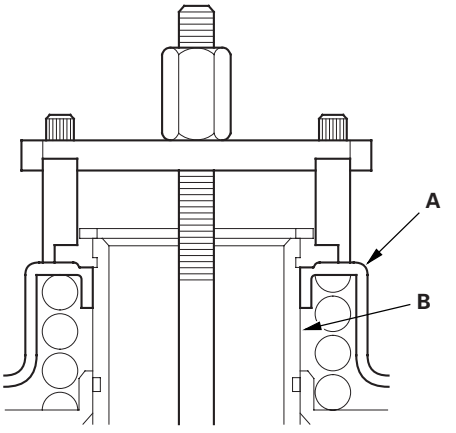
6. Set the clutch spring compressor set (A) on the spring retainer (B) so that it compresses the clutch return spring (C).

   NOTE: Coat the circumference of the spring retainer and the areas where the spring retainer contacts the clutch piston with ATF before installation.

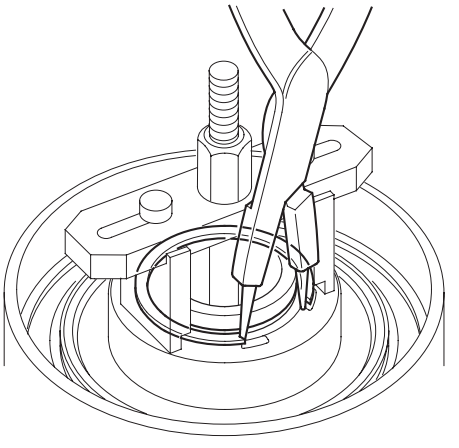


7. Compress the return spring carefully until the snap ring can be installed. Check that the spring retainer (A) is properly installed on the clutch hub (B). If improperly installed, change the position of the spring compressor set and the spring retainer.

   NOTE: Insert the spring retainer so it can be adjusted (center of tolerance) to prevent damaging the spring retainer oil seal.

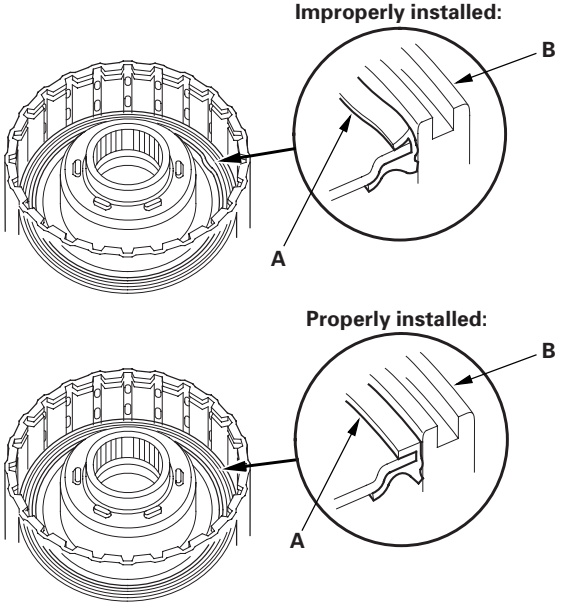


8. Install the snap ring using snap ring pliers.

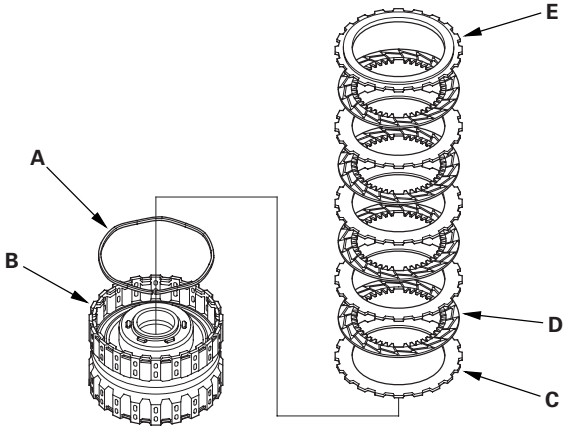


9. Remove the clutch spring compressor set.

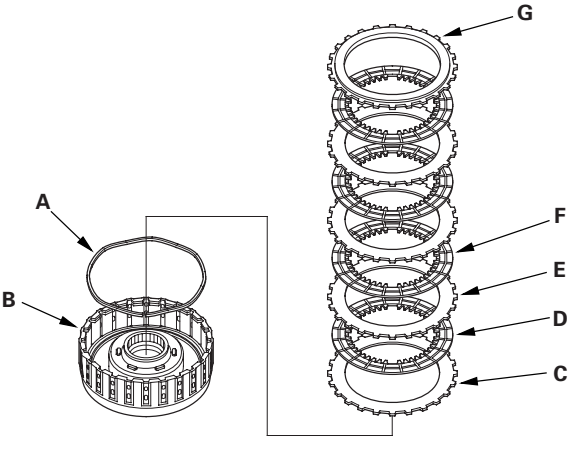
10. Make sure the oil seal of the spring retainer (A) is properly installed on the clutch piston (B). If the oil seal was damaged or cracked, replace the spring retainer.



11. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (4), and the discs (D) (4), and install the clutch end-plate (E) with the flat side down on the top disc.



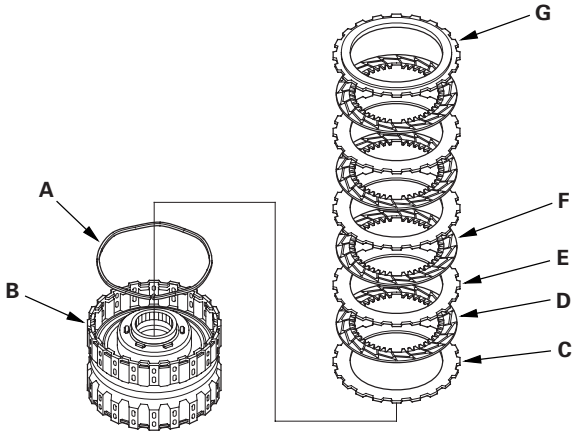
12. Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the top disc.



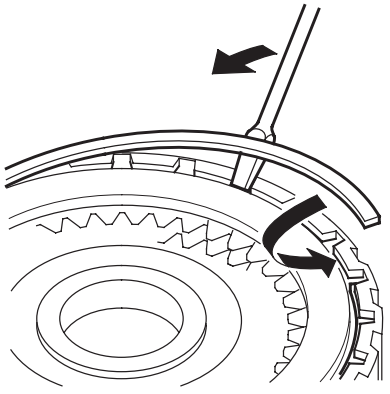
(cont'd)

1st, 2nd, and 3rd Clutch Reassembly (cont'd)

13. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the top disc.



14. Install the snap ring using a screwdriver to secure the clutch end-plate.



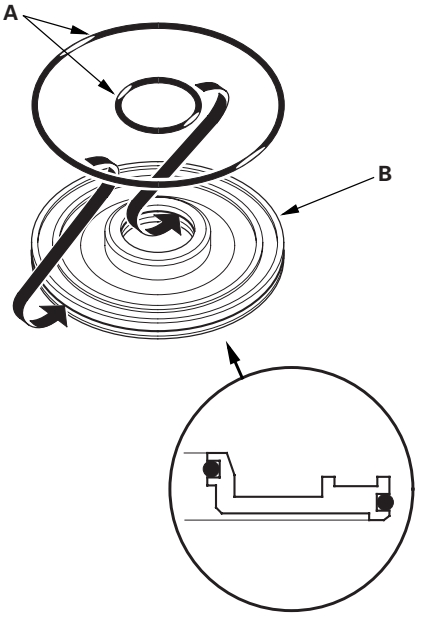
15. Check that the clutch piston moves by applying air pressure into fluid passage.

4th and 5th Clutch Reassembly

Special Tools Required
Clutch spring compressor set 07LAE-PX40000

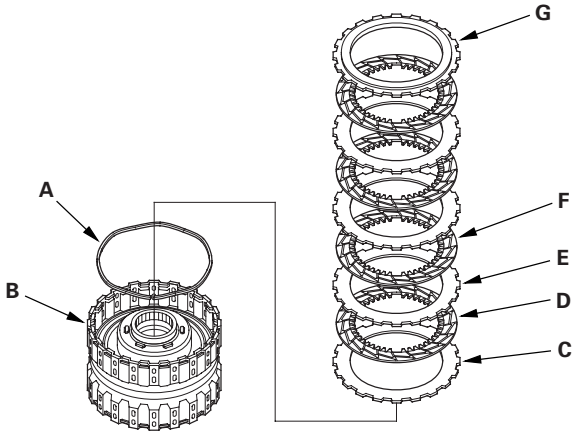
1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.

2. Install new O-rings (A) on the clutch piston (B).

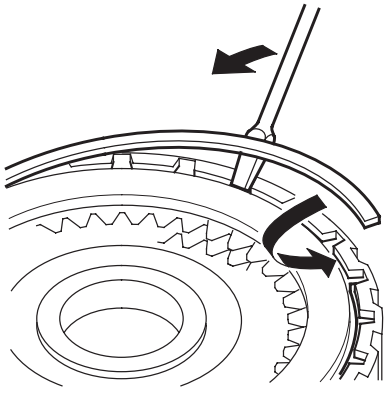


1st, 2nd, and 3rd Clutch Reassembly (cont'd)

13. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), and the clutch disc (D). Starting with the clutch wave-plate, alternately install the clutch wave-plates (E) (3), and the discs (F) (3), and install the clutch end-plate (G) with the flat side down on the top disc.



14. Install the snap ring using a screwdriver to secure the clutch end-plate.



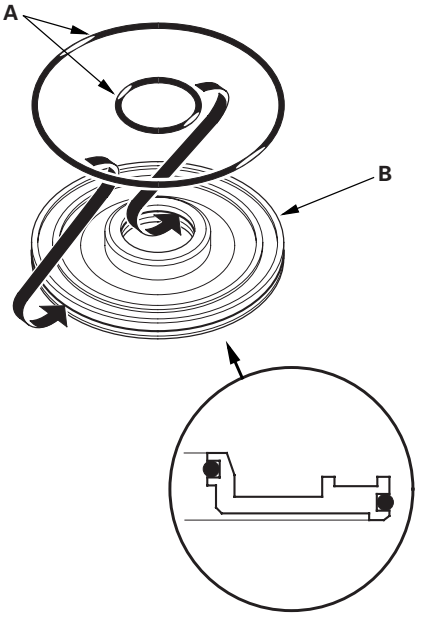
15. Check that the clutch piston moves by applying air pressure into fluid passage.

4th and 5th Clutch Reassembly

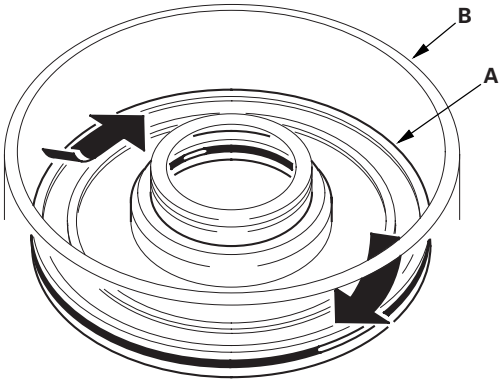
Special Tools Required
Clutch spring compressor set 07LAE-PX40000

1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.

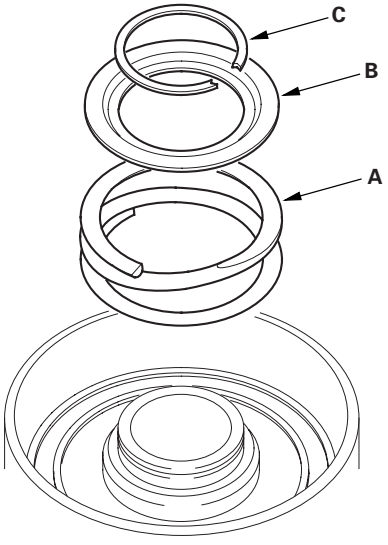
2. Install new O-rings (A) on the clutch piston (B).



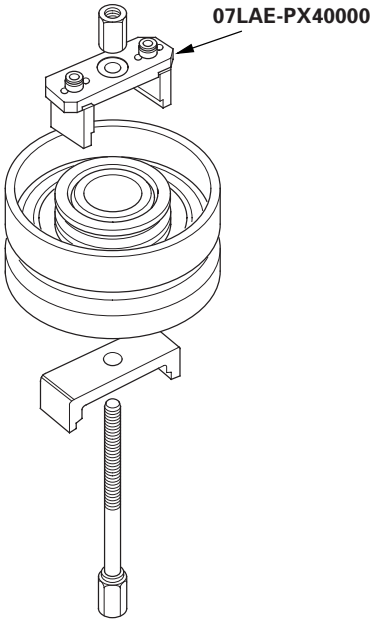
3. Install the clutch piston (A) in the clutch drum (B) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



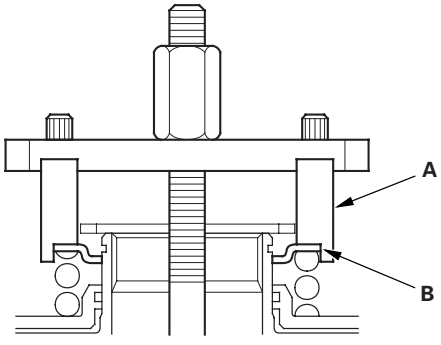
4. Set the return spring (A) and the spring retainer (B) on the clutch piston, and position the snap ring (C) on the spring retainer.



5. Install the clutch spring compressor set.



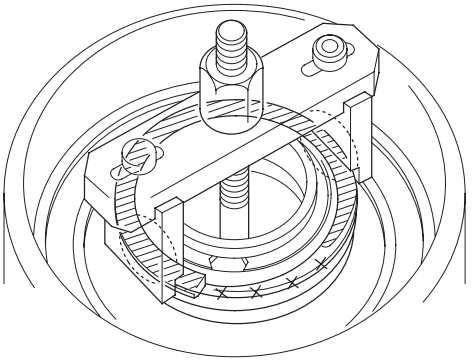
6. Be sure the clutch spring compressor set (A) is adjusted to have full contact with the spring retainer (B).



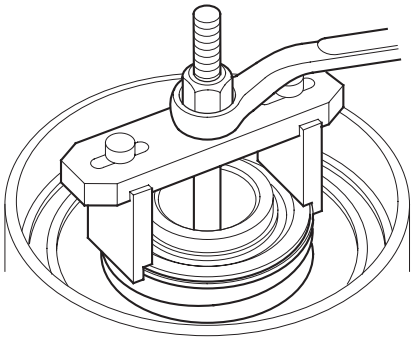
(cont'd)

4th and 5th Clutch Reassembly (cont'd)

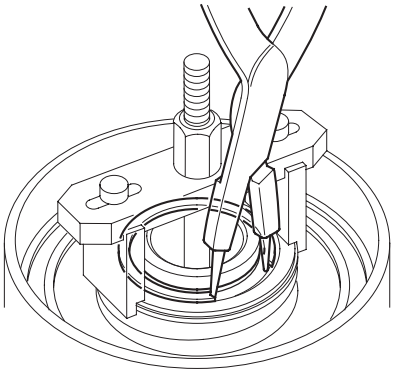
7. Check the placement of the clutch spring compressor set. If either end of the clutch spring compressor set is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.



8. Compress the return spring until the snap ring can be installed.

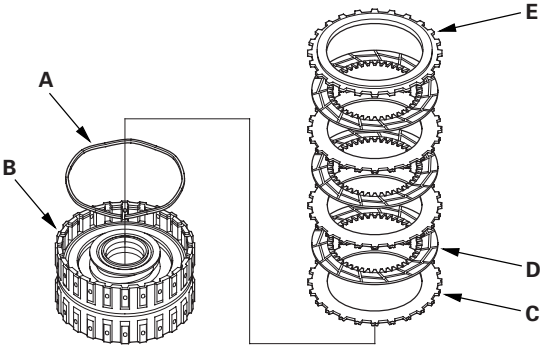


9. Install the snap ring using snap ring pliers.

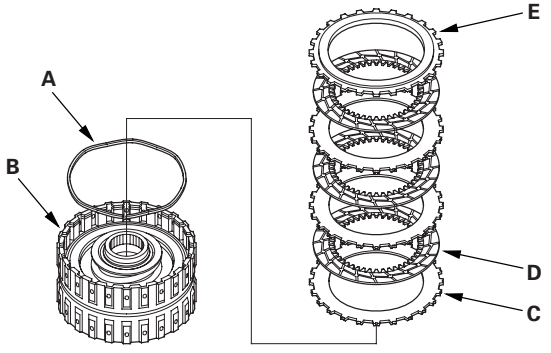


10. Remove the clutch spring compressor set.

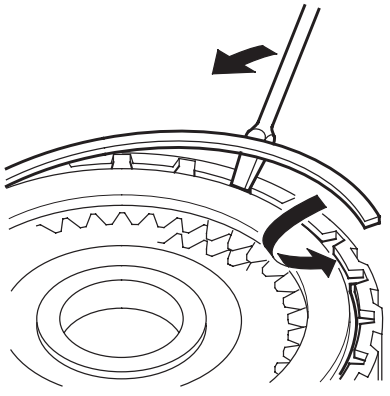
11. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (3) and the discs (D) (3). Install the clutch end-plate (E) with the flat side down on the top disc.



12. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (3) and the discs (D) (3). Install the clutch end-plate (E) with the flat side down on the top disc.



13. Install the snap ring using a screwdriver to secure the clutch end-plate.

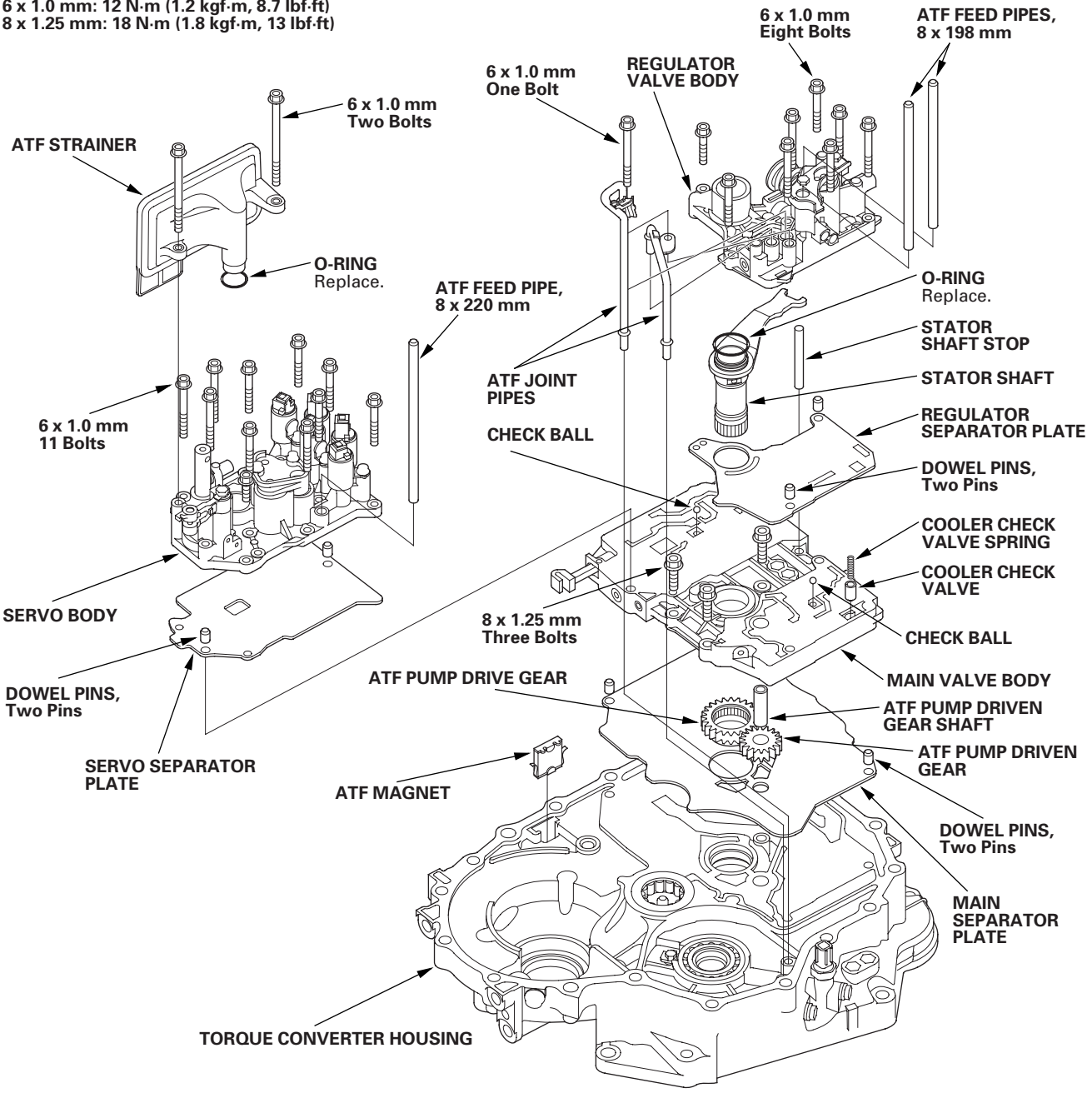


14. Check that the clutch piston moves by applying air pressure into fluid passage.

Valve Body and ATF Strainer Installation

Exploded View

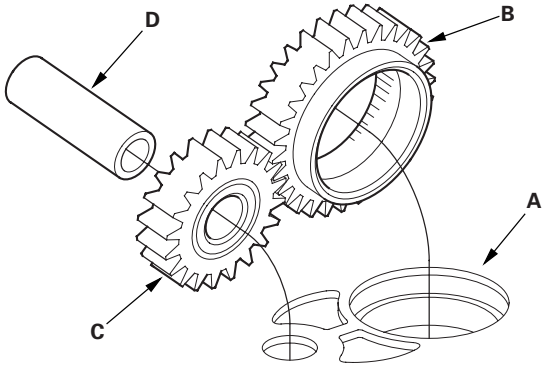
Torque Specifications:
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)



NOTE: Refer to the exploded view as needed during the following procedures.

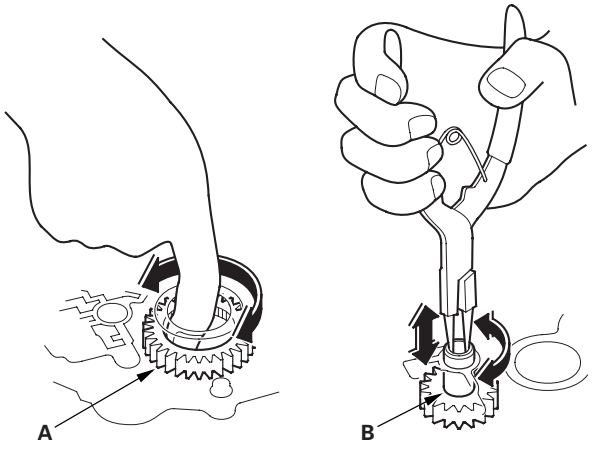
1. Make sure that the ATF magnet is clean and installed in the torque converter housing.

2. Install the main separator plate (A) and the two dowel pins on the torque converter housing. Then install the ATF pump drive gear (B), the driven gear (C), and the ATF pump driven gear shaft (D). Install the ATF pump driven gear with its grooved and chamfered side facing down.



3. Install the main valve body (three bolts).

4. Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (B) moves smoothly in the axial and the normal operating direction.



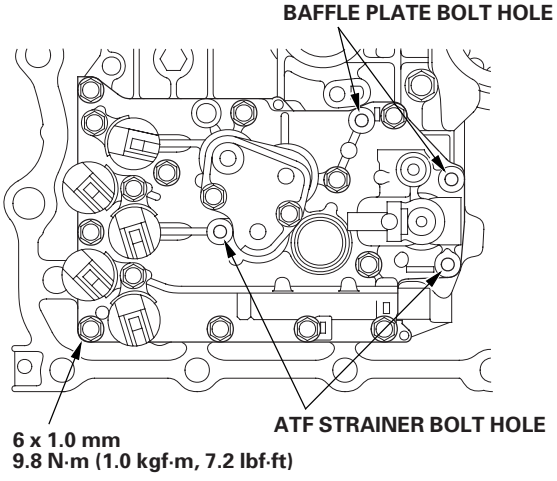
5. If the ATF pump drive gear and the ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torque, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.

6. Make sure that the two check balls and the cooler check valve are in the main valve body, then install the cooler check valve spring in the cooler check valve.

7. Install the servo separator plate and the two dowel pins on the main valve body.

8. Install the servo body (11 bolts).

9. Install a new O-ring on the ATF strainer, and install the ATF strainer (two bolts).



10. Install the regulator separator plate and the two dowel pins on the main valve body.

11. Install a new O-ring on the stator shaft, and install the stator shaft and the stator shaft stop.

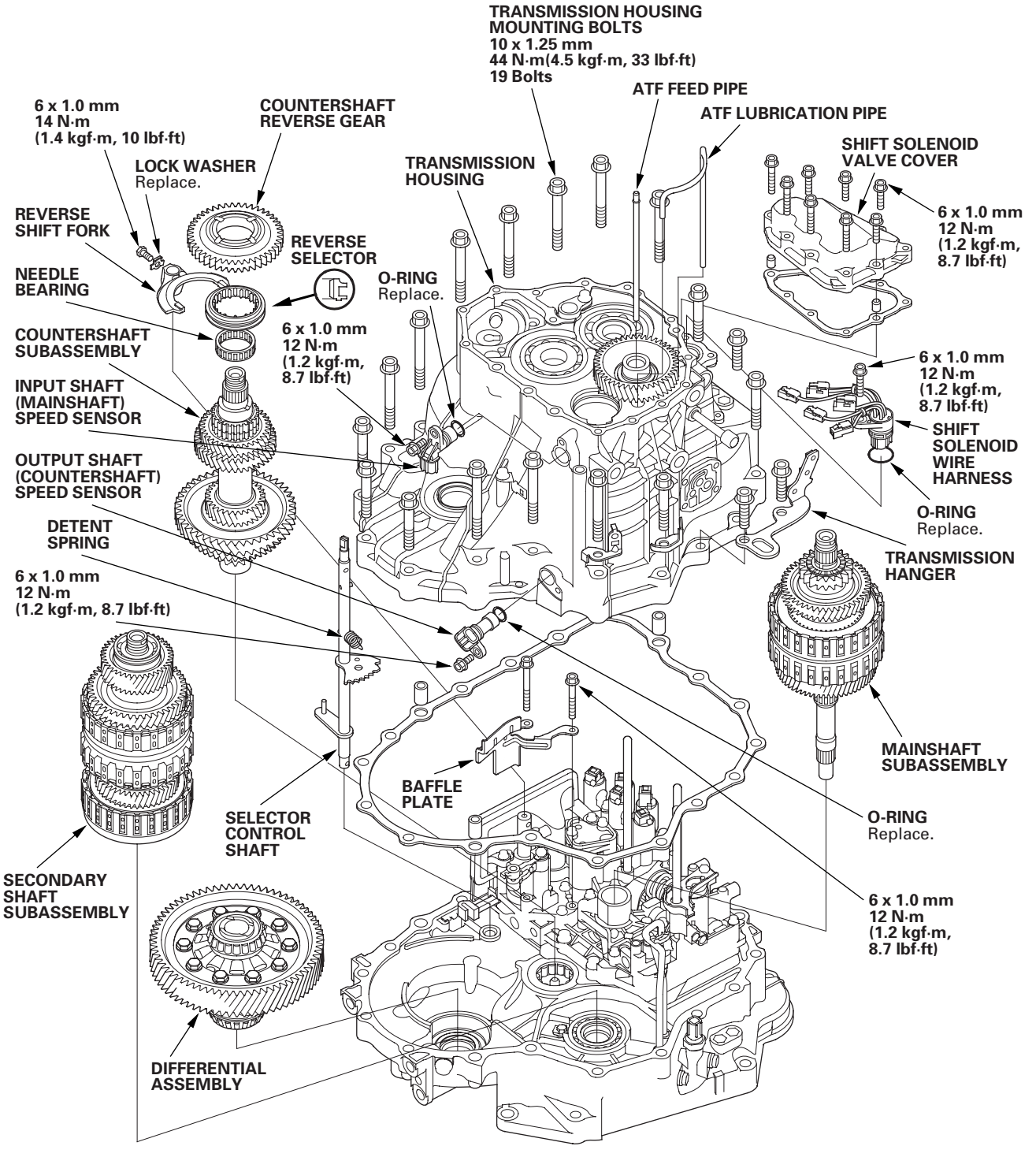
12. Install a regulator valve body (eight bolts).

13. Install the ATF joint pipes (one bolt).

14. Install the ATF feed pipes in the regulator valve body and the servo body.

Shaft Assembly and Housing Installation

Exploded View



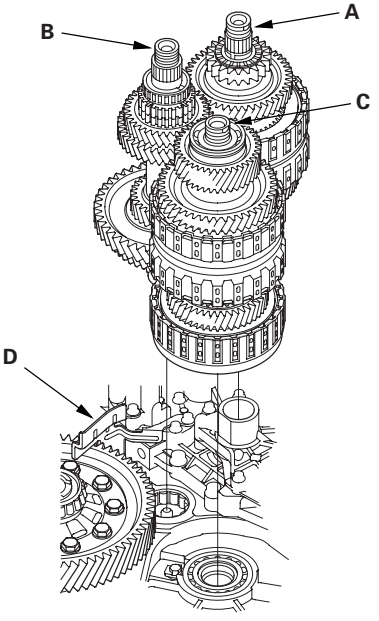
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Install the differential assembly in the torque converter housing.

2. Install the baffle plate on the servo body (see step 9 on page 14-343).

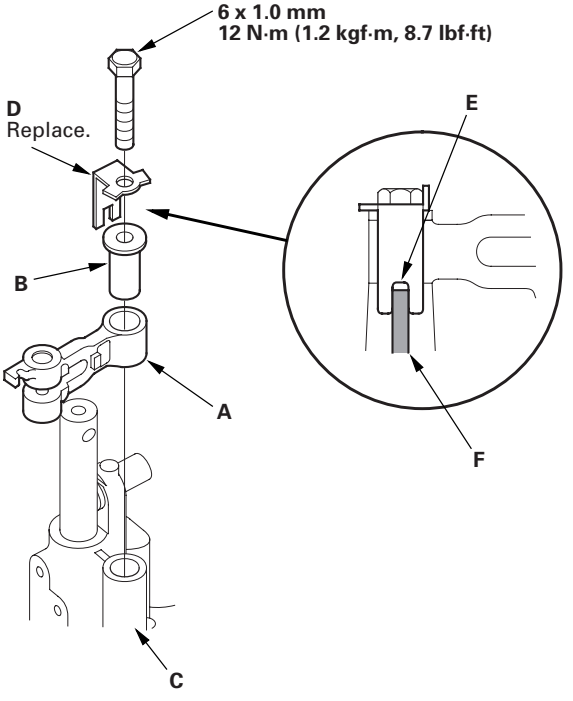
3. Assemble the mainshaft, the countershaft, and the secondary shaft.

4. Join the mainshaft subassembly (A), the countershaft subassembly (B), and the secondary shaft subassembly (C) together. Then install them in the torque converter housing. Do not bump the countershaft on the baffle plate (D).



5. Make sure if the countershaft and the differential are clear of the baffle plate.

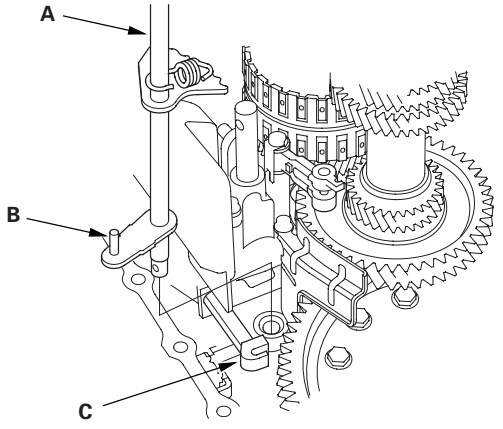
6. If the detent arm was removed, install the detent arm (A) with the arm collar (B) on the servo body (C), and install a new lock washer (D) by aligning its cutout (E) with the projection (F) of the servo body. Install and tighten the bolt, then bend the lock tab of the lock washer against the bolt head.



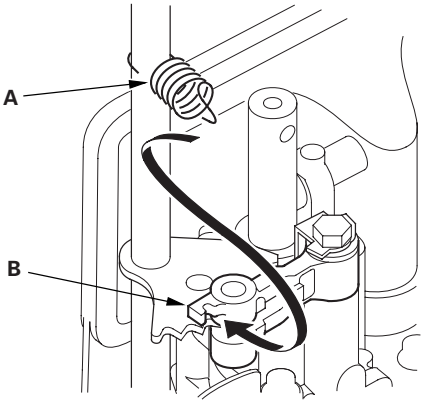
(cont'd)

Shaft Assembly and Housing Installation (cont'd)

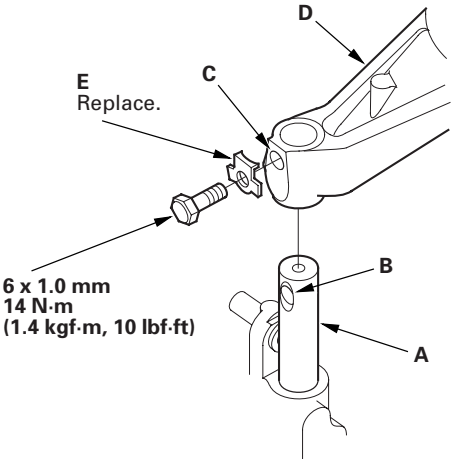
7. Install the selector control shaft (A) in the torque converter housing aligning the manual valve lever pin (B) on the selector control shaft with the guide of the manual valve (C). Pull the manual valve gently when aligning the manual valve with the selector control shaft.



8. Hook the detent spring (A) to the detent arm (B).



9. Turn the shift fork shaft (A) so the large chamfered hole (B) is facing the fork bolt hole (C) of the reverse shift fork (D).



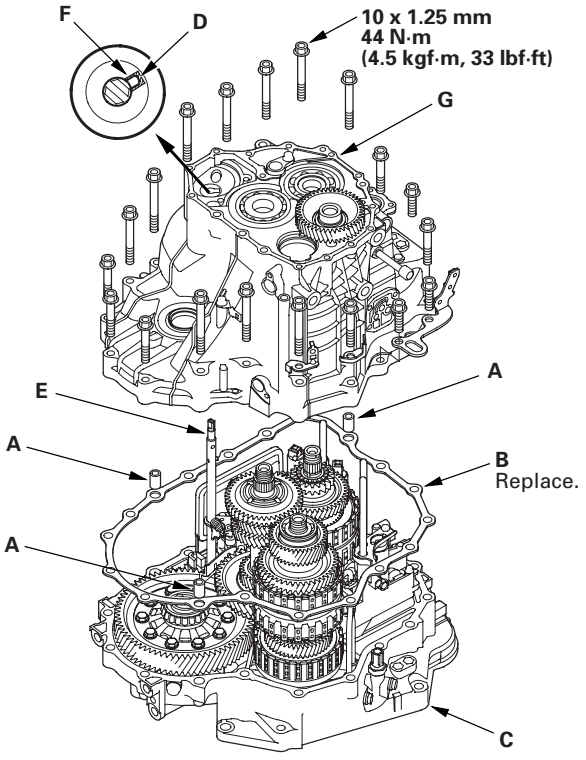
10. Install the reverse shift fork and the reverse selector together on the shift fork shaft and the countershaft. Secure the reverse shift fork to the shift fork shaft with the lock bolt and a new lock washer (E), then bend the lock tab of the lock washer against the bolt head.

11. Install the needle bearing and the countershaft reverse gear on the countershaft.

12. Install the reverse idler gear in the transmission housing (see page 14-299), if it was removed.

13. Install the idler gear shaft (see page 14-324), if it was removed.

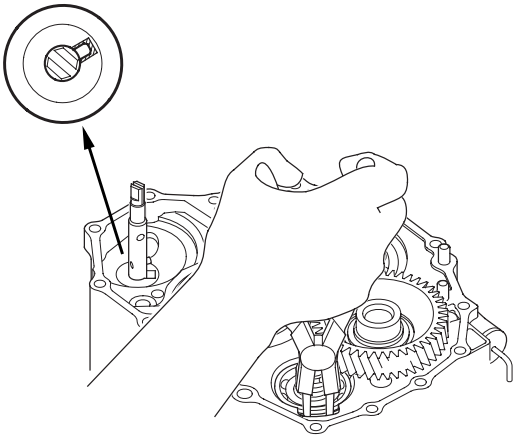
14. Install the three dowel pins (A) and a new gasket (B) on the torque converter housing (C).



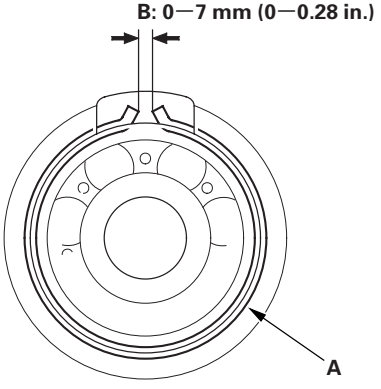
15. Align the spring pin (D) of the selector control shaft (E) with the transmission housing groove (F) by turning the control shaft. Do not squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together, it will cause a faulty shift position signal or position due to the play between the control shaft and the transmission range switch.

16. Place the transmission housing (G) on the torque converter housing. Do not install the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor before installing the transmission housing on the torque converter housing.

17. Use snap ring pliers to expand the snap ring of the secondary shaft bearing. Then push the transmission housing down to start the secondary shaft bearing through the snap ring. Then release the pliers. While rotating the reverse idler gear with a screwdriver, push down the housing until it bottoms and snap ring snaps in place in the secondary shaft bearing snap ring groove.



18. Check that the secondary shaft bearing snap ring (A) is seated in the bearing and the housing groove, and that the ring end gap (B) is correct.

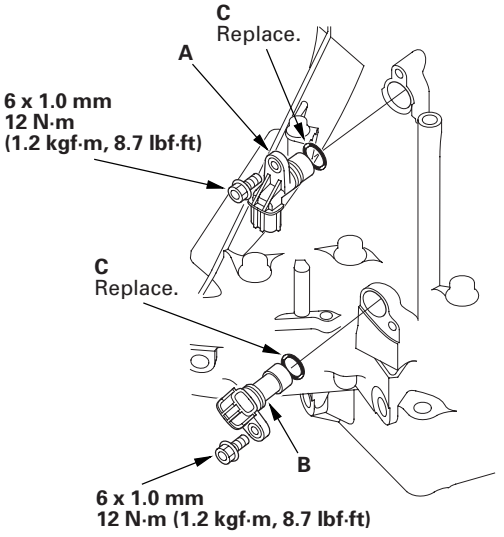


19. Install the transmission housing mounting bolts along with the transmission hanger and the harness clamp brackets, and tighten the 19 bolts in at least two steps in a crisscross pattern.

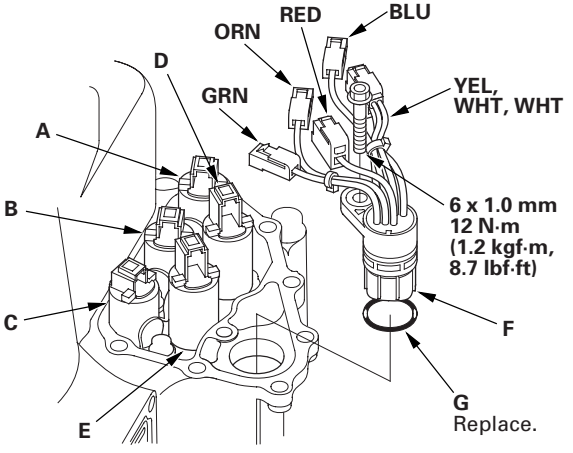
(cont'd)

Shaft Assembly and Housing Installation (cont'd)

20. Install the input shaft (mainshaft) speed sensor (A) and the output shaft (countershaft) speed sensor (B) with new O-rings (C).



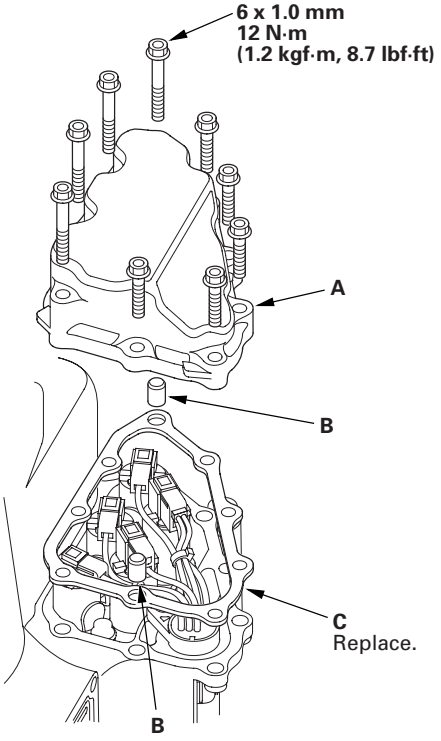
21. Install the shift solenoid wire harness (F) in the transmission housing with a new O-ring (G).



22. Connect the connectors to the respective valves:

- BLU wire to shift solenoid valve A.
- ORN wire to shift solenoid valve B.
- GRN wire to shift solenoid valve C.
- YEL, WHT, and WHT wire to shift solenoid valve D.
- RED wire to shift solenoid valve E.

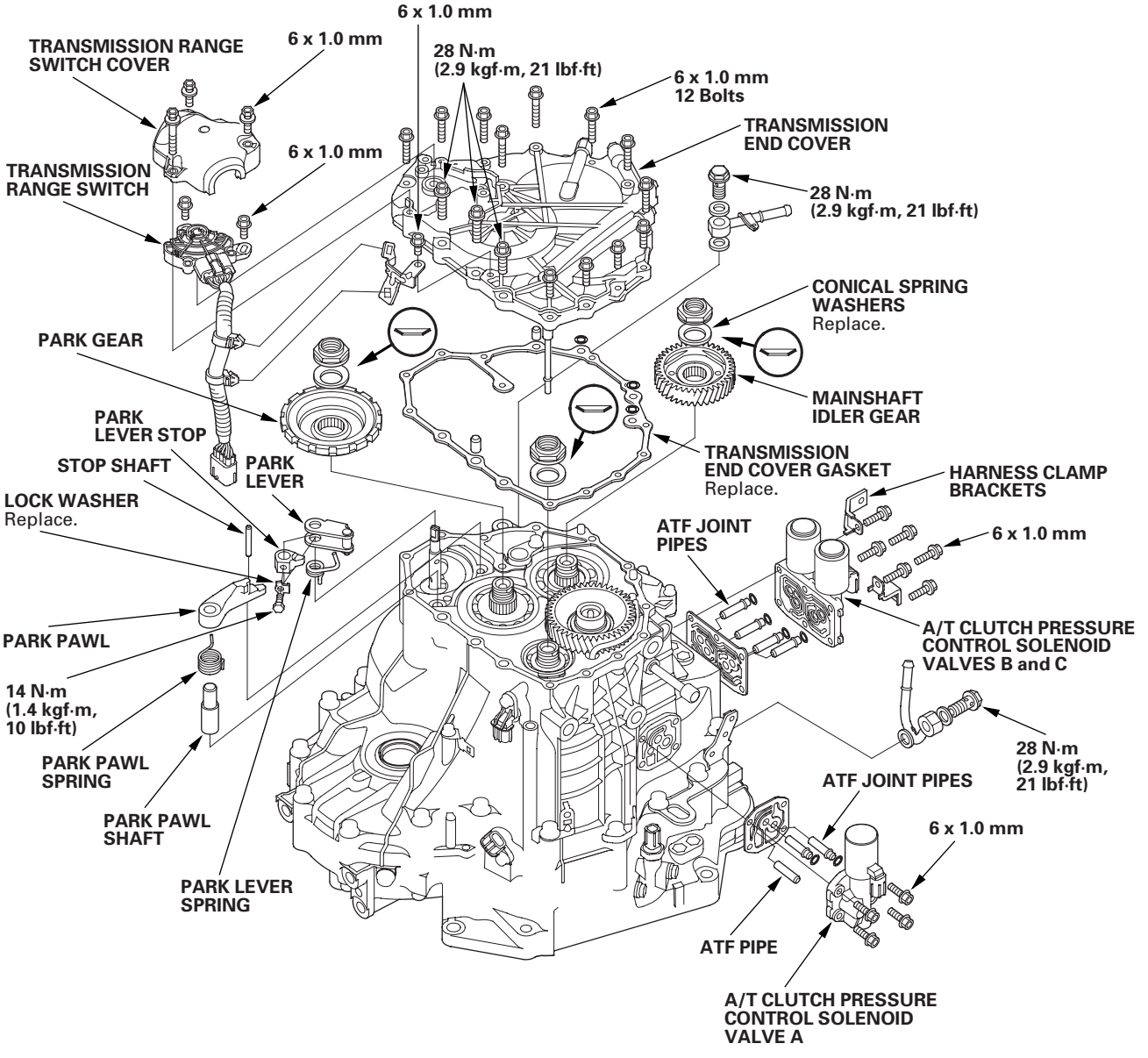
23. Install the shift solenoid valve cover (A) with the two dowel pins (B) and a new gasket (C).



End Cover Installation

Exploded View

Torque Specifications
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)

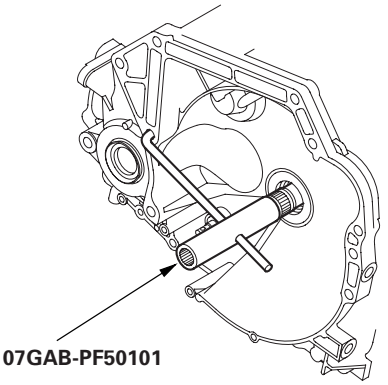


(cont'd)

End Cover Installation (cont'd)

Special Tools Required
Mainshaft holder 07GAB-PF50101

1. Install the mainshaft holder onto the mainshaft.

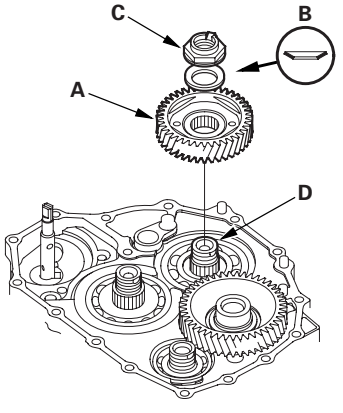


2. Lubricate the following parts with ATF:

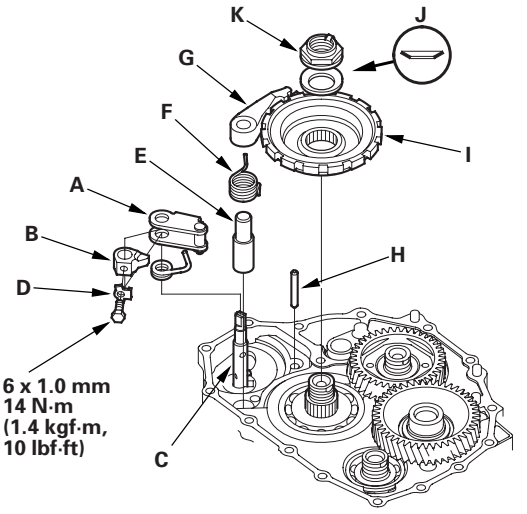
   - Splines and threads of the mainshaft.
   - Splines of the mainshaft idler gear.
   - Old conical spring washer and old locknut.

3. Install the mainshaft idler gear (A), the old conical spring washer (B), and the old locknut (C) on the mainshaft (D), and tighten the locknut to 226 N·m (23.0 kgf·m, 166 lbf·ft).

   NOTE:
   - Do not tap the idler gear to install.
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.



4. Install the park lever (A) and the park lever stop (B) on the selector control shaft (C), then install the lock bolt with a new lock washer (D). Do not bend the lock tab of the lock washer until step 18.



5. Install the park pawl shaft (E), the park pawl spring (F), the park pawl (G), and the stop shaft (H) on the transmission housing.

6. Lubricate the following parts with ATF:

   - Threads and splines of the countershaft.
   - Old conical spring washer and old locknut.
   - Areas where the park gear contacts the conical spring washer.

7. Install the park gear (I), the old conical spring washer (J), and the old locknut (K) on the countershaft.

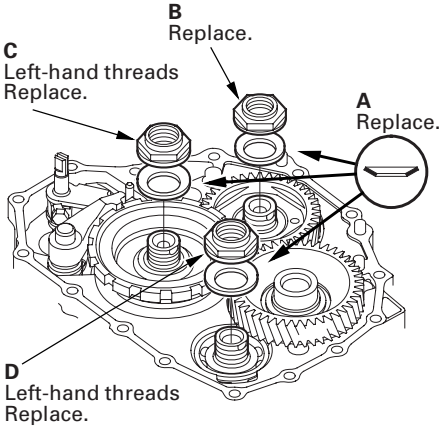
8. Lift the park pawl up, and engage it with the park gear, then tighten the locknut to 226 N·m (23.0 kgf·m, 166 lbf·ft).

   NOTE:
   - Do not tap the park gear to install.
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
   - Countershaft locknut has left-hand threads.

9. Remove the locknuts and the conical spring washers from the mainshaft and the countershaft.

10. Lubricate the threads of the shafts, new locknuts and new conical spring washers with ATF.

11. Install new conical spring washers (A) with facing stamped mark side up in the direction shown, and install a new mainshaft locknut (B), a new countershaft locknut (C), and a new secondary shaft locknut (D).

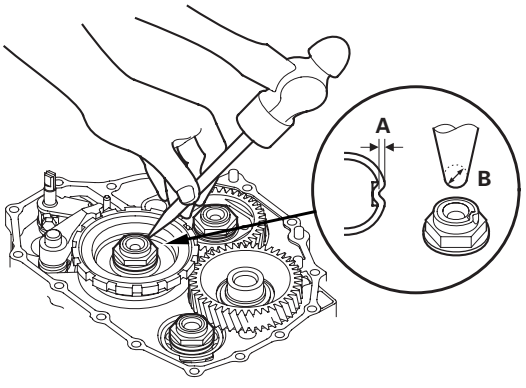


12. Tighten the locknuts to 167 N·m (17.0 kgf·m, 123 lbf·ft).

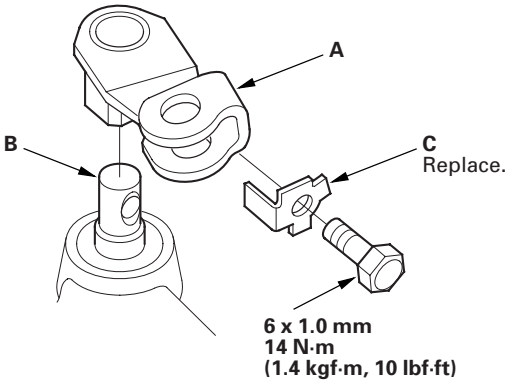
NOTE:
- Be sure to install the conical spring washers in the direction shown.
- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- Countershaft and secondary shaft locknuts have left-hand threads.

13. Remove the mainshaft holder from the mainshaft.

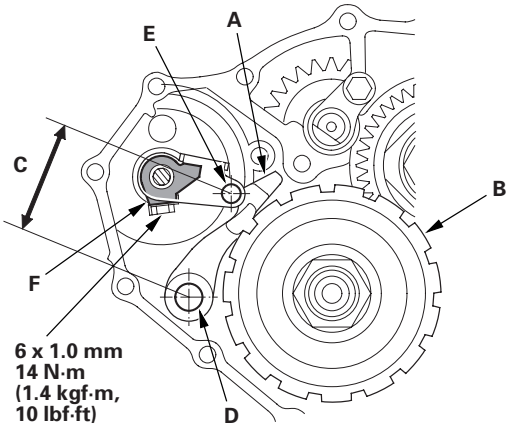
14. Stake the locknuts into the shafts to a depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



15. Install the control lever (A) on the selector control shaft (B), and install the bolt with a new lock washer (C), then bend the lock tab of the lock washer against the bolt head.



16. Set the park lever in the P position, then check that the park pawl (A) engages the park gear (B).



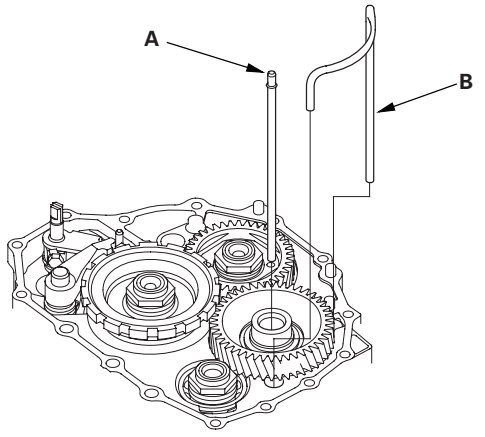
17. If the park pawl does not engage fully, check the distance (C) between the pawl shaft (D) and the park lever roller pin (E) (see page 14-292).

18. Tighten the lock bolt, and bend the lock tab of the lock washer (F) against the bolt head.

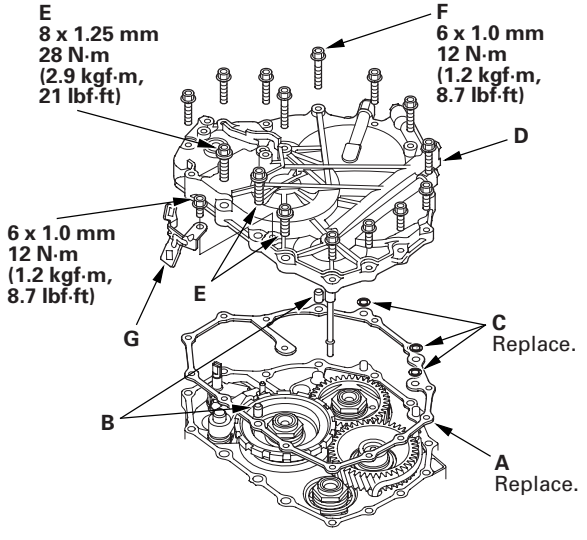
(cont'd)

End Cover Installation (cont'd)

19. Install the ATF feed pipe (A) into the idler gear shaft, and install the ATF lubrication pipe (B) into the transmission housing.



20. Install a new gasket (A) on the transmission housing, and install the two dowel pins (B) and new O-rings (C) over the top of the ATF feed pipes.

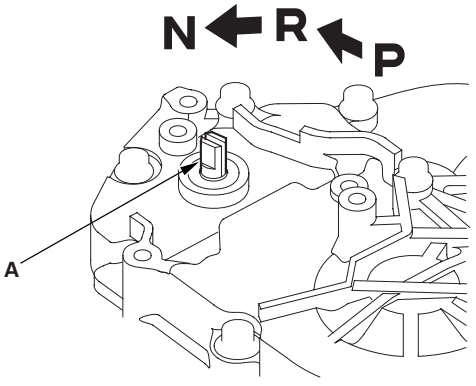


21. Install the end cover (D), and tighten the three special bolts (E) and the 6 x 1.0 mm bolts (F) (12 bolts).

22. Install the harness clamp bracket (G) on the end cover.

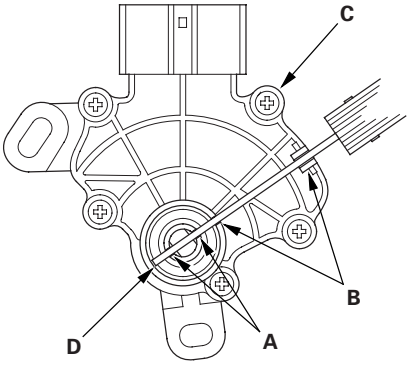
23. Set the selector control shaft (A) to the N position by turning the control lever on the torque converter side.

    NOTE: Do not squeeze the end of the selector control shaft tips together when turning the selector control shaft. If the tips are squeezed together it will cause a faulty shift position signal or position due to the play between the selector control shaft and the transmission range switch.

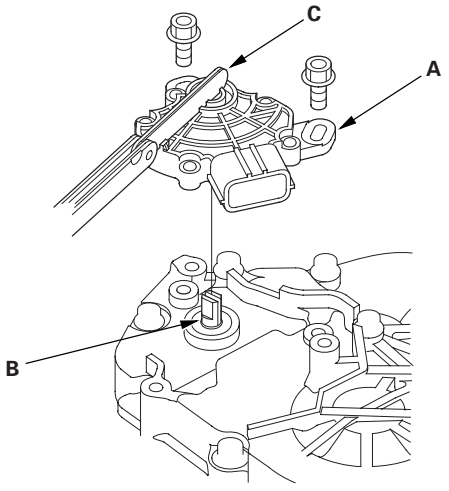


24. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in.) feeler gauge blade (D) in the cutouts to hold in the N position.

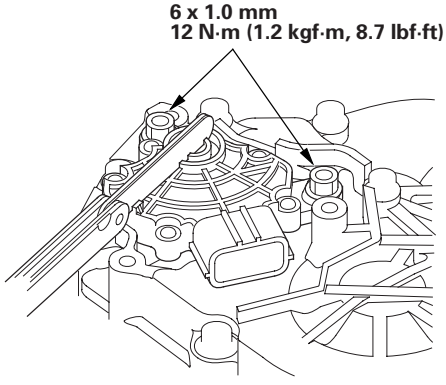
    NOTE: Be sure to use a 2.0 mm (0.08 in.) blade or equivalent to hold the transmission range switch in the N position.



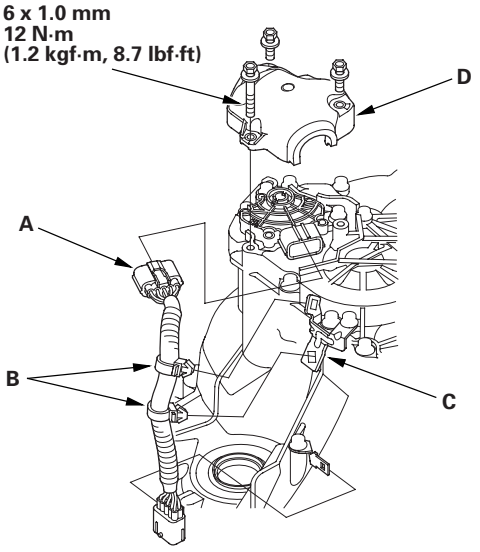
25. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position using the 2.0 mm (0.08 in.) blade (C).



26. Tighten the bolts on the transmission range switch while you continue to hold it in the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.



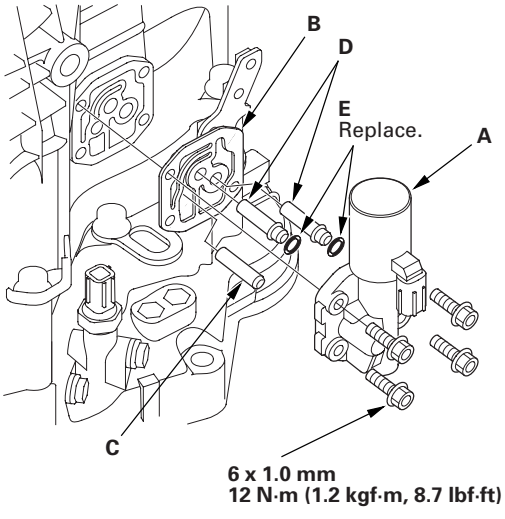
27. Connect the transmission range switch connector (A) securely, then install the harness clamps (B) on the clamp bracket (C).



28. Install the transmission range switch cover (D).

29. Install a new gasket (B) on the transmission housing, and install the ATF pipe (C) and the ATF joint pipes (D).

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.



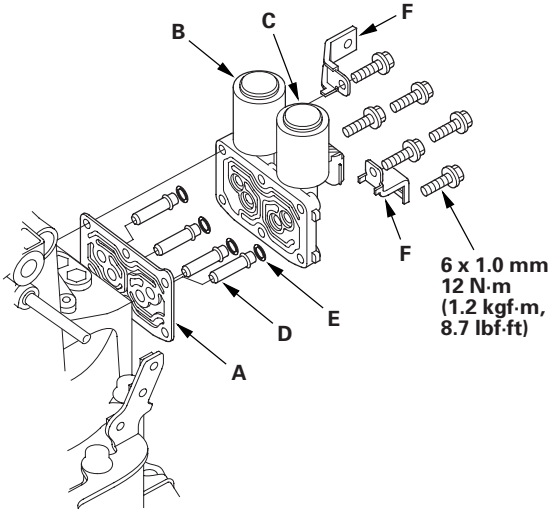
30. Install new O-rings (E) over the ATF joint pipes, and install A/T clutch pressure control solenoid valve A.

(cont'd)

End Cover Installation (cont'd)

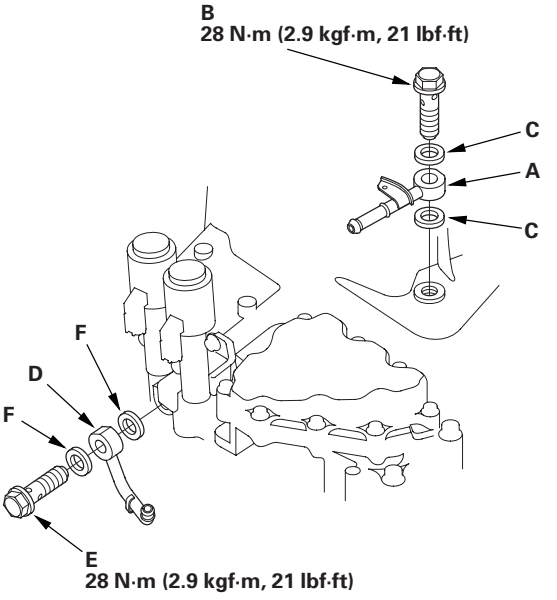
31. Install a new gasket (A) and the ATF joint pipes (D) on the transmission housing, and install new O-rings (E) over the ATF joint pipes.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.



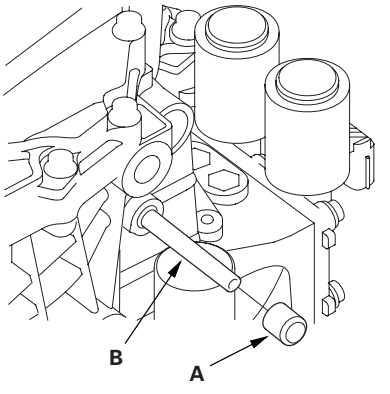
32. Install A/T clutch pressure control solenoid valves B and C, and the harness clamp brackets (F).

33. Install the ATF cooler inlet line (A) with the banjo bolt (B) and new sealing washers (C).



34. Install the ATF cooler outlet line (D) with the banjo bolt (E) and new sealing washers (F).

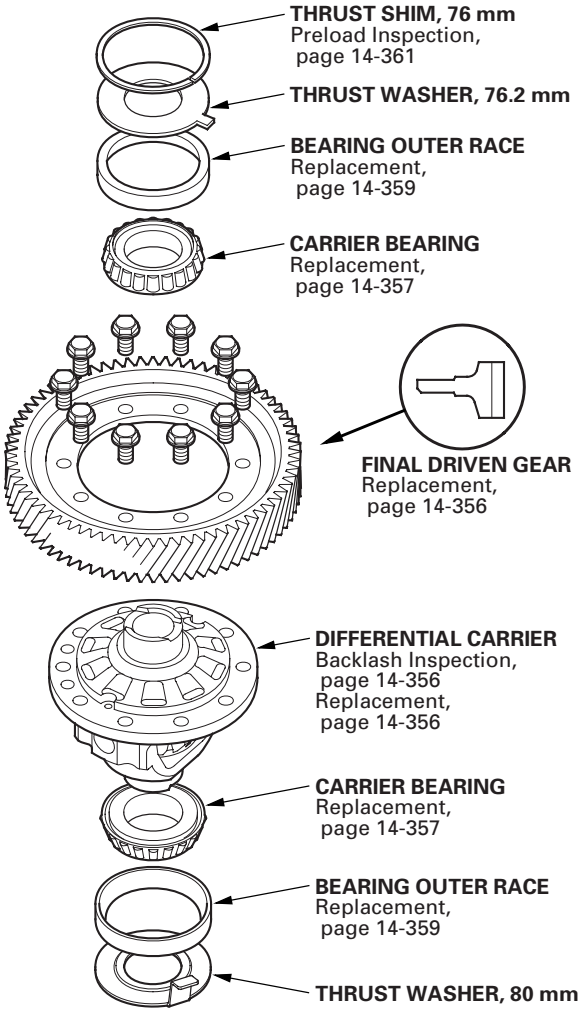
35. Install the breather cap (A) on the breather pipe (B).



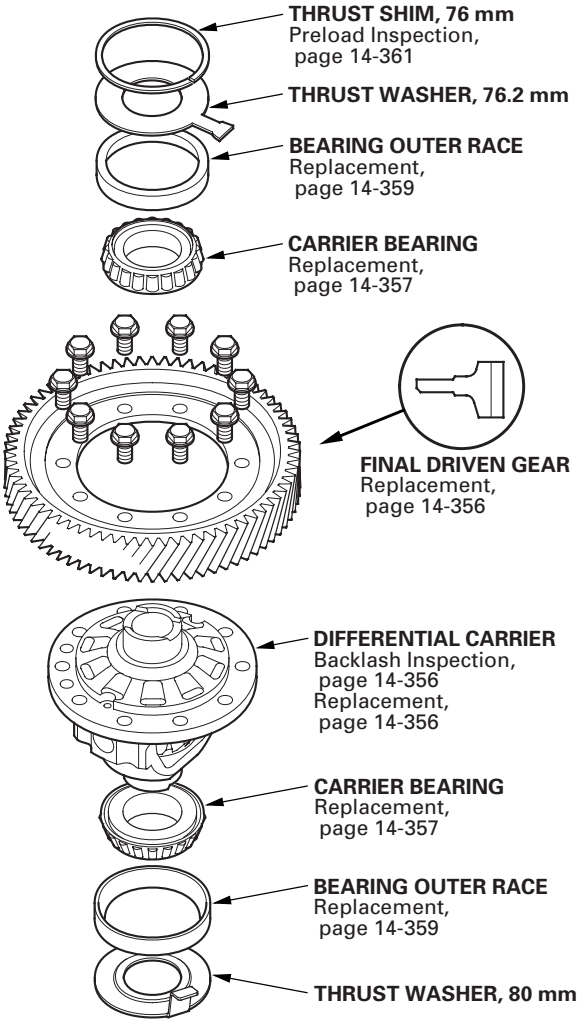
36. Install the ATF dipstick.

Component Location Index

'06 Model

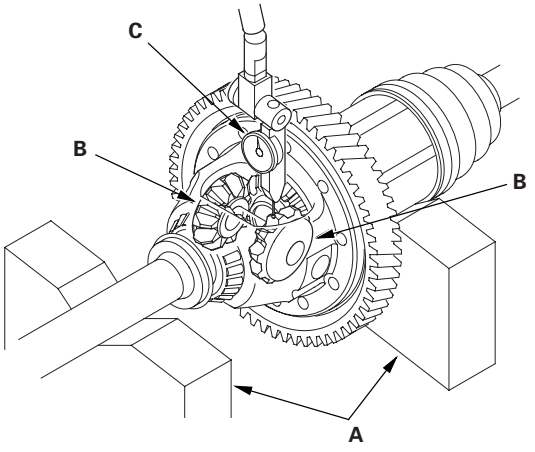


'07-09 Models



Backlash Inspection

1. Install both axles into the differential, and place the axles on V-blocks (A).



2. Measure the backlash of the pinion gears (B) using a dial indicator (C).

   Standard: 0.05—0.15 mm (0.002—0.006 in.)

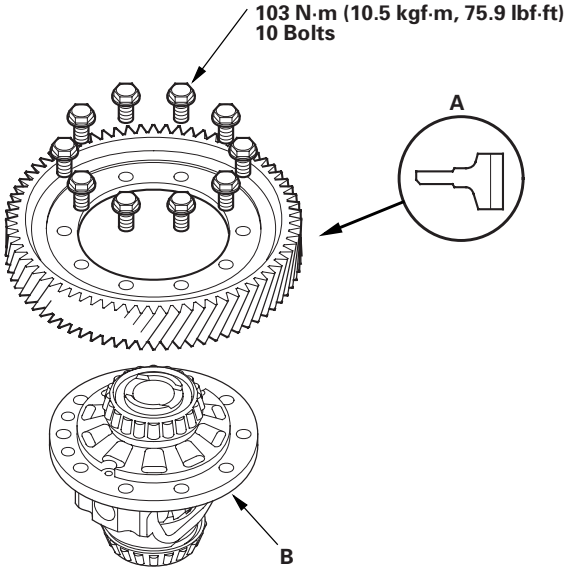
3. If the backlash is out of standard, replace the differential carrier.

Differential Carrier and Final Driven Gear Replacement

NOTE: Inspect and adjust the carrier bearing preload (see page 14-361) whenever the differential carrier is replaced.

1. Remove the final driven gear (A) from the differential carrier (B).

   NOTE: The final driven gear bolts have left-hand threads.



2. Install the final driven gear on the differential carrier in the direction shown. Tighten the bolts to 103 N·m (10.5 kgf·m, 75.9 lbf·ft) in a crisscross pattern in at least two steps.

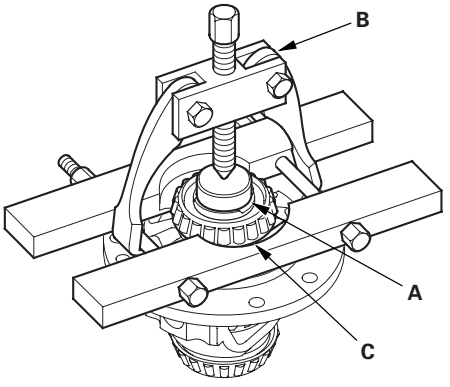
Carrier Bearing Replacement

Special Tools Required
Attachment, 40 mm 07LAD-PW50601

NOTE:
- The bearing and the outer race should be replaced as a set.
- Inspect and adjust the bearing preload (see page 14-361) whenever the bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

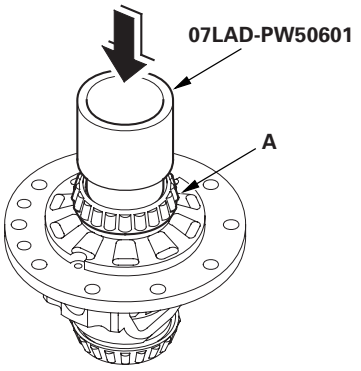
1. Remove the final driven gear from the differential carrier (see page 14-356).

2. Install the bearing separator under the carrier bearing. Place a spacer (A) on the differential carrier, and install the commercially available bearing puller (B).



3. Remove the carrier bearing (C).

4. Install a new carrier bearing (A) using the 40 mm attachment with the small end and a press until it bottoms. Press the bearing on securely so there is no clearance between the bearing and the differential carrier.

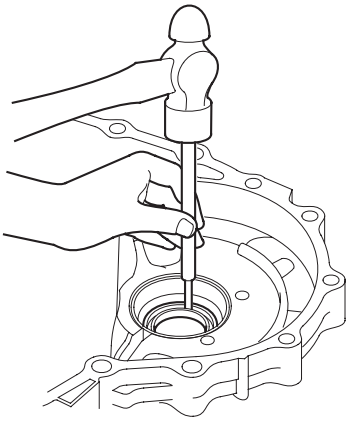


5. Install the final driven gear on the differential carrier (see page 14-356).

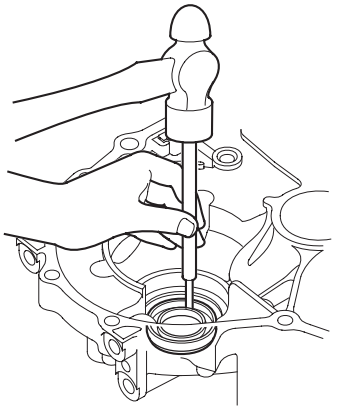
Oil Seal Replacement

Special Tools Required
- Driver 07749-0010000
- Oil seal driver attachment 07947-SD90101
- Oil seal driver attachment 07JAD-PH80101

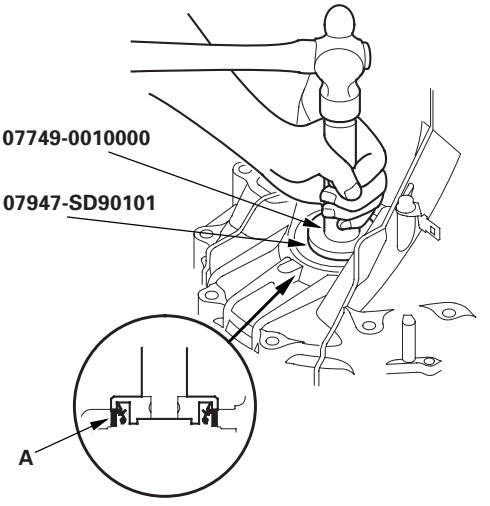
1. Remove the oil seal from the transmission housing.



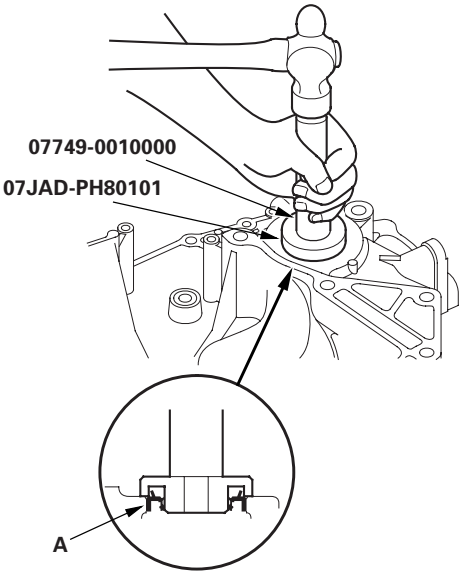
2. Remove the oil seal from the torque converter housing.



3. Install a new oil seal (A) flush with the transmission housing using the driver and the oil seal driver attachment.



4. Install a new oil seal (A) flush with the torque converter housing using the driver and the oil seal driver attachment.



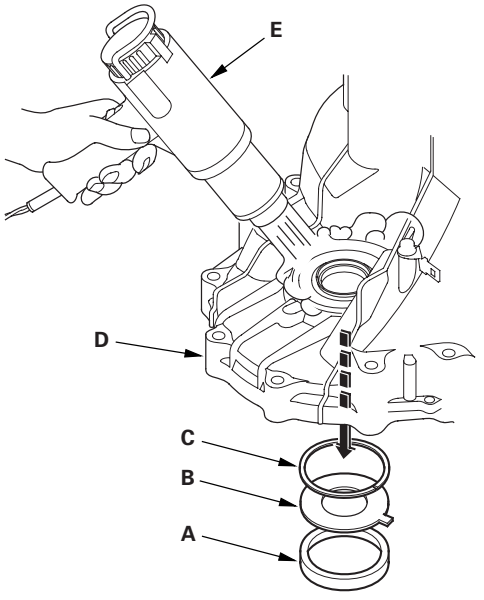
Carrier Bearing Outer Race Replacement

Special Tools Required
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100
- Attachment, 72 x 75 mm 07746-0010600

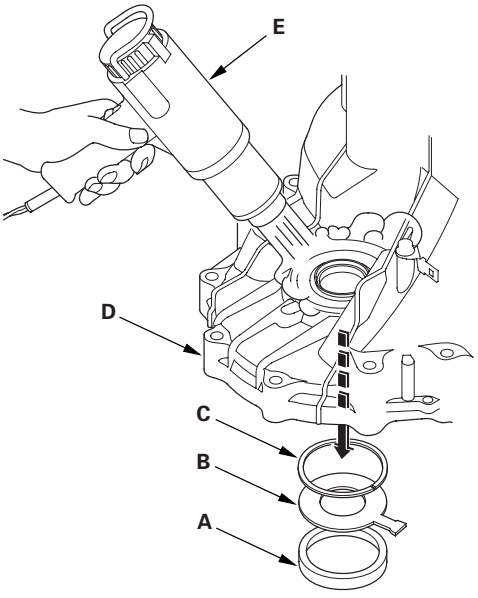
NOTE:
- Replace the bearing with a new one whenever the outer race is replaced. The bearing and the bearing outer race should be replaced as a set.
- Do not use the thrust shim on the torque converter housing.
- Adjust the bearing preload (see page 14-361) after replacing the carrier bearing and the carrier bearing outer race.
- Coat all parts with ATF during installation.

1. Remove the bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 100 ℃ (212 ℉) with a heat gun (E). Do not heat the housing more than 100 ℃ (212 ℉).

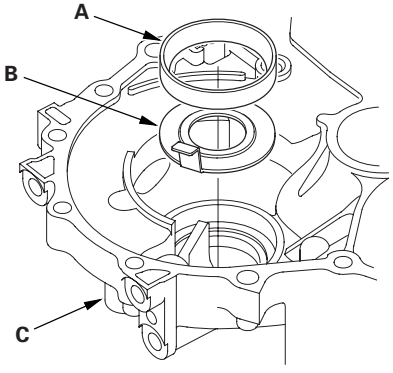
'06 Model



'07-09 Models



2. Remove the bearing outer race (A) and the 80 mm thrust washer (B) from the torque converter housing (C) by hand.



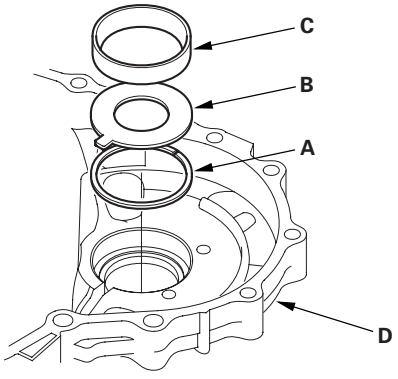
(cont'd)

Carrier Bearing Outer Race Replacement (cont'd)

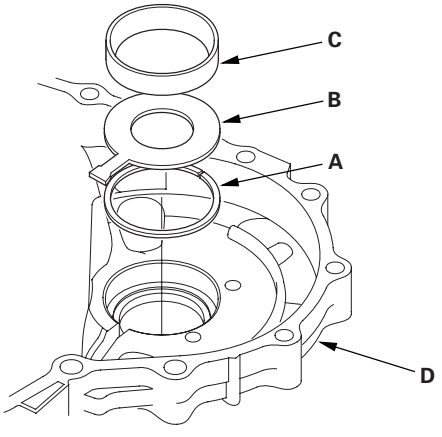
3. Install the 76 mm thrust shim (A), the 76.2 mm thrust washer (B), and the carrier bearing outer race (C) in the transmission housing (D).

   NOTE:
   For '07-09 models: Be sure to install the 76.2 mm thrust washer with the ''41382 RKY'' mark facing downward.

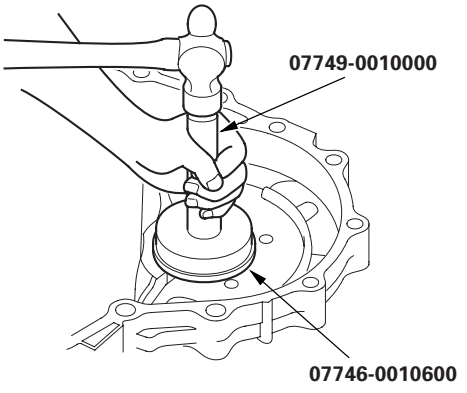
'06 Model



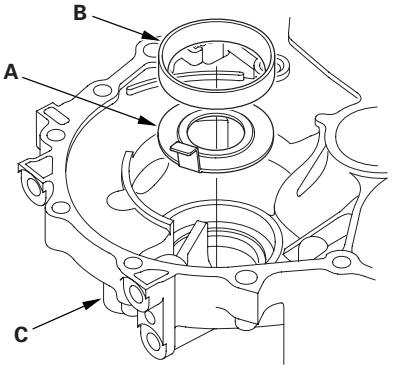
'07-09 Models



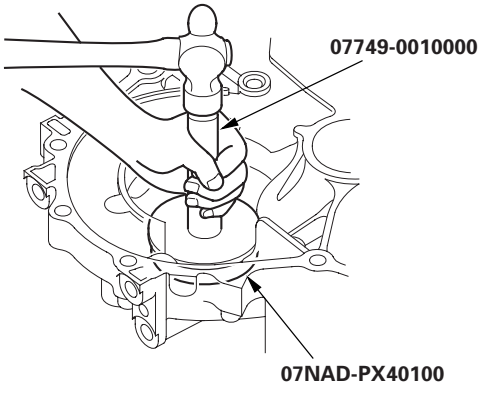
4. Install the outer race securely in the housing so there is no clearance between the outer race, the thrust washer, the thrust shim, and the transmission housing using the driver and the 72 x 75 mm attachment.



5. Install the 80 mm thrust washer (A) and the carrier bearing outer race (B) in the torque converter housing (C).



6. Install the carrier bearing outer race securely in the torque converter housing so there is no clearance between the carrier bearing outer race, the 80 mm thrust washer, and the torque converter housing using the driver and the 78 x 80 mm attachment.

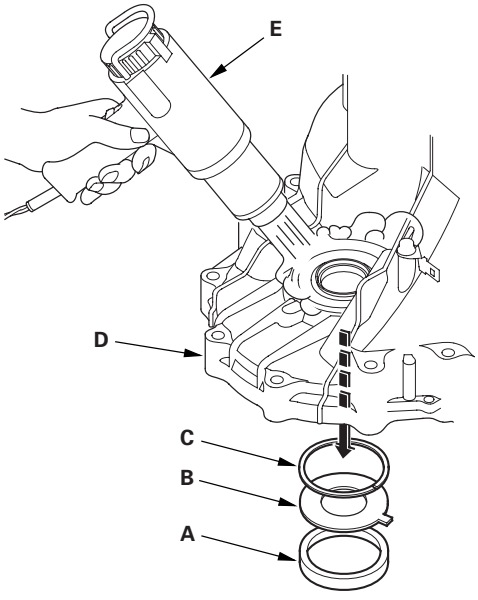


Special Tools Required
- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600
- Preload inspection tool 07HAJ-PK40201

NOTE:
- Replace the carrier bearing with a new one whenever the carrier bearing outer race is replaced. The carrier bearing and the carrier bearing outer race should be replaced as a set.
- Do not use the 76 mm thrust shim on the torque converter housing.
- Adjust the carrier bearing preload, when replacing the transmission housing, the torque converter housing, the differential carrier, the carrier bearing, the carrier bearing outer race, or the 76 mm thrust shim.

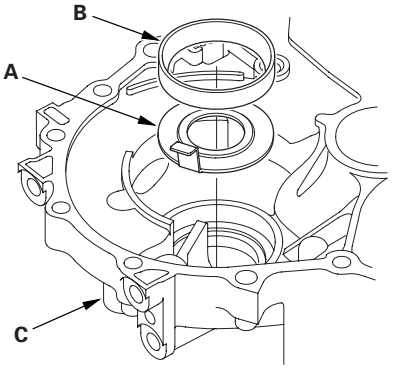
1. Remove the carrier bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 100 ℃ (212 ℉) with a heat gun (E). Do not heat the housing more than 100 ℃ (212 ℉).

'06 Model

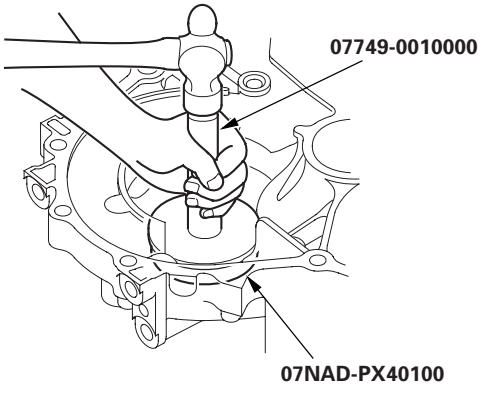


(cont'd)

5. Install the 80 mm thrust washer (A) and the carrier bearing outer race (B) in the torque converter housing (C).



6. Install the carrier bearing outer race securely in the torque converter housing so there is no clearance between the carrier bearing outer race, the 80 mm thrust washer, and the torque converter housing using the driver and the 78 x 80 mm attachment.

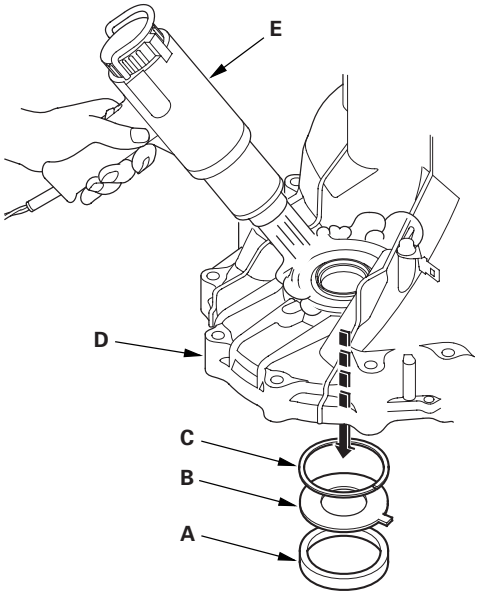


Special Tools Required
- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600
- Preload inspection tool 07HAJ-PK40201

NOTE:
- Replace the carrier bearing with a new one whenever the carrier bearing outer race is replaced. The carrier bearing and the carrier bearing outer race should be replaced as a set.
- Do not use the 76 mm thrust shim on the torque converter housing.
- Adjust the carrier bearing preload, when replacing the transmission housing, the torque converter housing, the differential carrier, the carrier bearing, the carrier bearing outer race, or the 76 mm thrust shim.

1. Remove the carrier bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 100 ℃ (212 ℉) with a heat gun (E). Do not heat the housing more than 100 ℃ (212 ℉).

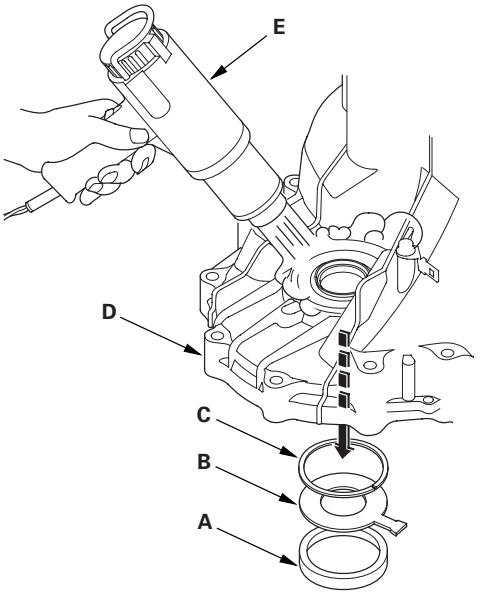
'06 Model



(cont'd)

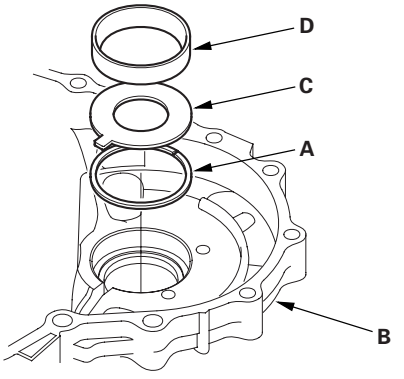
Carrier Bearing Preload Inspection (cont'd)

'07-09 Models

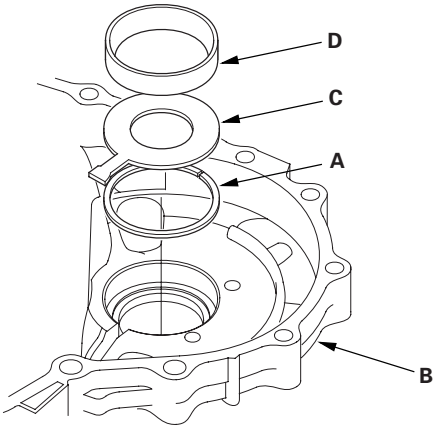


2. Install the 76 mm thrust shim (A) in the transmission housing (B).
   If you replace the 76 mm thrust shim with a new one, use the same thickness shim as the old one.

'06 Model



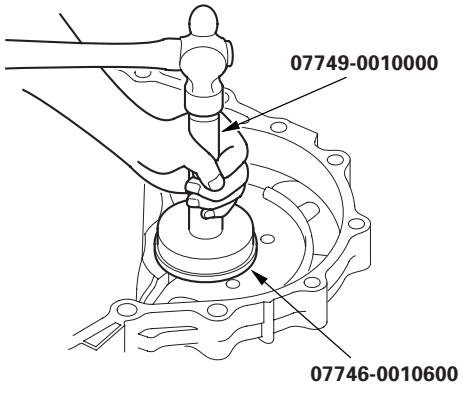
'07-09 Models



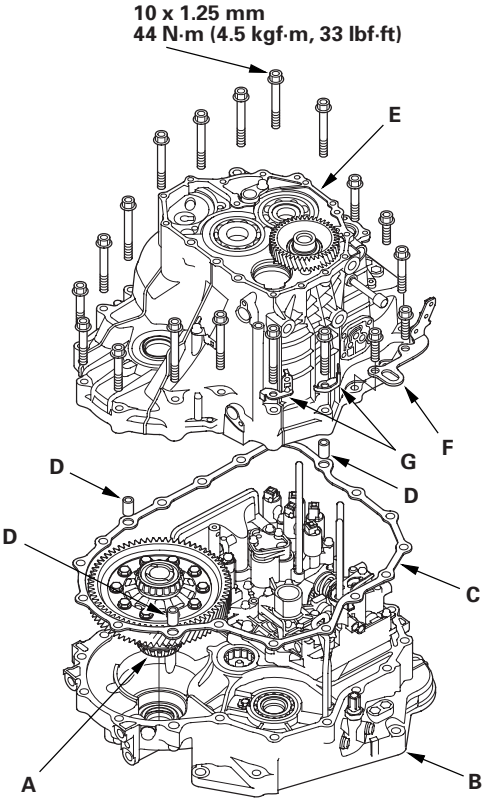
3. Install the 76.2 mm thrust washer (C), and the carrier bearing outer race (D) in the transmission housing.

   NOTE:
   For '07-09 models: Be sure to install the 76.2 mm thrust washer with the ''41382 RKY'' mark facing downward.

4. Install the outer race securely in the transmission housing so there is no clearance between the outer race, the thrust washer, the thrust shim, and the transmission housing with the driver and the 72 x 75 mm attachment.



5. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and the dowel pins (D) on the torque converter housing.



(cont'd)

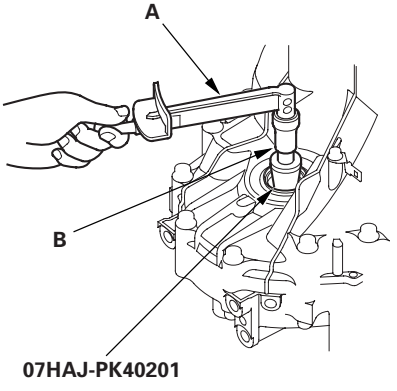
Carrier Bearing Preload Inspection (cont'd)

6. Install the transmission housing (E), and install the mounting bolts (19 bolts) with the transmission hanger (F) and the harness clamp brackets (G), then tighten the bolts.

7. Rotate the differential assembly in both directions to seat the bearings.

8. Measure the starting torque of the differential assembly using the preload inspection tool, a torque wrench (A), and a socket (B). Measure the starting torque at normal room temperature in both directions.

   Standard:
   New Bearings:
   2.7—3.9 N·m (28—40 kgf·cm, 24—35 lbf·in.)
   Reused Bearings:
   2.5—3.6 N·m (25—37 kgf·cm, 22—32 lbf·in.)



07HAJ-PK40201

9. If the starting torque is out of standard, remove the 76 mm thrust shim, and select the thrust shim from the following table. Install a new thrust shim and recheck. To increase the starting torque, increase the thickness of the 76 mm thrust shim. To decrease the starting torque, decrease the thickness of the 76 mm thrust shim. Changing the thrust shim to the next size will increase or decrease starting torque about 0.3—0.4 N·m (3—4 kgf·cm, 2—3 lbf·in.).

THRUST SHIM, 76 mm

No.	Part Number	Thickness
S	41438-PX4-700	2.05 mm (0.081 in.)
T	41439-PX4-700	2.10 mm (0.083 in.)
U	41440-PX4-700	2.15 mm (0.085 in.)
A	41441-PK4-000	2.20 mm (0.087 in.)
B	41442-PK4-000	2.25 mm (0.089 in.)
C	41443-PK4-000	2.30 mm (0.091 in.)
D	41444-PK4-000	2.35 mm (0.093 in.)
E	41445-PK4-000	2.40 mm (0.094 in.)
F	41446-PK4-000	2.45 mm (0.096 in.)
G	41447-PK4-000	2.50 mm (0.098 in.)
H	41448-PK4-000	2.55 mm (0.100 in.)
I	41449-PK4-000	2.60 mm (0.101 in.)
J	41450-PK4-000	2.65 mm (0.103 in.)
K	41451-PK4-000	2.70 mm (0.105 in.)
L	41452-PK4-000	2.75 mm (0.107 in.)
M	41453-PK4-000	2.80 mm (0.110 in.)
N	41454-PK4-000	2.85 mm (0.112 in.)
O	41455-PK4-000	2.90 mm (0.114 in.)
P	41456-PK4-000	2.95 mm (0.116 in.)
Q	41457-PK4-000	3.00 mm (0.118 in.)
R	41458-PK4-000	3.05 mm (0.120 in.)
0A	41428-PRP-000	1.55 mm (0.061 in.)
0B	41429-PRP-000	1.60 mm (0.063 in.)
0C	41430-PRP-000	1.65 mm (0.065 in.)
0D	41431-PRP-000	1.70 mm (0.067 in.)
0E	41432-PRP-000	1.75 mm (0.069 in.)
0F	41433-PRP-000	1.80 mm (0.071 in.)
0G	41434-PRP-000	1.85 mm (0.073 in.)
0H	41435-PRP-000	1.90 mm (0.075 in.)
0I	41436-PRP-000	1.95 mm (0.077 in.)
0J	41437-PRP-000	2.00 mm (0.079 in.)

(cont'd)

THRUST SHIM, 76 mm (cont'd)

No.	Part Number	Thickness
A	41428-PAX-000	1.575 mm (0.062 in.)
B	41429-PAX-000	1.625 mm (0.064 in.)
C	41430-PAX-000	1.675 mm (0.066 in.)
D	41431-PAX-000	1.725 mm (0.068 in.)
E	41432-PAX-000	1.775 mm (0.070 in.)
F	41433-PAX-000	1.825 mm (0.072 in.)
G	41434-PAX-000	1.875 mm (0.074 in.)
H	41435-PAX-000	1.925 mm (0.076 in.)
I	41436-PAX-000	1.975 mm (0.078 in.)
J	41437-PAX-000	2.025 mm (0.080 in.)
K	41438-PAX-000	2.075 mm (0.082 in.)
L	41439-PAX-000	2.125 mm (0.084 in.)
M	41440-PAX-000	2.175 mm (0.086 in.)
N	41441-PAX-000	2.225 mm (0.088 in.)
O	41442-PAX-000	2.275 mm (0.090 in.)
P	41443-PAX-000	2.325 mm (0.092 in.)
Q	41444-PAX-000	2.375 mm (0.094 in.)
R	41445-PAX-000	2.425 mm (0.095 in.)
S	41446-PAX-000	2.475 mm (0.097 in.)
T	41447-PAX-000	2.525 mm (0.099 in.)
U	41448-PAX-000	2.575 mm (0.101 in.)
V	41449-PAX-000	2.625 mm (0.103 in.)
W	41450-PAX-000	2.675 mm (0.105 in.)
X	41451-PAX-000	2.725 mm (0.107 in.)
Y	41452-PAX-000	2.775 mm (0.109 in.)
Z	41453-PAX-000	2.825 mm (0.111 in.)
0A	41454-PAX-000	2.875 mm (0.113 in.)
0B	41455-PAX-000	2.925 mm (0.115 in.)
0C	41456-PAX-000	2.975 mm (0.117 in.)
0D	41457-PAX-000	3.025 mm (0.119 in.)

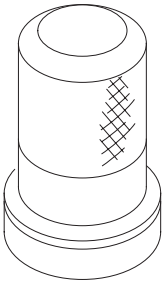
DYNOMITE -2009-

Driveline/Axle

Driveline/Axle

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07GAD-PH70201	Oil Seal Driver, 64 mm	1
②	07JAF-SH20400	Support Base Attachment	1
③	07XAC-001010A	Threaded Adapter, 22 x 1.5 mm	1
④	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑤	07746-0010400	Bearing Driver Attachment, 52 x 55 mm	1
⑥	07746-0030400	Inner Bearing Driver Attachment, 35 mm	1
⑦	07749-0010000	Driver Handle, 15 x 135L	1
⑧	07947-SB00100	Oil Seal Driver, 44.5 mm	1
⑨	07965-SD90100	Support Base	1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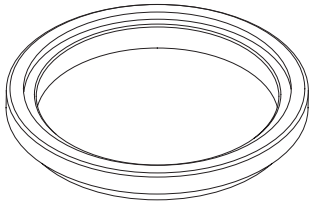
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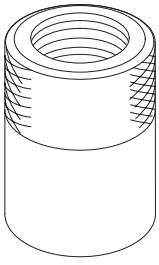
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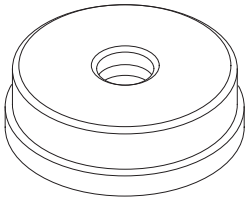
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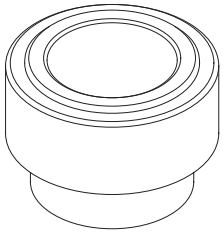
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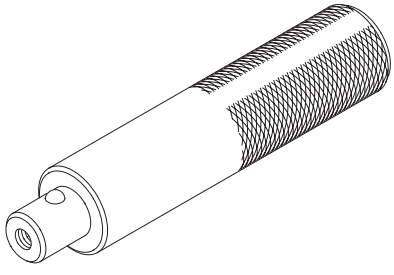
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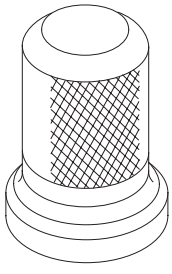
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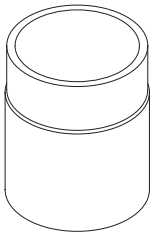
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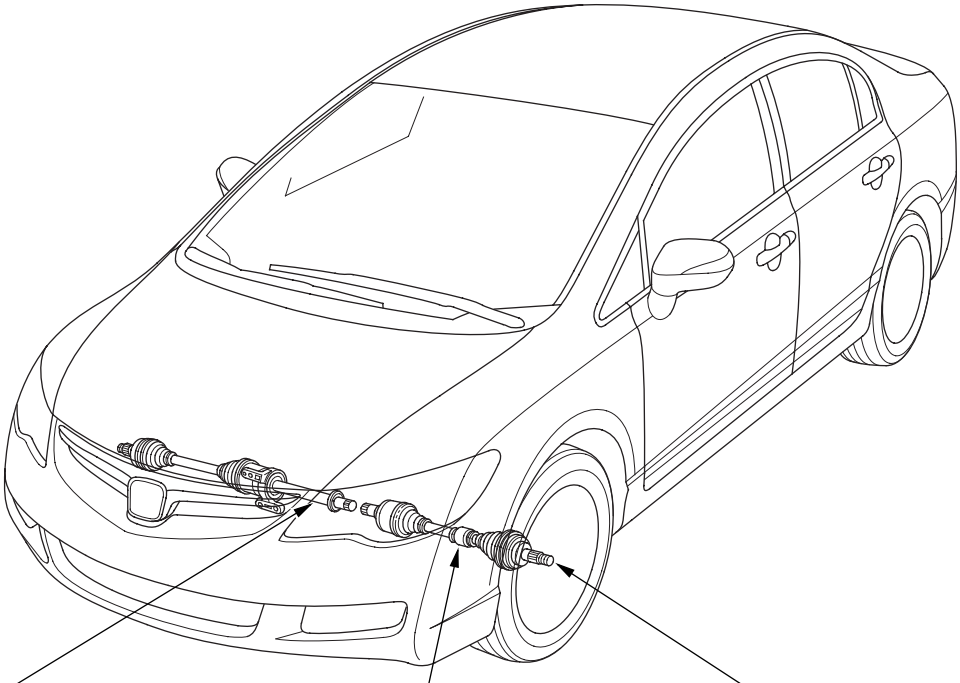
Component Location Index



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Disassembly, page 16-24
Reassembly, page 16-25
Installation, page 16-27

DYNAMIC DAMPER
Replacement, page 16-10

DRIVESHAFT
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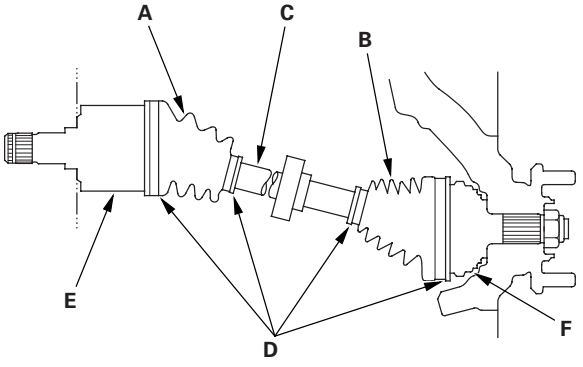
Disassembly, page 16-6
Reassembly, page 16-11
Installation, page 16-20

Driveshaft Inspection

1. Check the inboard boot (A) and the outboard boot (B) on the driveshaft (C) for cracks, damage, leaking grease, and loose boot bands (D). If any damage is found, replace the boot and the boot bands.



2. Check the driveshaft for cracks and damage. If any damage is found, replace the driveshaft.

3. Check the inboard joint (E) and the outboard joint (F) for cracks and damage. If any damage is found, replace the inboard joint or the outboard joint as an assembly.

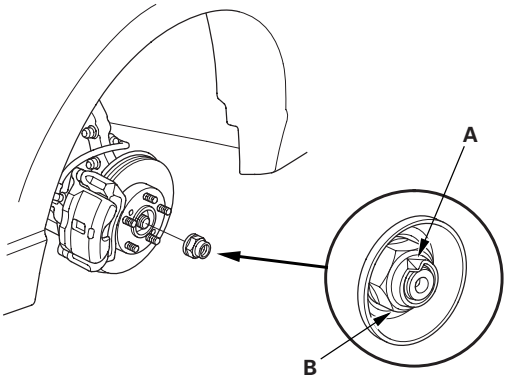
4. Hold the inboard joint and turn the front wheel by hand, then make sure the joint is not excessively loose. If necessary, replace the inboard joint or the outboard joint as an assembly.

Driveshaft Removal

1. Raise the vehicle on a lift.

2. Remove the front wheels.

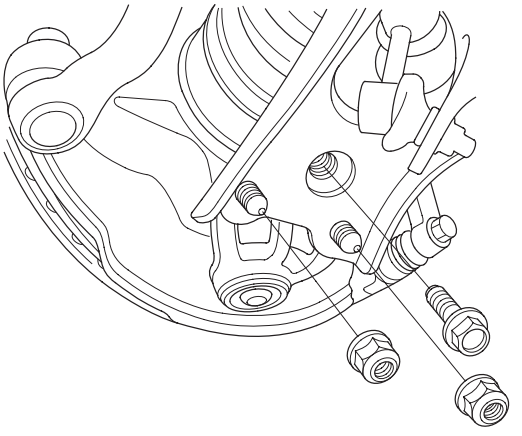
3. Pry up the locking tab (A) on the spindle nut (B), then remove the nut.



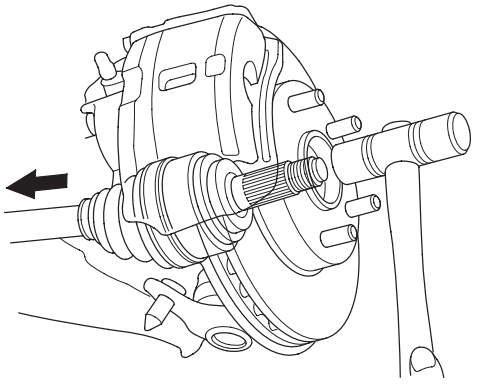
4. Drain the transmission fluid, then reinstall the drain plug with a new sealing washer:

   - 5-speed manual transmission (see page 13-5)
   - 6-speed manual transmission (see page 13-82)
   - Automatic transmission (see page 14-232)

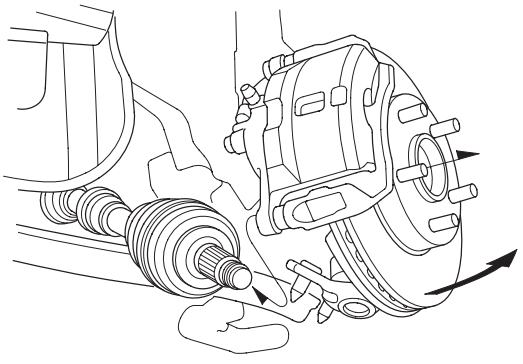
5. Remove the nuts and the bolt, then separate the lower arm using a prybar.



6. Separate the driveshaft outboard joint from the front hub using a plastic hammer.

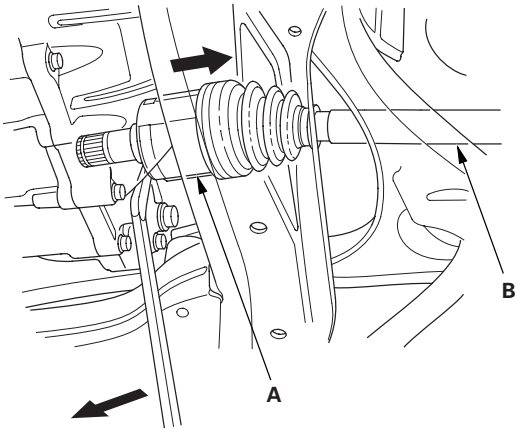


7. Pull the knuckle outward, and separate the driveshaft outboard joint from the front hub.



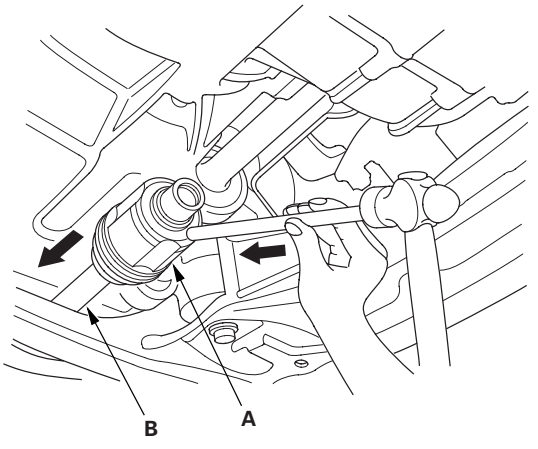
8. Left driveshaft: Pry the inboard joint (A) from the differential using a prybar. Remove the driveshaft as an assembly.

   NOTE:
   - Do not pull on the driveshaft (B), or the inboard joint may come apart. Pull the inboard joint straight out to avoid damaging the oil seal.
   - Be careful not to damage the oil seal using the prybar.



9. Right driveshaft: Drive the inboard joint (A) off of the intermediate shaft using a drift and a hammer. Remove the driveshaft as an assembly.

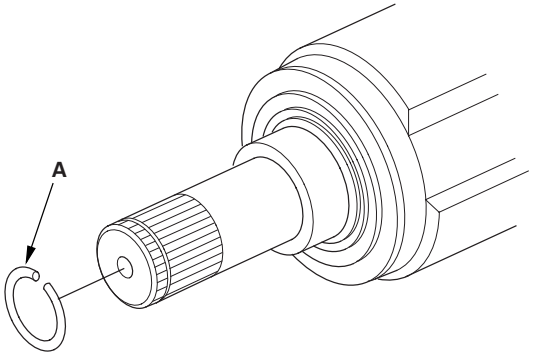
   NOTE: Do not pull on the driveshaft (B), or the inboard joint may come apart.



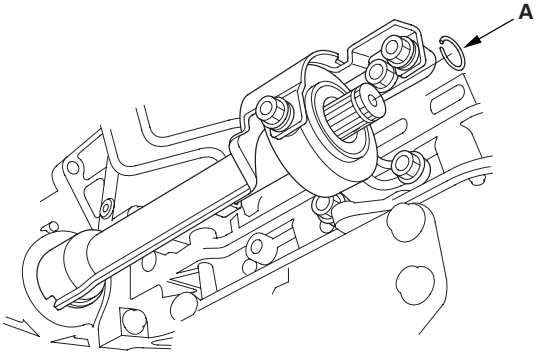
(cont'd)

Driveshaft Removal (cont'd)

10. Remove the set ring (A) from the left driveshaft inboard joint.



11. Remove the set ring (A) from the intermediate shaft.



Driveshaft Disassembly

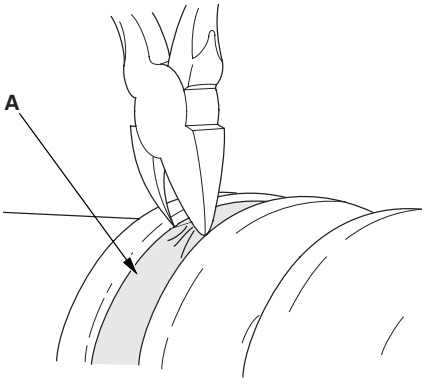
Special Tools Required
- Threaded adapter, 22 x 1.5 mm 07XAC-001010A
- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Slide hammer, 5/8''-18 UNF, commercially available
- Boot band pliers, commercially available
- Puller, commercially available

Inboard Joint Side

1. Remove the boot bands. Be careful not to damage the boot.

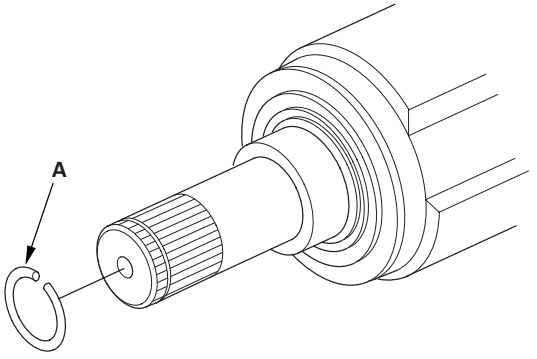
   - If the boot band is a welded type (A), cut the boot band.
   - If the boot band is a double loop type (B), lift up the band end (C), and push it into the clip (D).
   - If the boot band is a low profile type (E), pinch the boot band using commercially available boot band pliers (F).

Welded type

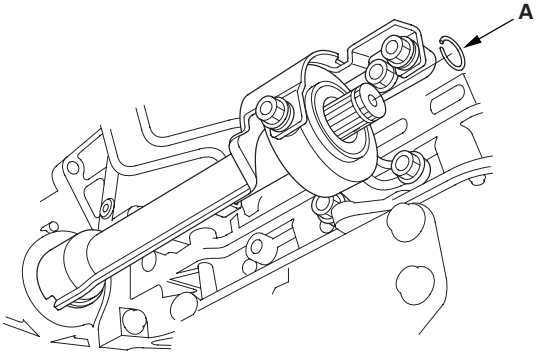


Driveshaft Removal (cont'd)

10. Remove the set ring (A) from the left driveshaft inboard joint.



11. Remove the set ring (A) from the intermediate shaft.



Driveshaft Disassembly

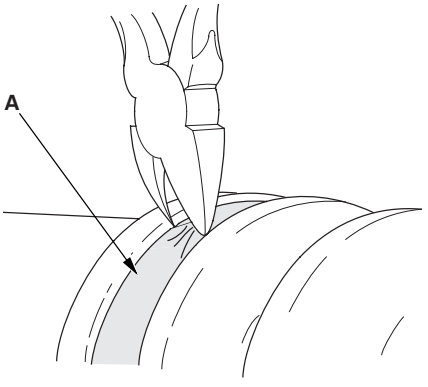
Special Tools Required
- Threaded adapter, 22 x 1.5 mm 07XAC-001010A
- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Slide hammer, 5/8''-18 UNF, commercially available
- Boot band pliers, commercially available
- Puller, commercially available

Inboard Joint Side

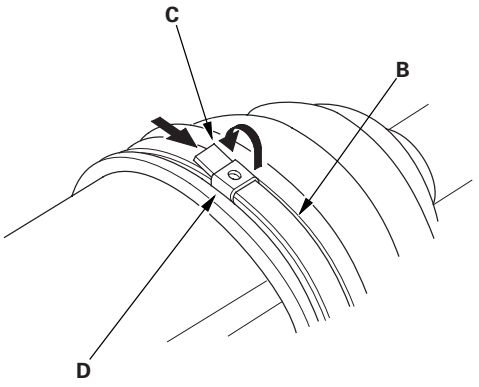
1. Remove the boot bands. Be careful not to damage the boot.

   - If the boot band is a welded type (A), cut the boot band.
   - If the boot band is a double loop type (B), lift up the band end (C), and push it into the clip (D).
   - If the boot band is a low profile type (E), pinch the boot band using commercially available boot band pliers (F).

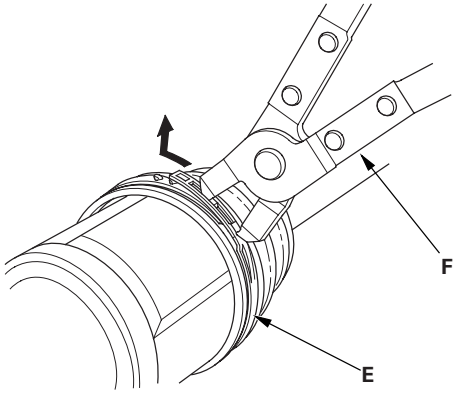
Welded type



Double loop type

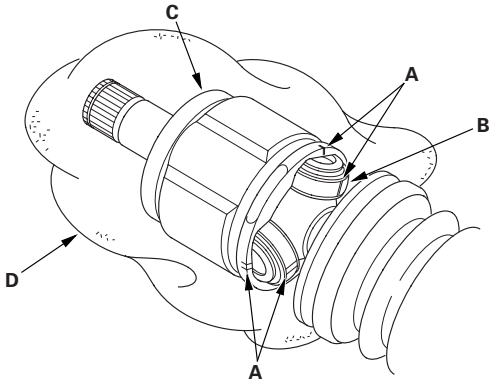


Low profile type



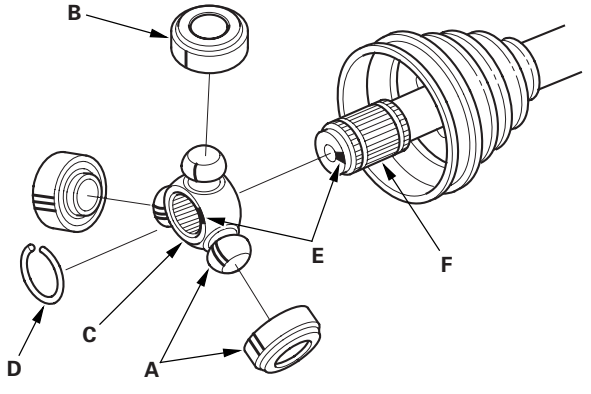
2. Make marks (A) on each roller (B) and the inboard joint (C) to identify the locations of the rollers to the grooves in the inboard joint. Then remove the inboard joint on a clean shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.

   NOTE: Do not engrave or scribe any marks on the rolling surface.



3. Make marks (A) on the rollers (B) and the spider (C) to identify the locations of the rollers on the spider, then remove the rollers.

   NOTE: Do not engrave or scribe any marks on the rolling surfaces.



4. Remove the circlip (D).

5. Make marks (E) on the spider and the driveshaft (F) to identify the position of the spider on the shaft.

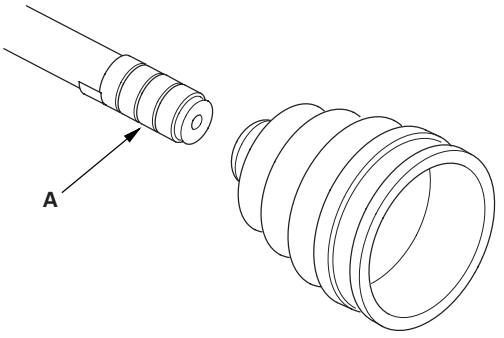
6. Remove the spider.

   NOTE: If necessary, use a commercially available puller.

(cont'd)

Driveshaft Disassembly (cont'd)

7. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.

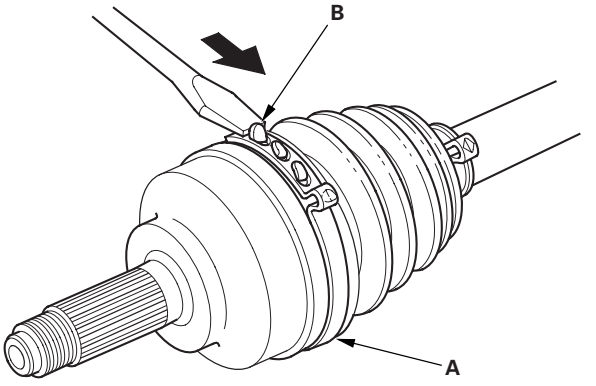


8. Remove the inboard boot. Be careful not to damage the boot.

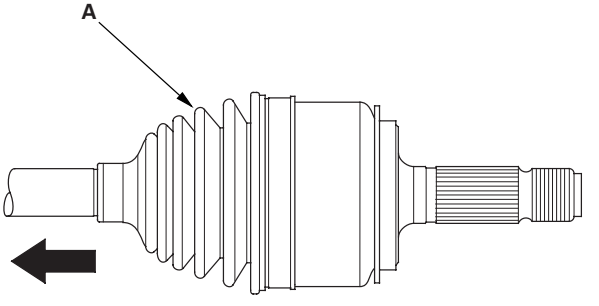
9. Remove the vinyl tape.

Outboard Joint Side

1. Remove the boot bands (A). Lift up the three tabs (B) using a screwdriver, then release the band. Be careful not to damage the boot.

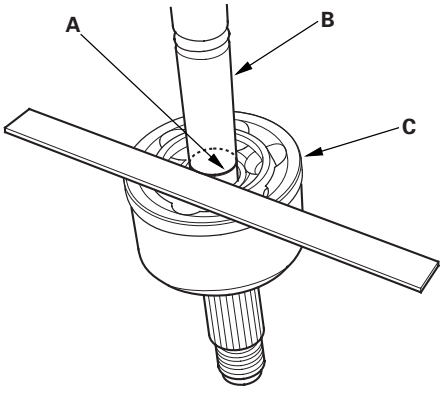


2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.



3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.

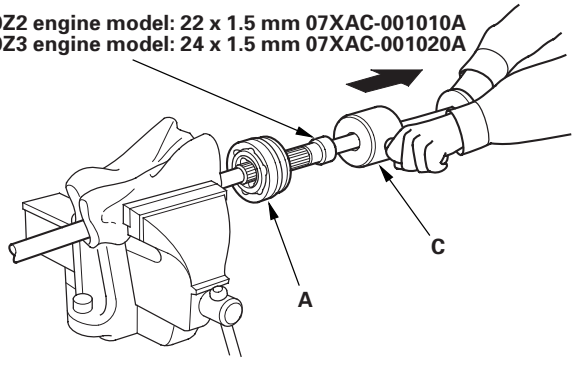
4. Make a mark (A) on the driveshaft (B) at the same level as the outboard joint rim (C).



5. Securely clamp the driveshaft in a bench vise with a shop towel.

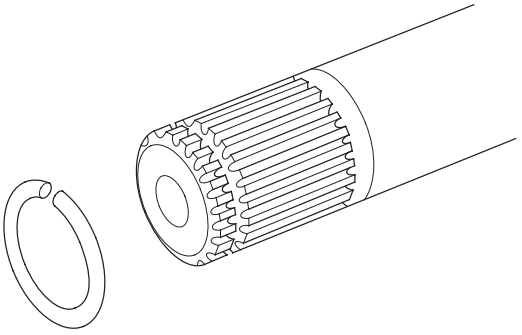
6. Remove the outboard joint (A) using the threaded adapter (B) and a commercially available 5/8''-18 UNF slide hammer (C).

B
K20Z2 engine model: 22 x 1.5 mm 07XAC-001010A
K20Z3 engine model: 24 x 1.5 mm 07XAC-001020A

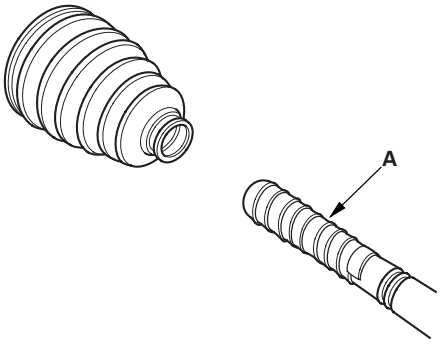


7. Remove the driveshaft from the bench vise.

8. Remove the stop ring from the driveshaft.



9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damaging the boot.



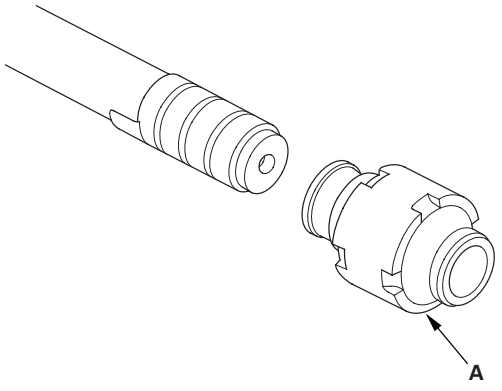
10. Remove the outboard boot. Be careful not to damage the boot.

11. Remove the vinyl tape.

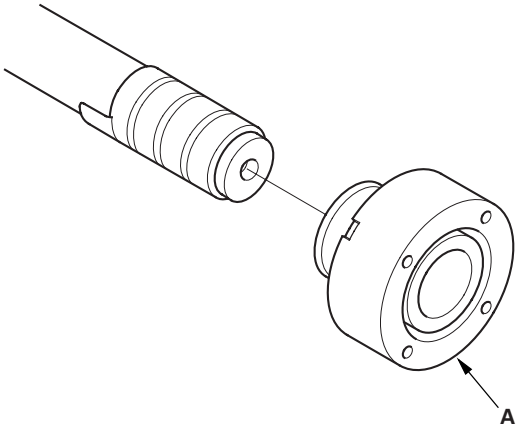
Dynamic Damper Replacement

1. Remove the inboard joint (see page 16-6).
2. Remove the dynamic damper band (see step 1 on page 16-6).
3. Remove the dynamic damper (A).

K20Z2 engine model (left driveshaft only)



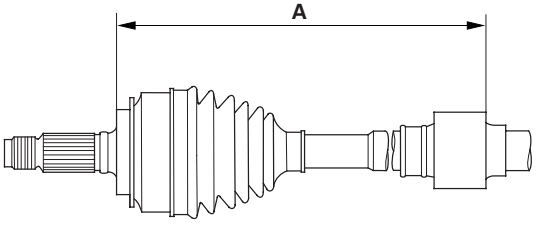
K20Z3 engine model



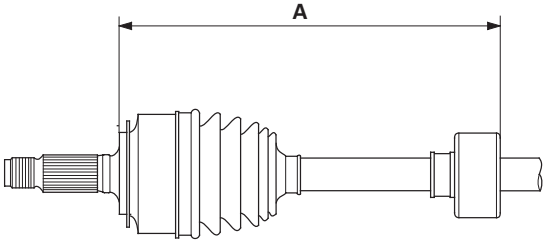
4. Install the new dynamic damper and adjust the position of the new dynamic damper to these measurements.

   NOTE: Be careful not to swap the dynamic dampers. The right and left dynamic dampers are different (K20Z3 engine model).

K20Z2 engine model



K20Z3 engine model

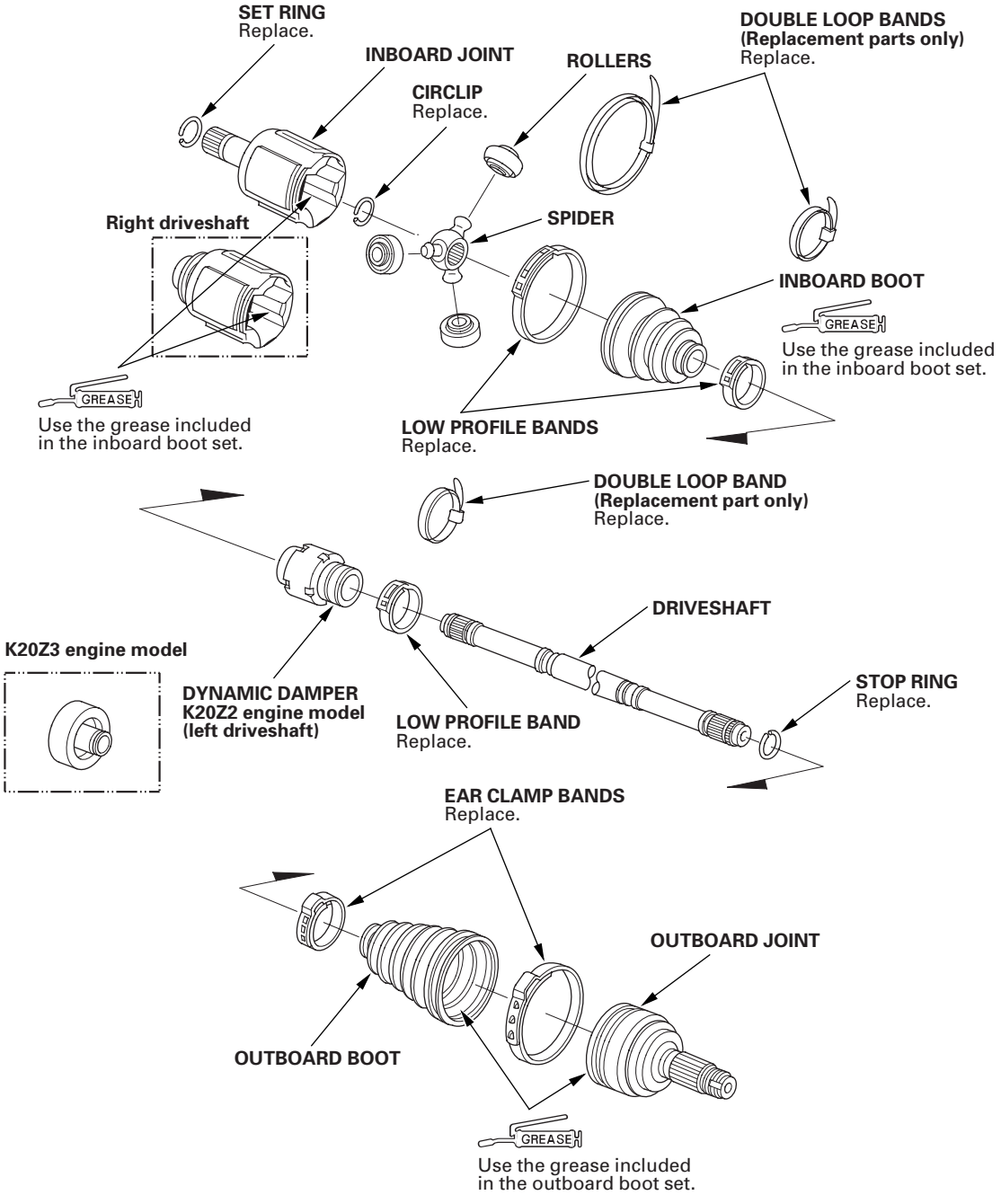


Model	Left/Right Driveshaft	Specified Length (A)
K20Z2 engine model	Left	293.0—297.0 mm (11.54—11.69 in.)
K20Z3 engine model	Left/Right	284.0—288.0 mm (11.18—11.34 in.)

5. Install the dynamic damper band (see step 10 on page 16-14).
6. Install the inboard joint (see page 16-12).

Driveshaft Reassembly

Exploded View



(cont'd)

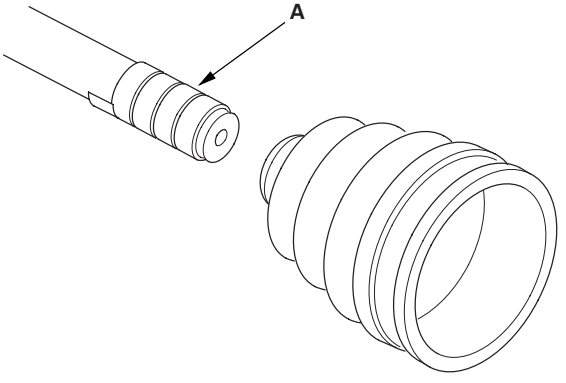
Driveshaft Reassembly (cont'd)

Special Tools Required
- Boot band tool, KD-3191 or equivalent commercially available
- Boot band pliers, Kent-Moore J-35910 or equivalent, commercially available

NOTE: Refer to the Exploded View, as needed, during this procedure.

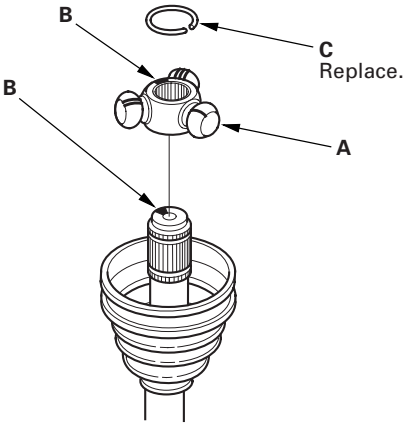
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the inboard boot.



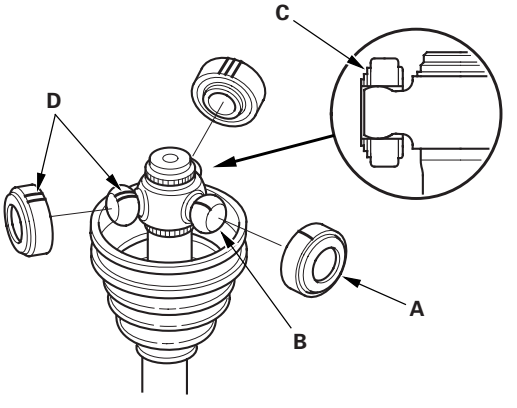
2. Install the inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

3. Install the spider (A) onto the driveshaft by aligning the marks (B) you made on the spider and the end of the driveshaft.



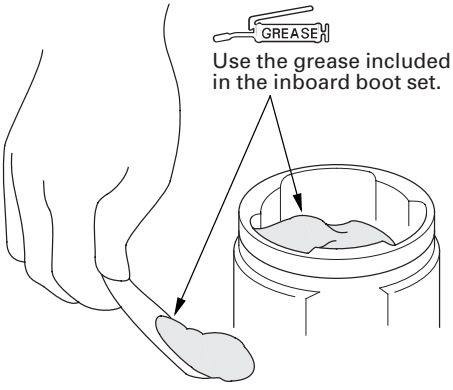
4. Install a new circlip (C) into the driveshaft groove. Always rotate the circlip in its groove to make sure it is fully seated.

5. Fit the rollers (A) onto the spider (B) with their high shoulders (C) facing outward, and note these items:
   - Reinstall the rollers in their original positions on the spider by aligning the marks (D) you made.
   - Hold the driveshaft pointed up to prevent the rollers from falling off.



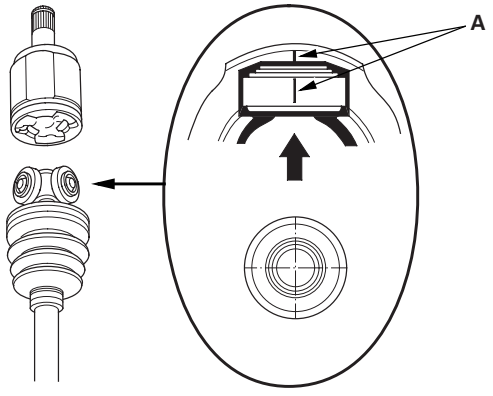
6. Pack the inboard joint with the joint grease included in the new inboard boot set.

Grease quantity
Inboard joint:
K20Z2 engine model: 112—132 g (4.0—4.7 oz)
K20Z3 engine model: 180—200 g (6.3—7.0 oz)

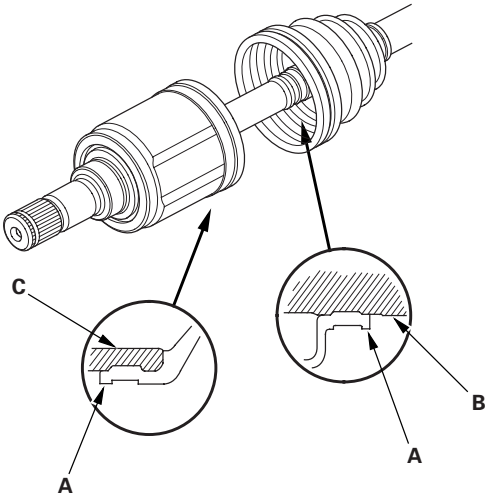


7. Fit the inboard joint onto the driveshaft and note these items:

- Reinstall the inboard joint onto the driveshaft by aligning the marks (A) you made on the inboard joint and the rollers.
- Hold the driveshaft so the inboard joint is pointing up to prevent it from falling off.



8. Fit the boot ends (A) onto the driveshaft (B) and the inboard joint (C).

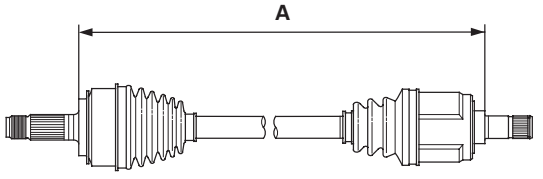


(cont'd)

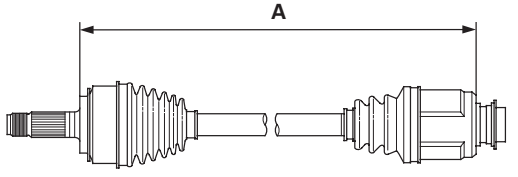
Driveshaft Reassembly (cont'd)

9. Adjust the length (A) of the driveshaft to the figure as shown, then adjust the boots to halfway between full compression and full extension. Bleed excess air from the boots by inserting a flat-tipped screwdriver between the boot and the joint.

Left driveshaft



Right driveshaft



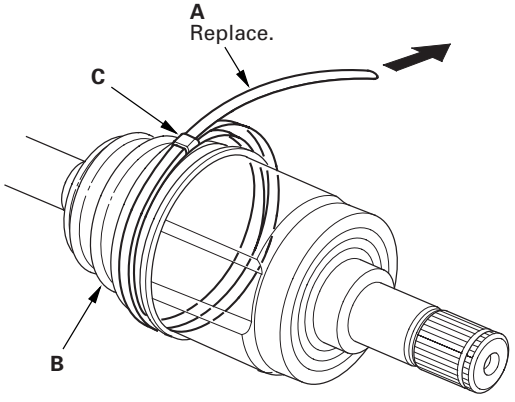
Model	Left/Right Driveshaft	Specified Length (A)
K20Z2 engine model	Left	505.5—510.0 mm (19.88—20.08 in.)
	Right	493.0—498.0 mm (19.41—19.61 in.)
K20Z3 engine model	Left	511.0—516.0 mm (20.12—20.31 in.)
	Right	486.8—491.8 mm (19.17—19.36 in.)

10. Install new boot bands.

- For the double loop type, go to step 11.
- For the low profile type, go to step 20.

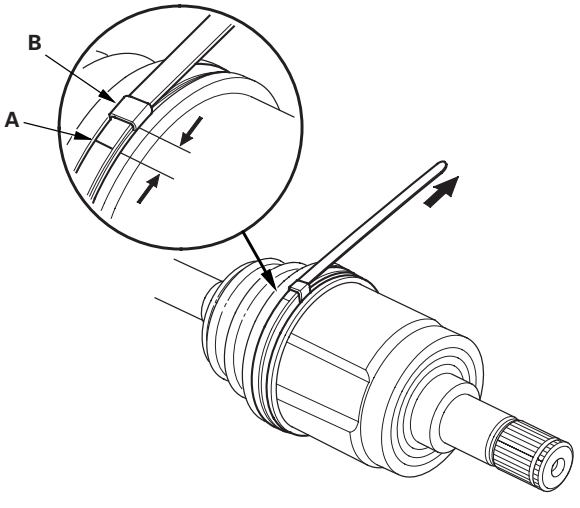
11. Fit the boot ends onto the driveshaft and the inboard joint, then install a new double loop band (A) onto the boot (B).

NOTE: Pass the end of the new double loop band through the clip (C) twice in the direction of the forward rotation of the driveshaft.

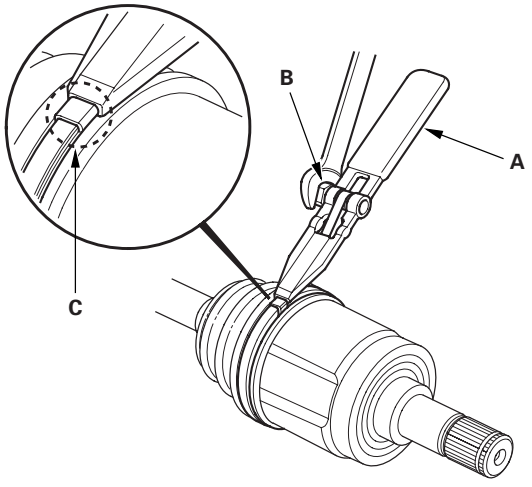


12. Pull up the slack in the band by hand.

13. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).

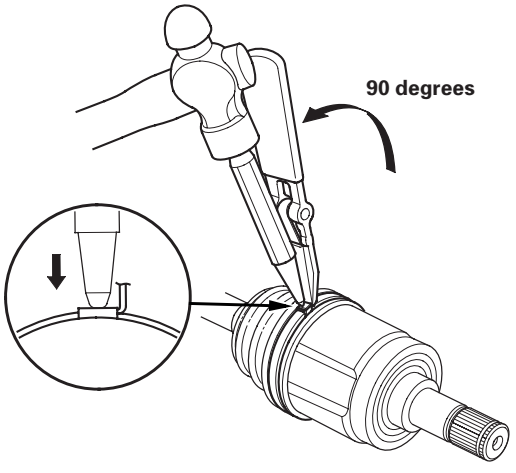


14. Thread the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).

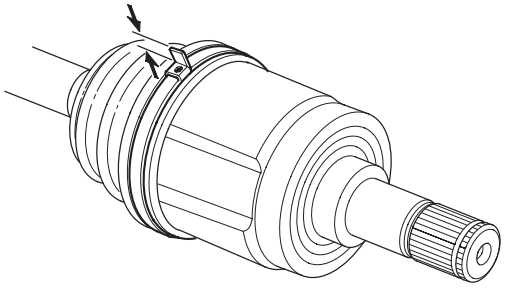


15. Using a wrench on the winding mandrel of the boot band tool, tighten the band until the marked spot (C) on the band meets the edge of the clip.

16. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.

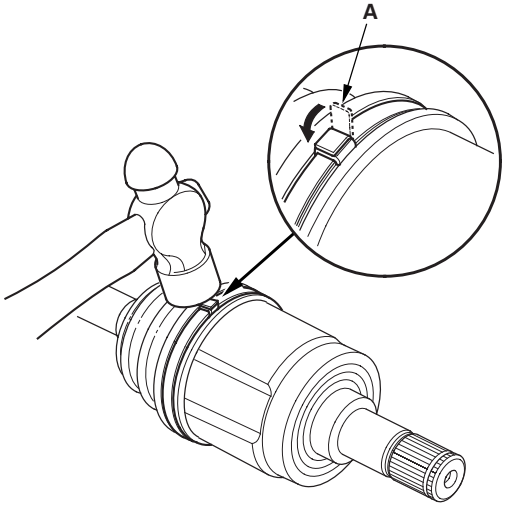


17. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5—10 mm (0.2—0.4 in.) tail protruding from the clip.



18. Bend the band end (A) by tapping it down using a hammer.

NOTE:
- Make sure the band and the clip do not interfere with anything on the vehicle and the band does not move.
- Clean any grease remaining on the surrounding surfaces.

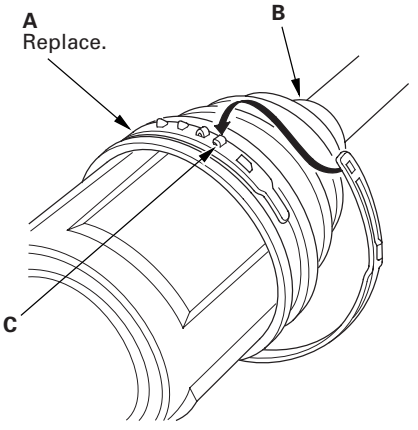


19. Repeat steps 11 through 18 for the band on the other end of the boot.

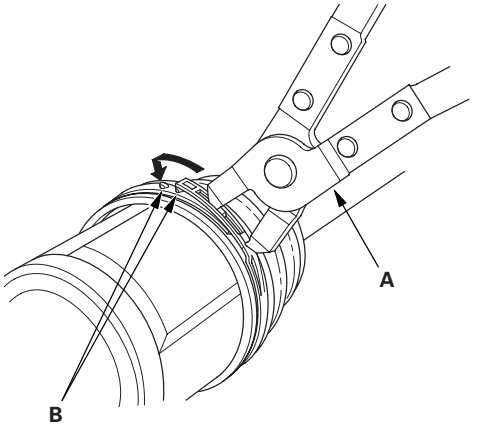
(cont'd)

Driveshaft Reassembly (cont'd)

20. Install a new low profile band (A) onto the boot (B), then hook the tab (C) of the band.



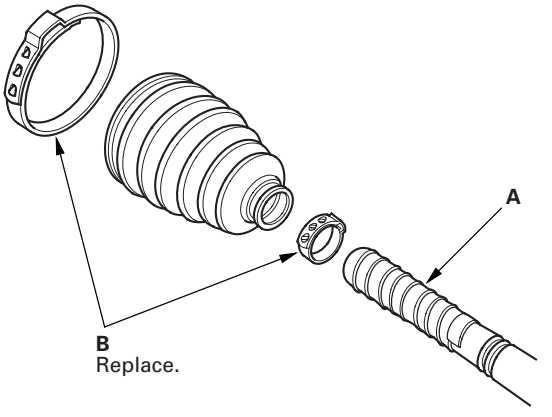
21. Close the hook portion of the band using commercially available boot band pincers (A), then hook the tabs (B) of the band.



22. Install the boot band on the other end of the boot, and repeat steps 20 through 21.

Outboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damaging the outboard boot.

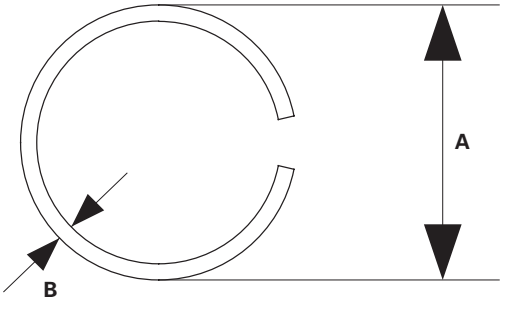


2. Install new ear clamp bands (B) and the outboard boot, then remove the vinyl tape. Be careful not to damage the outboard boot.

3. Make sure to check the size of a new stop ring.

NOTICE

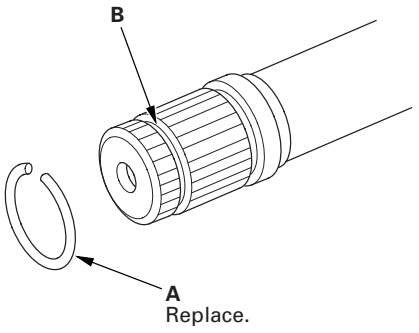
To avoid driveshaft and vehicle damage, make sure you install a new stop ring.



Stop ring specifications

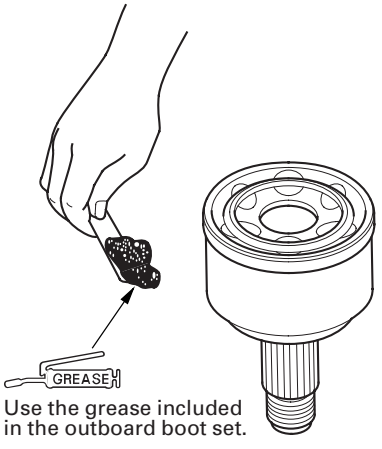
Model	Overall Diameter (A)	Wire Diameter (B)
6-speed M/T model	30.5 mm (1.20 in.)	1.8 mm (0.07 in.)
Except 6-speed M/T model	24.3 mm (0.96 in.)	1.6 mm (0.06 in.)

4. Install the stop ring (A) into the driveshaft groove (B).

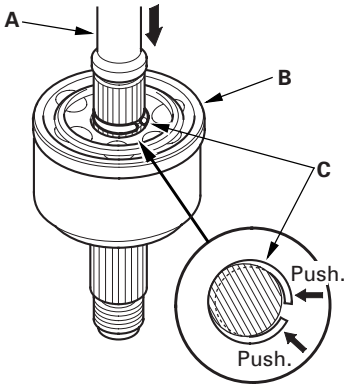


5. Pack about 35 g (1.2 oz) grease included in the new outboard boot set into the driveshaft hole in the outboard joint.

   NOTE: If you are installing a new outboard joint, the grease is already installed.



6. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.

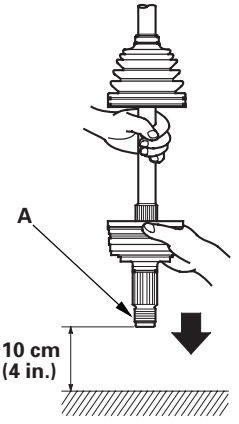


(cont'd)

Driveshaft Reassembly (cont'd)

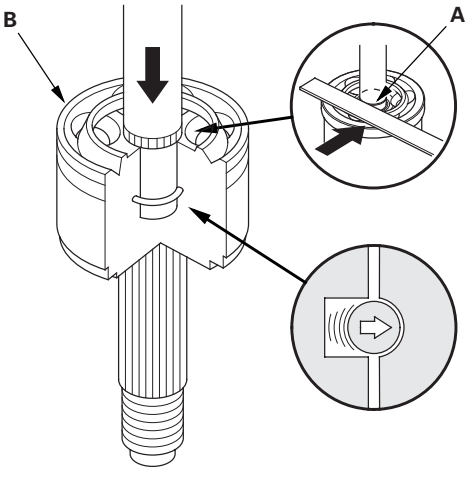
7. To completely seat the outboard joint, pick up the driveshaft and joint, and tap or hit the assembly onto a hard surface from a height of about 10 cm (4 in.).

   NOTE: Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.



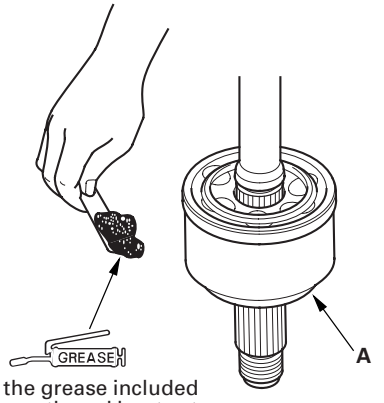
8. Check the alignment of the paint mark (A) you made with the outboard joint end (B).

   NOTICE
   To avoid driveshaft and vehicle damage, the shaft must be all the way into the outboard joint to ensure the stop ring is properly seated.



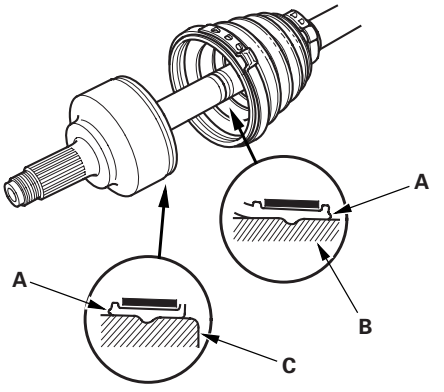
9. Pack the outboard joint (A) with the remaining grease included in the new outboard boot set.

   Total grease quantity
   Outboard joint:
   K20Z2 engine model: 120—140 g (4.2—4.9 oz)
   K20Z3 engine model: 110—130 g (3.8—4.5 oz)



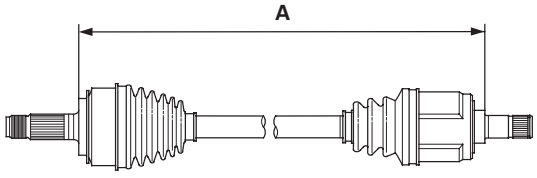
Use the grease included in the outboard boot set.

10. Fit the boot ends (A) onto the driveshaft (B) and outboard joint (C). Bleed any excess air from the boot by inserting a flat-tipped screwdriver between the boot and the joint.

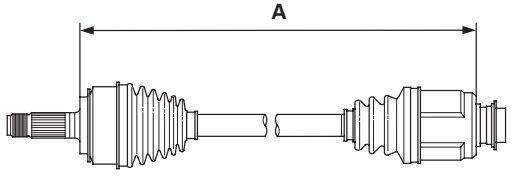


11. Inspect the length (A) of the driveshaft to the figure as shown, then adjust the boots to halfway between full compression and full extension.

Left driveshaft

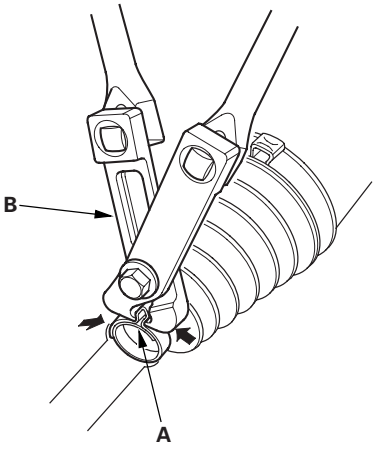


Right Driveshaft

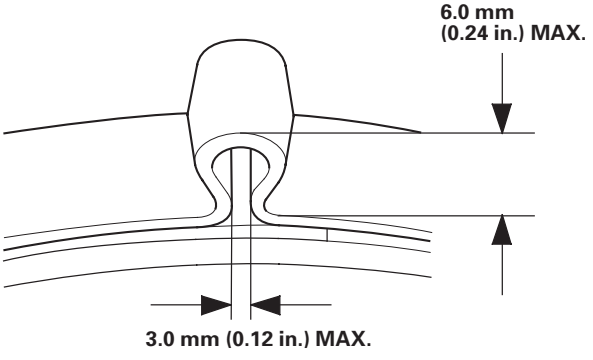


Model	Left/Right Driveshaft	Specified Length (A)
K20Z2 engine model	Left	505.5—510.0 mm (19.88—20.08 in.)
	Right	493.0—498.0 mm (19.41—19.61 in.)
K20Z3 engine model	Left	511.0—516.0 mm (20.12—20.31 in.)
	Right	486.8—491.8 mm (19.17—19.36 in.)

12. Close the ear portion (A) of the band using commercially available boot band pliers (Kent-Moore J-35910 or equivalent) (B).



13. Check the clearance between the closed ear portion of the band. If the clearance is not within the standard, close the ear portion of the band tighter.



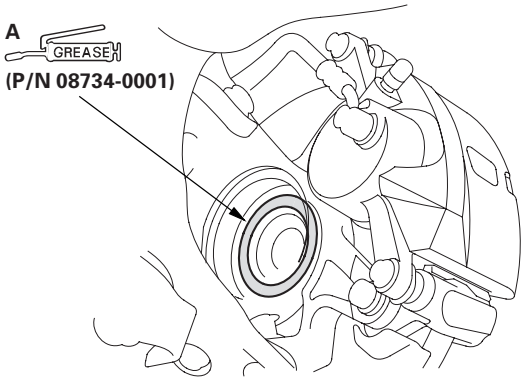
14. Repeat steps 12 and 13 for the band on the other end of the boot.

Driveshaft Installation

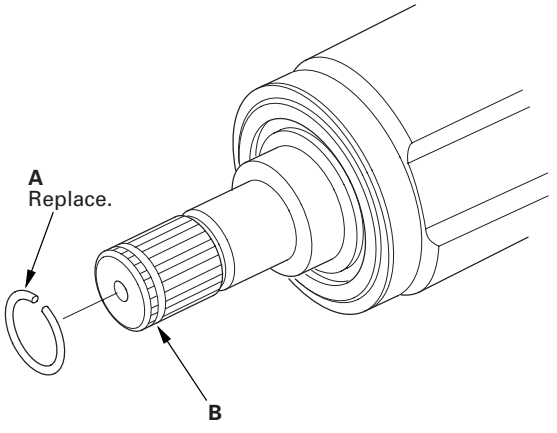
NOTE: Before starting installation, make sure the mating surfaces of the joint and the splined section are clean.

1. Apply about 5 g (0.18 oz) moly 60 paste (P/N 08734-0001) to the contact area (A) of the outboard joint and the front wheel bearing.

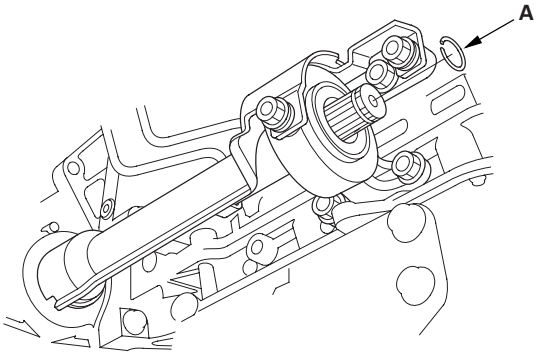
   NOTE: The paste helps to prevent noise and vibration.



2. Install a new set ring (A) onto the set ring groove (B) of the driveshaft (left driveshaft).

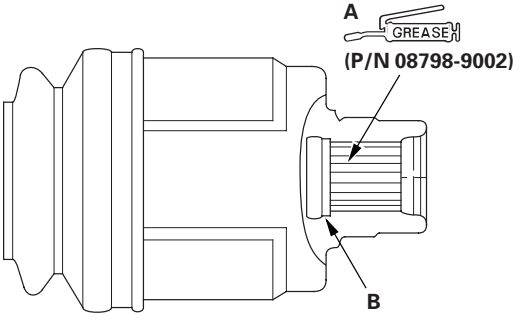


3. Install a new set ring (A) onto the set ring groove (B) of the intermediate shaft.



4. Apply super high temp urea grease (P/N 08798-9002) to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.

   Grease quantity
   K20Z2 engine model: 0.5—1.0 g (0.02—0.04 oz)
   K20Z3 engine model: 2.0—3.0 g (0.08—0.12 oz)

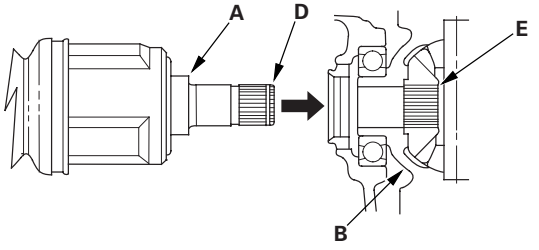


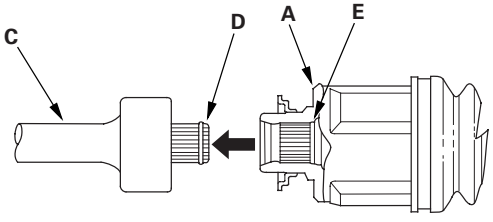
5. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

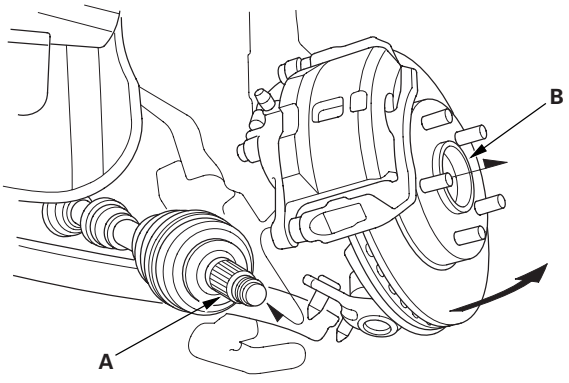
6. Insert the inboard end (A) of the driveshaft into the differential (B) or the intermediate shaft (C) until the set ring (D) locks in the groove (E).

   NOTE: Insert the driveshaft horizontally to prevent damaging the oil seal.

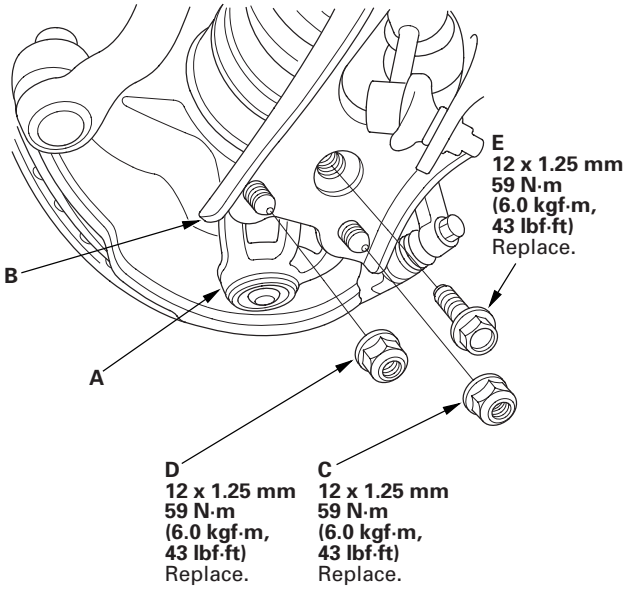




7. Install the outboard joint (A) into the front hub (B).



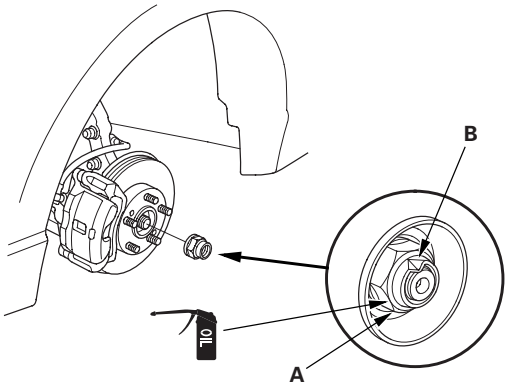
8. Connect the knuckle (A) onto the lower arm (B). During installation, install a new flange bolt and new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order: the nut on the front (C), the nut on the rear (D), then the bolt (E).



(cont'd)

Driveshaft Installation (cont'd)

9. Apply small amount of engine oil to the seating surface of new spindle nut (A).



K20Z2 engine model:
22 x 1.5 mm
181 N·m
(18.5 kgf·m, 134 lbf·ft)
Replace.
K20Z3 engine model:
24 x 1.5 mm
245 N·m
(25.0 kgf·m, 180 lbf·ft)
Replace.

10. Install the spindle nut, then tighten it. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.

11. Clean the mating surfaces of the brake disc and the wheel, then install the front wheels.

12. Turn the front wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.

13. Refill the transmission with the recommended transmission fluid:

    - 5-speed manual transmission (see page 13-5)
    - 6-speed manual transmission (see page 13-82)
    - Automatic transmission (see page 14-232)

14. Lower the vehicle on the lift.

15. Check the wheel alignment, and adjust it if necessary (see page 18-5).

16. Test-drive the vehicle.

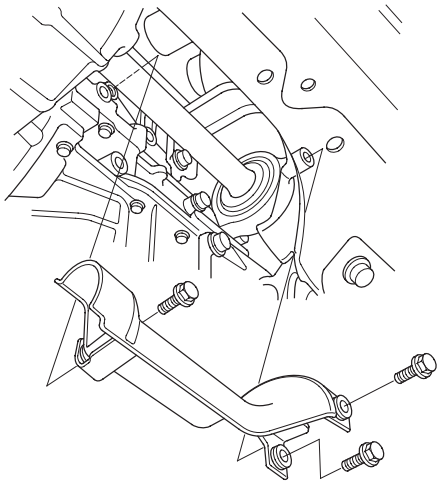
Intermediate Shaft Removal

1. Drain the transmission fluid. Reinstall the drain plug with a new sealing washer:

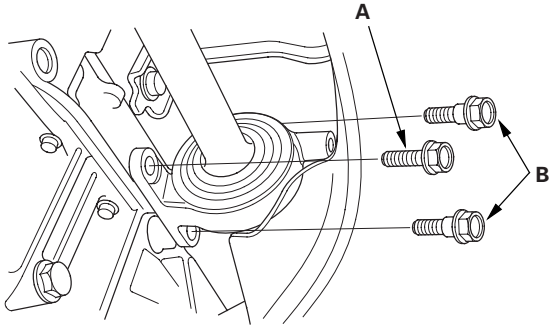
   - 5-speed manual transmission (see page 13-5)
   - 6-speed manual transmission (see page 13-82)
   - Automatic transmission (see page 14-232)

2. Remove the right driveshaft (see page 16-4).

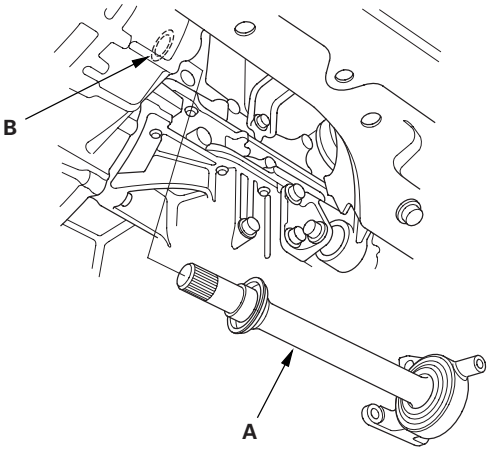
3. Remove the three flange bolts, then remove the heat shield.



4. Remove the flange bolt (A) and the two shoulder bolts (B).



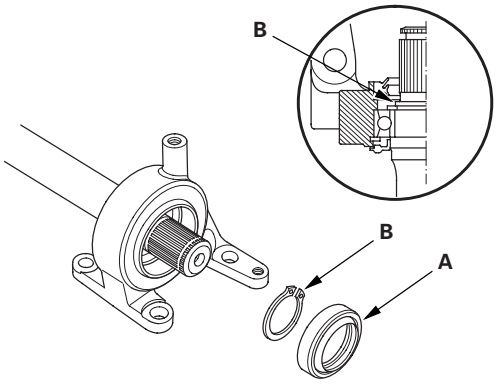
5. Remove the intermediate shaft (A) from the differential. Hold the intermediate shaft horizontally until it is clear of the differential to prevent damaging the oil seal (B).



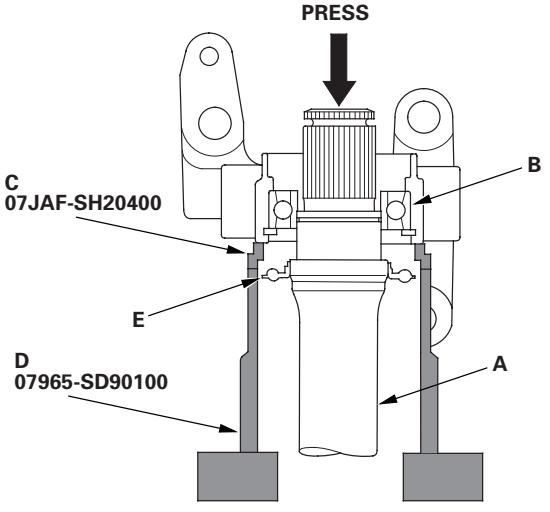
Intermediate Shaft Disassembly

Special Tools Required
- Support base attachment 07JAF-SH20400
- Oil seal driver, 44.5 mm 07947-SB00100
- Support base 07965-SD90100

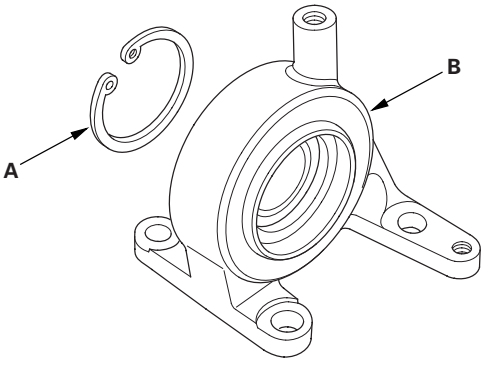
1. Remove the outer seal (A) and the external snap ring (B).



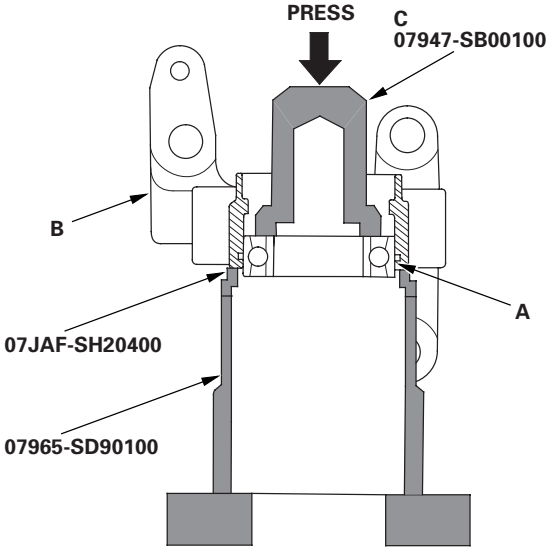
2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using the support base attachment (C), the support base (D), and a press. Be careful not to damage the bearing support rings (E) on the intermediate shaft during disassembly.



3. Remove the internal snap ring (A) from the bearing support (B).

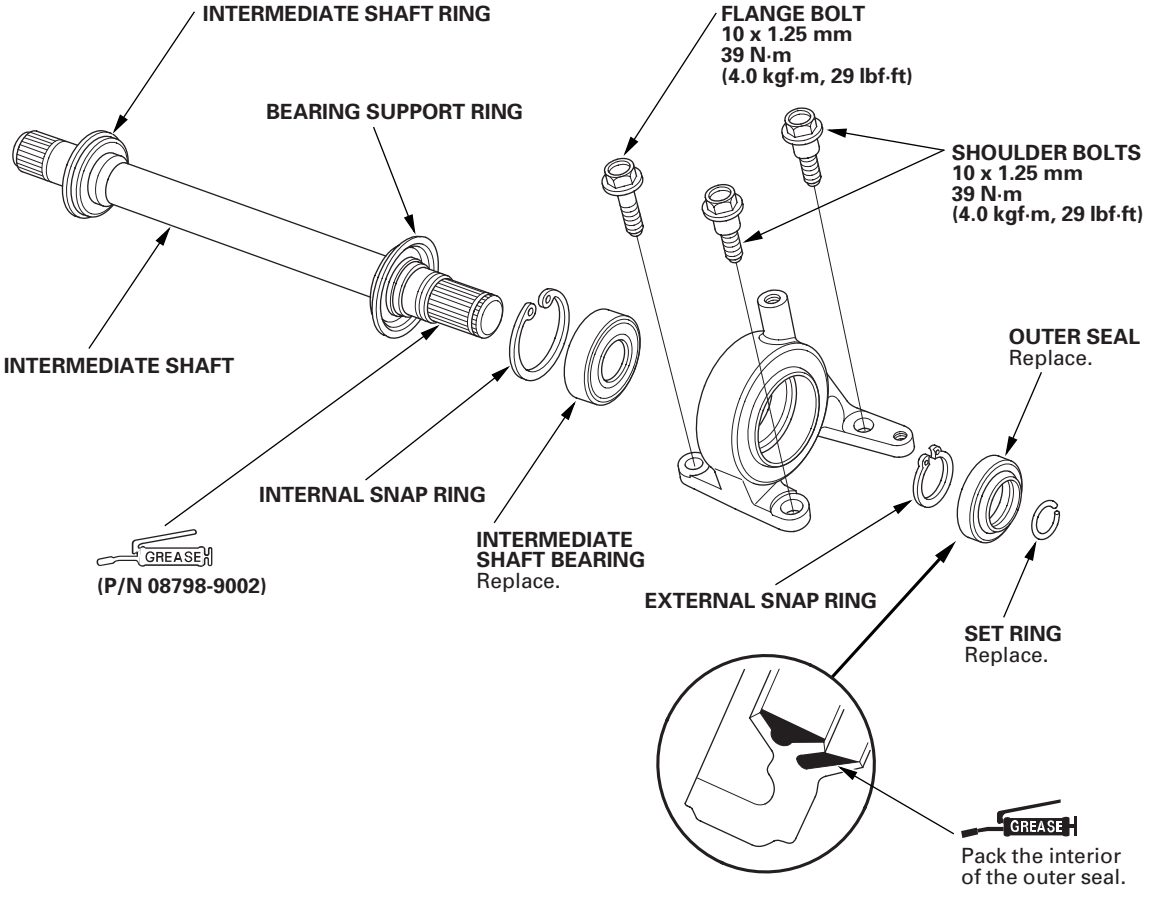


4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the half shaft base, the support base attachment, the 44.5 mm oil seal driver (C), and a press.



Intermediate Shaft Reassembly

Exploded View



(cont'd)

Intermediate Shaft Reassembly (cont'd)

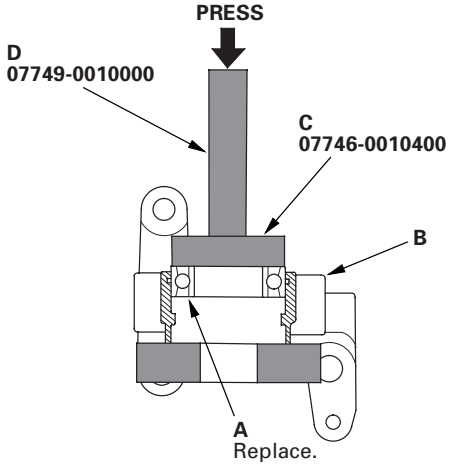
Special Tools Required
- Support base attachment 07JAF-SH20400
- Driver handle, 15 x 135L 07749-0010000
- Bearing driver attachment, 52 x 55 mm 07746-0010400
- Inner bearing driver attachment, 35 mm 07746-0030400
- Oil seal driver, 64 mm 07GAD-PH70201
- Support base 07965-SD90100

NOTE: Refer to the Exploded View, as needed, during this procedure.

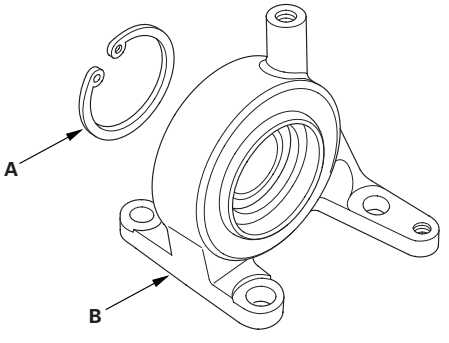
1. Clean the disassembled parts with solvent, and dry them with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

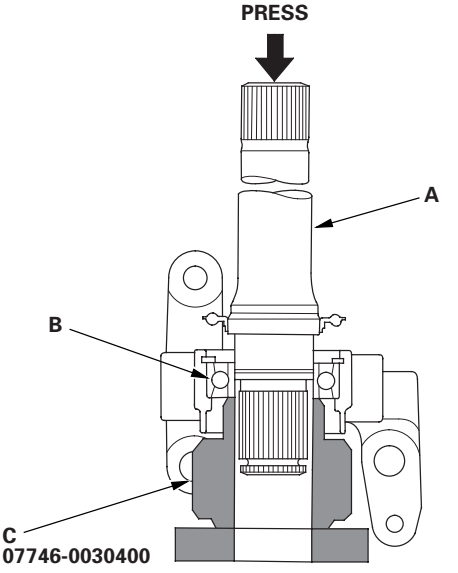
2. Press a new intermediate shaft bearing (A) into the bearing support (B) using the 52 x 55 mm bearing driver attachment (C), the 15 x 135L driver handle (D), and a press.



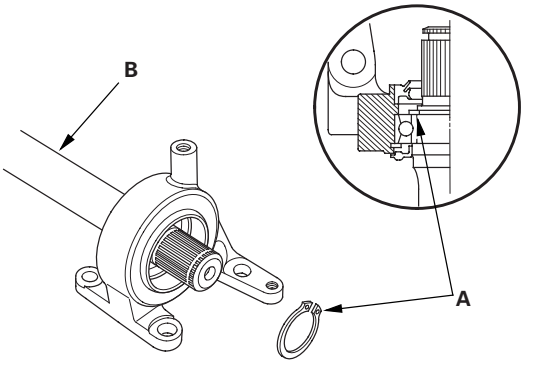
3. Install the internal snap ring (A) into the groove of the bearing support (B).



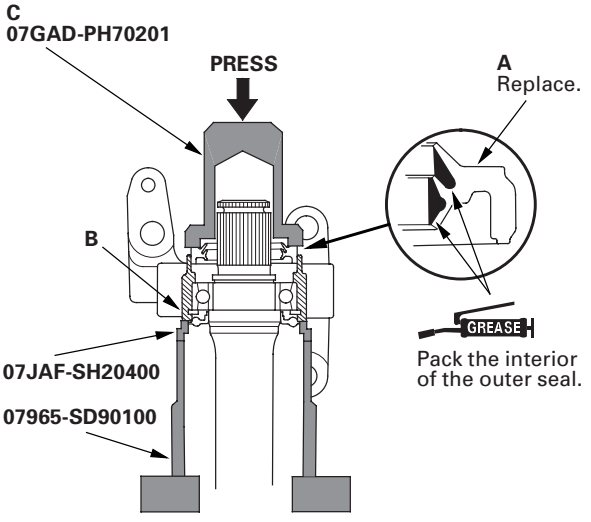
4. Press the intermediate shaft (A) into the shaft bearing (B) using the 35 mm inner bearing driver attachment (C) and a press.



5. Install the external snap ring (A) into the groove of the intermediate shaft (B).

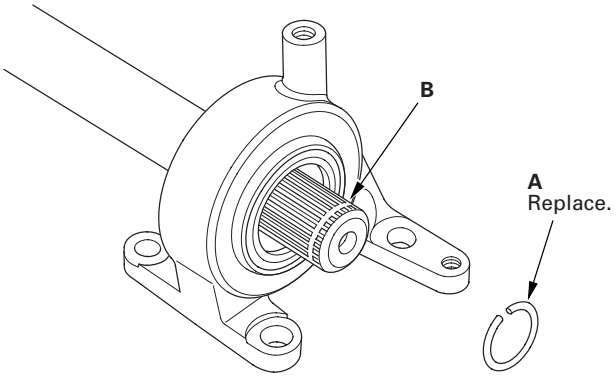


6. Install a new outer seal (A) flush with the bearing support (B) using the support base attachment, the support base, the 64 mm oil seal driver (C), and a press.



Intermediate Shaft Installation

1. Install a new set ring (A) onto the set ring groove (B) of the intermediate shaft.

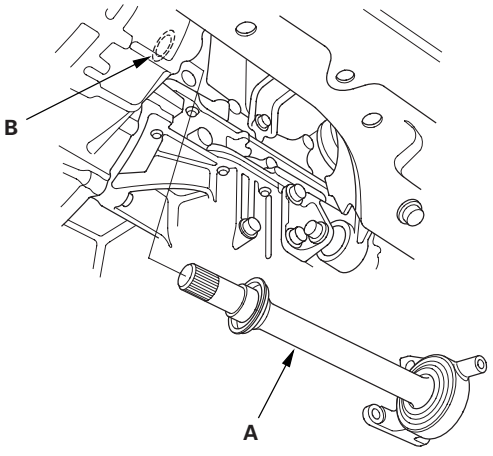


2. Clean the areas where the intermediate shaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

3. Insert the intermediate shaft (A) into the differential until the set ring locks in the groove.

   NOTE: Insert the intermediate shaft carefully to prevent damaging the oil seal (B).



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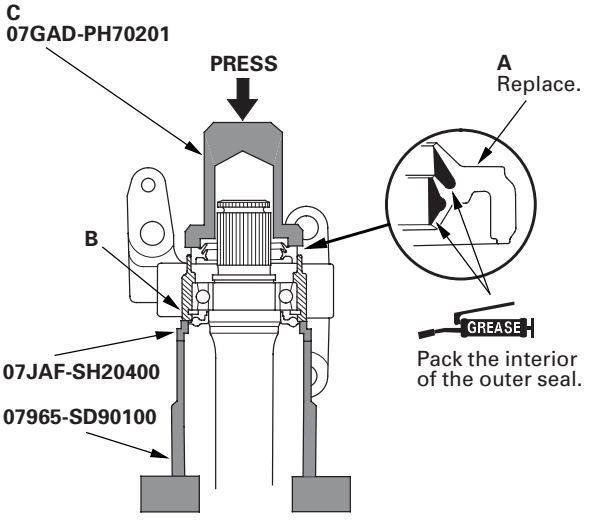
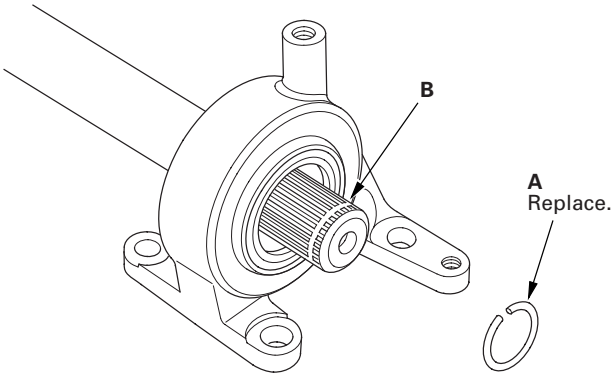
6. Install a new outer seal (A) flush with the bearing support (B) using the support base attachment, the support base, the 64 mm oil seal driver (C), and a press.



Intermediate Shaft Installation

1. Install a new set ring (A) onto the set ring groove (B) of the intermediate shaft.

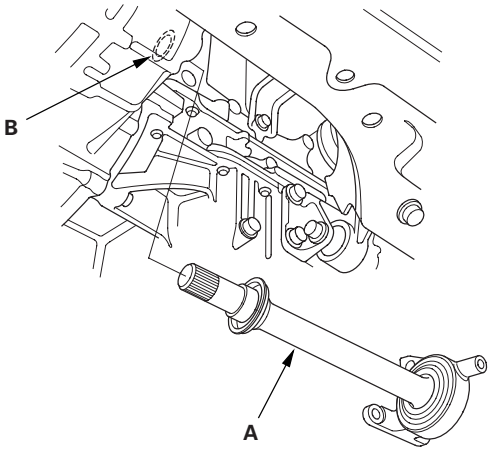


2. Clean the areas where the intermediate shaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air.

   NOTE: Do not wash the rubber parts with solvent.

3. Insert the intermediate shaft (A) into the differential until the set ring locks in the groove.

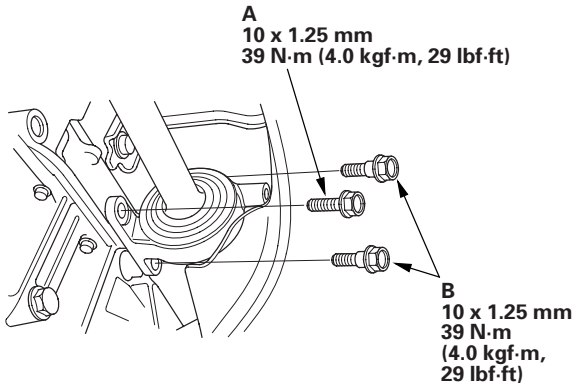
   NOTE: Insert the intermediate shaft carefully to prevent damaging the oil seal (B).



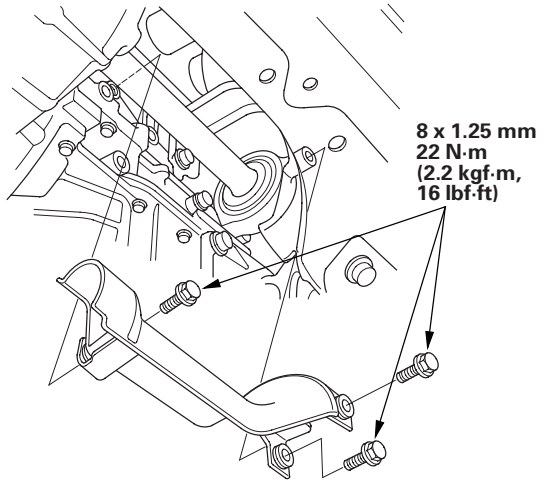
(cont'd)

Intermediate Shaft Installation (cont'd)

4. Install the flange bolt (A) and two shoulder bolts (B).



5. Install the heat shield, and tighten and three bolts.



6. Install the right driveshaft (see page 16-20).

7. Refill the transmission with the recommended transmission fluid:

   - 5-speed manual transmission (see page 13-5)
   - 6-speed manual transmission (see page 13-82)
   - Automatic transmission (see page 14-232)

8. Check the wheel alignment, and adjust it if necessary (see page 18-5).

9. Test-drive the vehicle.

DYNOMITE -2009-

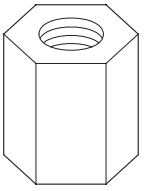
Steering

Steering

EPS (Electrical Power Steering) Components

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAF-SDAA100	Ball Joint Thread Protector, 12 mm	1
②	07JAF-SH20330	Bushing Base	1
③	07MAA-SL0020A	Locknut Wrench, 43 mm	1
④	07MAC-SL0A202	Ball Joint Remover, 28 mm	1



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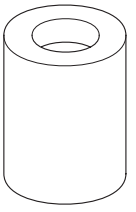

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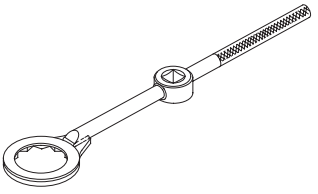

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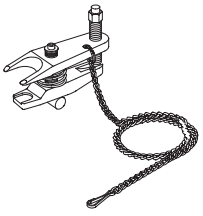
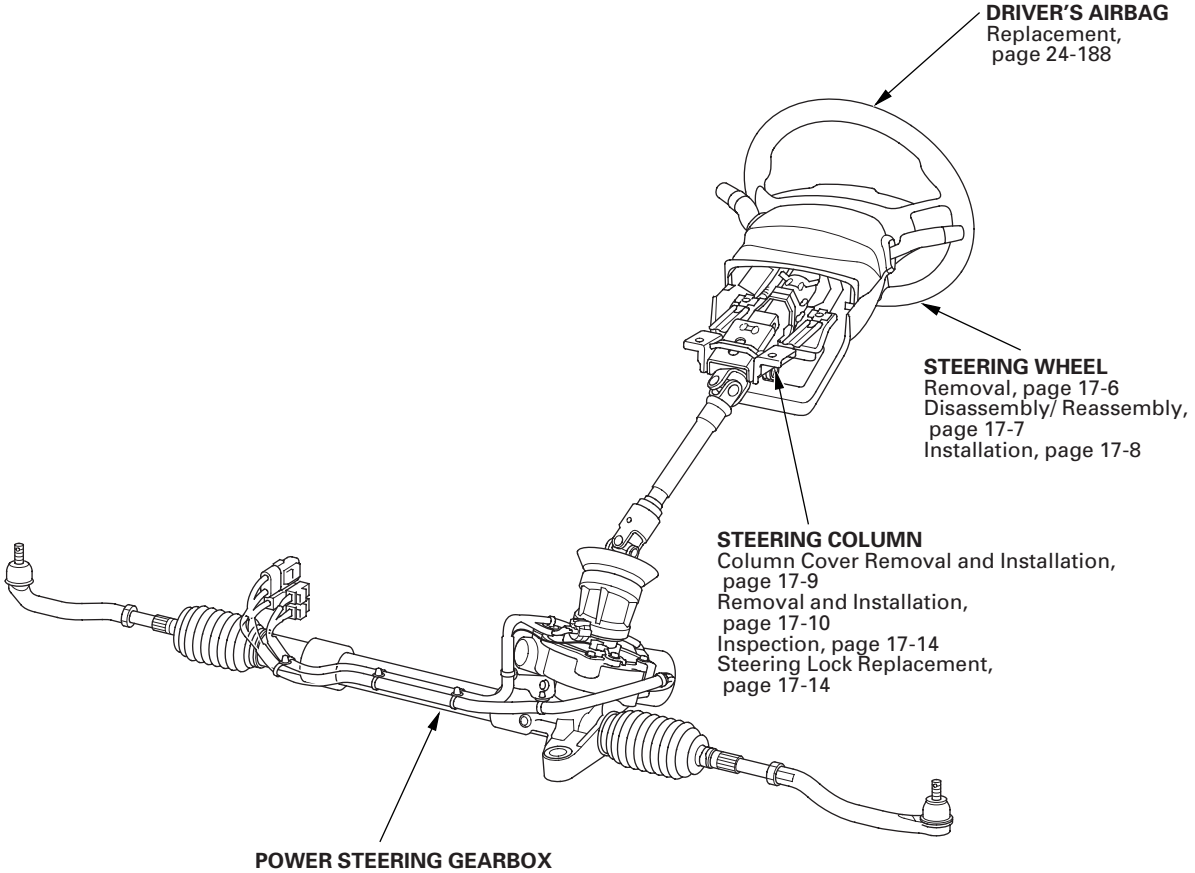


④

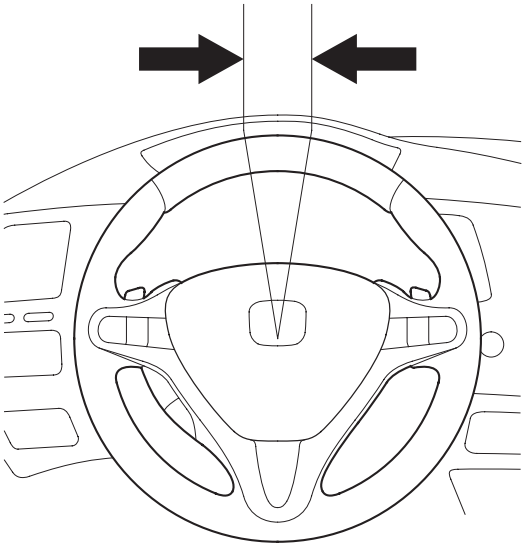
Component Location Index



Steering Wheel Rotational Play Check

1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
   - If the play is within the limit, the steering gearbox and steering linkage are OK.
   - If the play exceeds the limit, adjust the rack guide (see page 17-15). If the play is still excessive after rack guide adjustment, inspect the steering linkage and steering gearbox (see page 17-5).

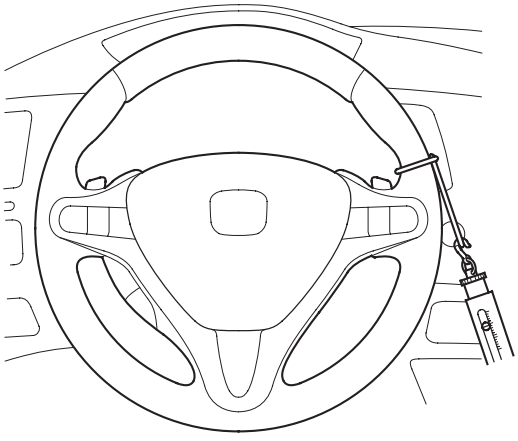
Rotational play: 0—10 mm (0—0.39 in.)



Power Assist Check

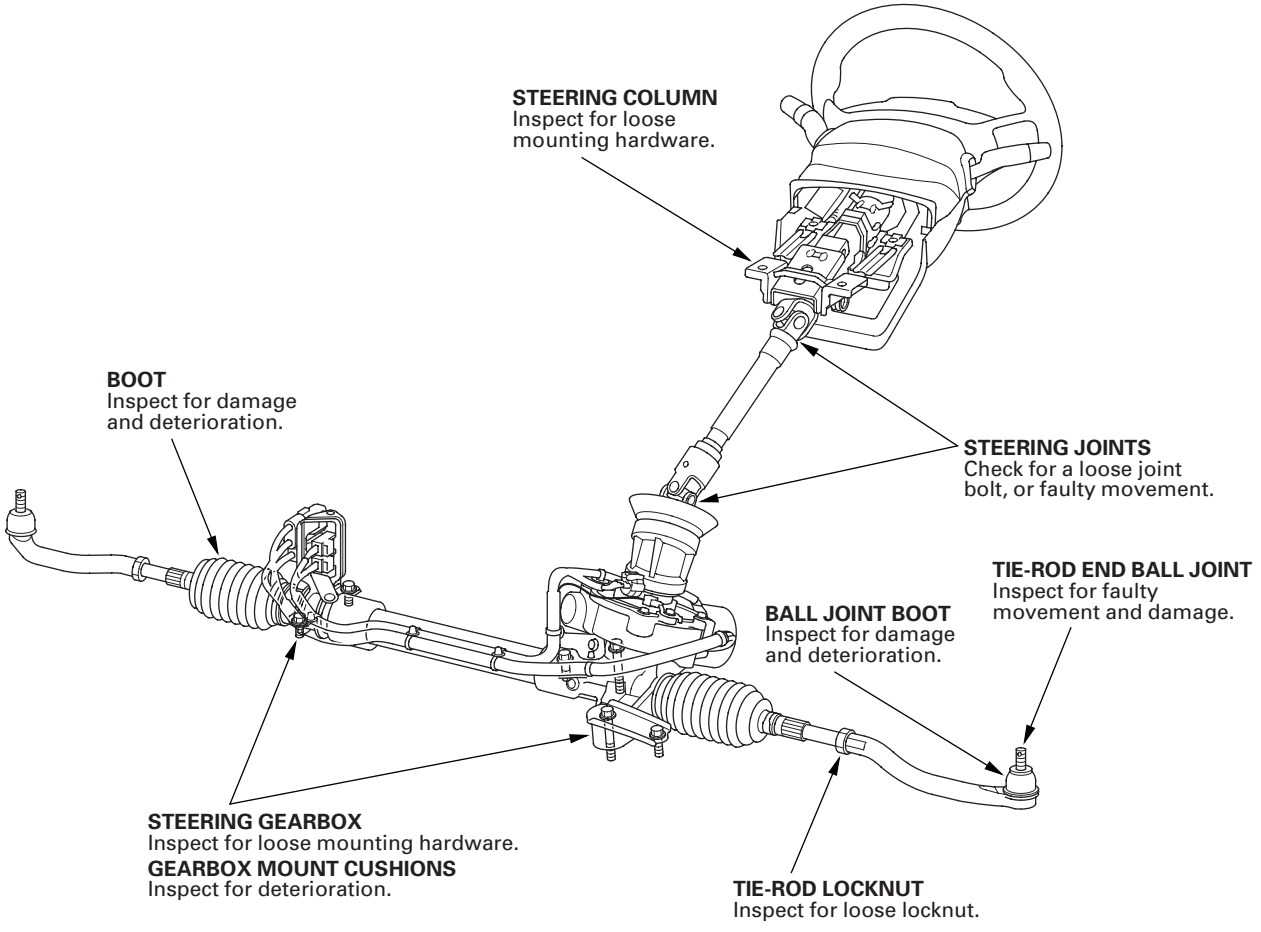
NOTE: This test should be done with original equipment tires and wheels at the correct tire pressure.

1. Start the engine, and let it idle.
2. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown, and read it as soon as the tires begin to turn.



3. If the scale reads no more than 34 N (3.5 kgf, 7.7 lbf), the power assist is OK. If it reads more, check these items:
   - Steering linkage (see page 17-5)
   - Rack guide adjustment (see page 17-15)
   - EPS system (see page 17-19)

Steering Linkage and Gearbox Inspection



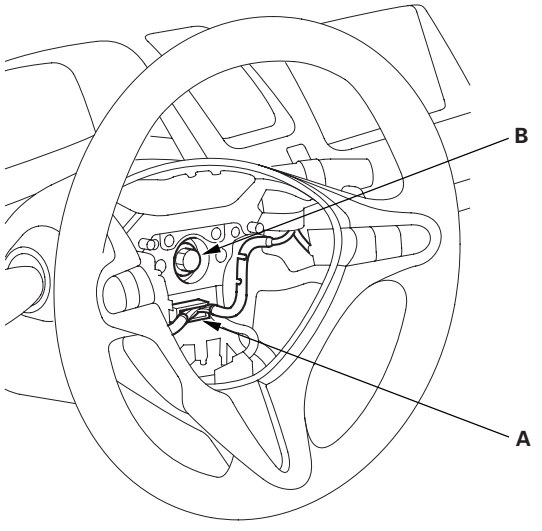
Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

1. Do the battery terminal disconnection procedure (see page 22-68).

2. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 24-188).

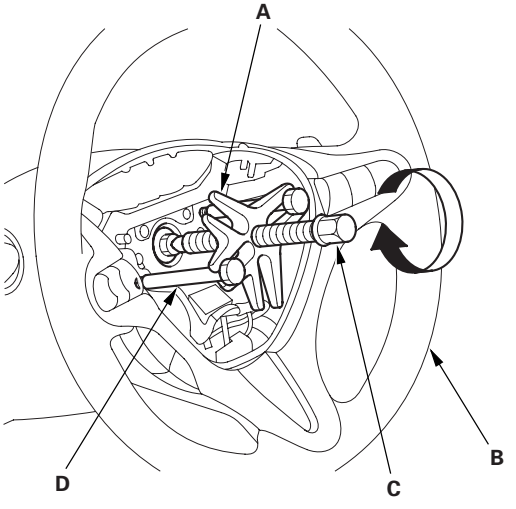
3. Disconnect the cable reel subharness connector (A).



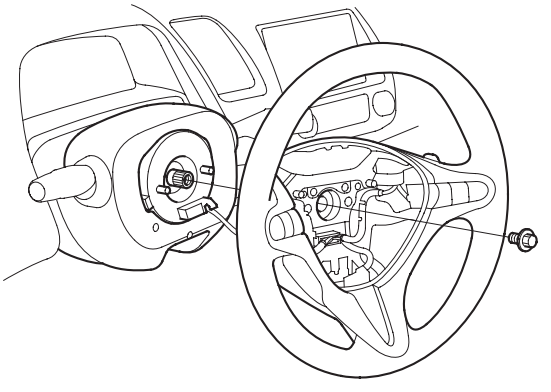
4. Loosen the steering wheel bolt (B).

5. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

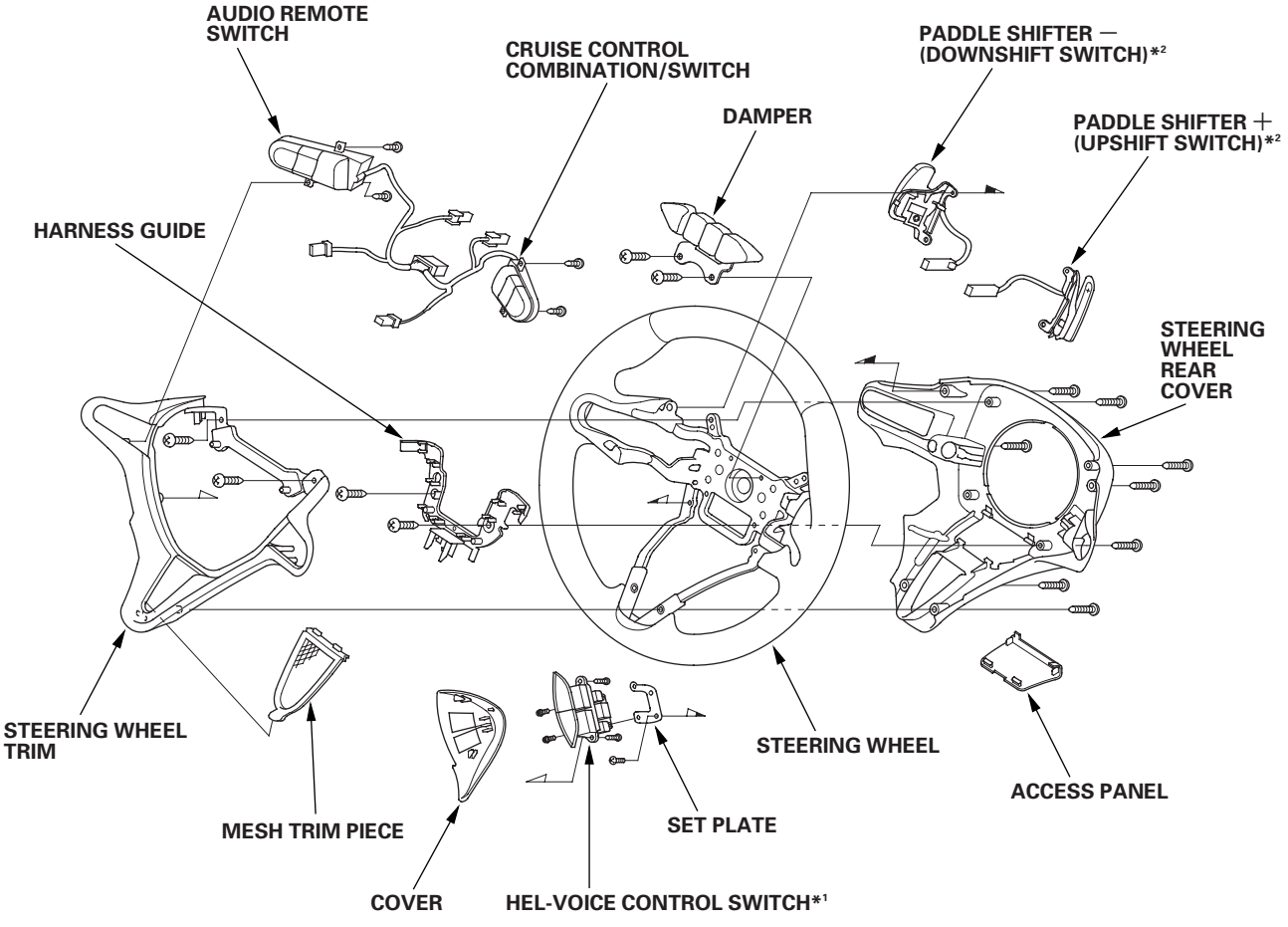
   Note these items when removing the steering wheel:
   - Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
   - If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.



6. Remove the steering wheel puller, then remove the steering wheel bolt and steering wheel from the steering column.



Steering Wheel Disassembly/Reassembly

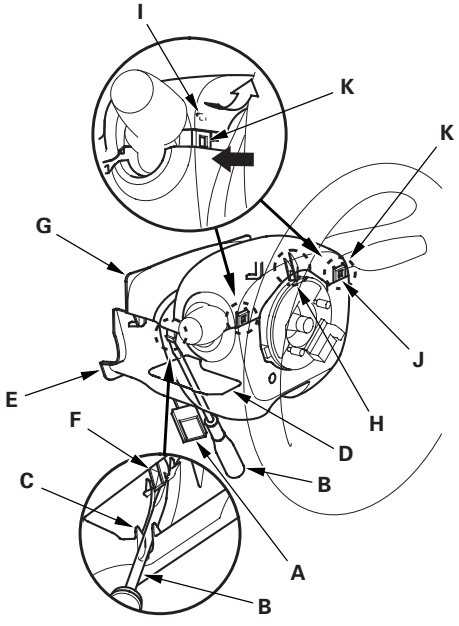


*1: With Navigation
*2: A/T

Column Cover Removal and Installation

NOTE:
- Take care not to scratch or damage the column covers.
- Do not pry the cover surface with any tools.

1. Release the lock lever (A), and adjust the steering column to full tilt down position and to the full telescopic out position.



2. Insert a suitable sized screwdriver or equivalent tool (B) along the guide rib (C) into the lever hole (D) in the lower column cover (E).

3. Release the hook (F) located on the left side of the upper column cover (G). A right side hook (H) of the upper column cover can't be released from the inside.

4. Turn the steering wheel to the left, and release the left pawl (I) of the upper column cover while pushing the lower column cover from the front side.

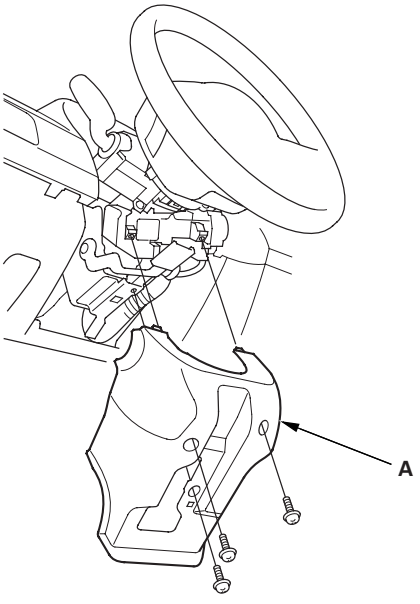
5. Turn the steering wheel to the right, and release the right pawl (J) of the upper column cover in the same way as in step 4.

6. Remove the cover by lightly pulling it up by releasing the right side hook of the upper column cover.

NOTICE

Carefully release the pawls, note the hooks (K) may break when the upper column cover is pulled up too hard.

7. Remove the three screws, then remove the lower column cover (A).



8. Install the upper and lower column cover in the reverse order of removal, and push the hooks into place securely.

Steering Column Removal and Installation

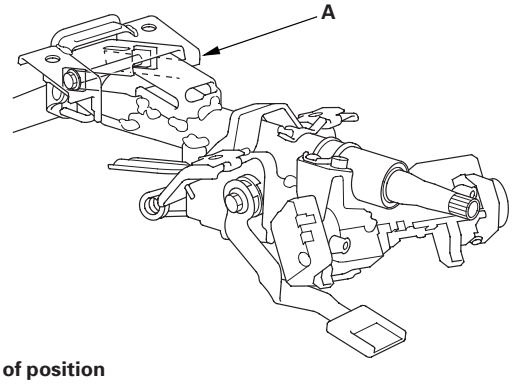
SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

Removal

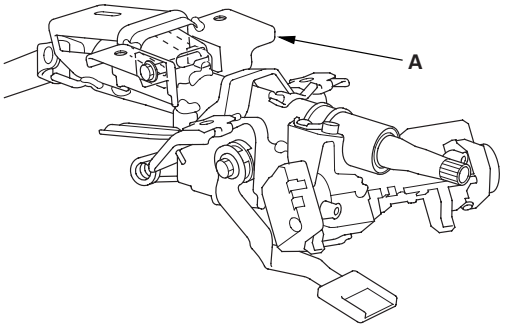
NOTICE

Be careful not to pull the bracket (A) on the front side of the steering column out of its normal position. If the bracket accidentally comes out, replace the steering column as an assembly.

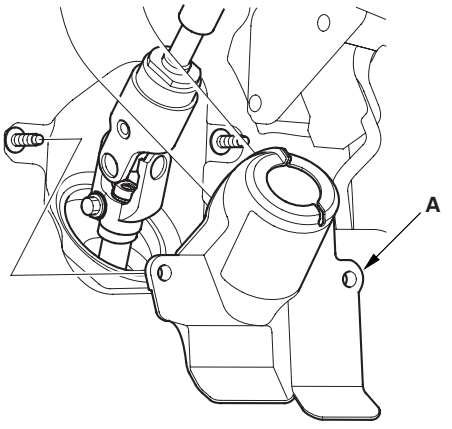
Normal position



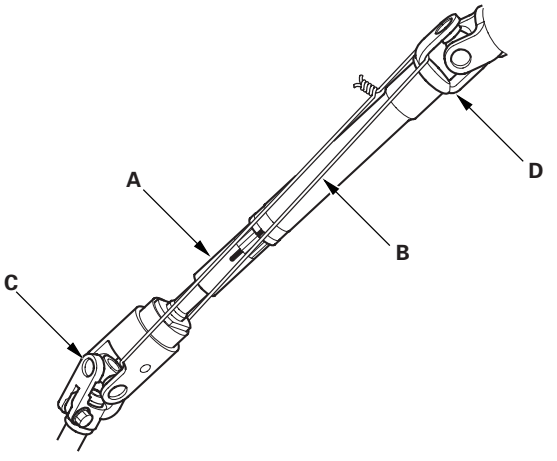
Out of position



1. Do the battery terminal disconnection procedure (see page 22-68).
2. Remove the driver's airbag (see page 24-188), and the steering wheel (see page 17-6).
3. Remove the driver's dashboard undercover (see page 20-103).
4. Remove the column covers (see page 17-9).
5. Remove the steering joint cover (A).



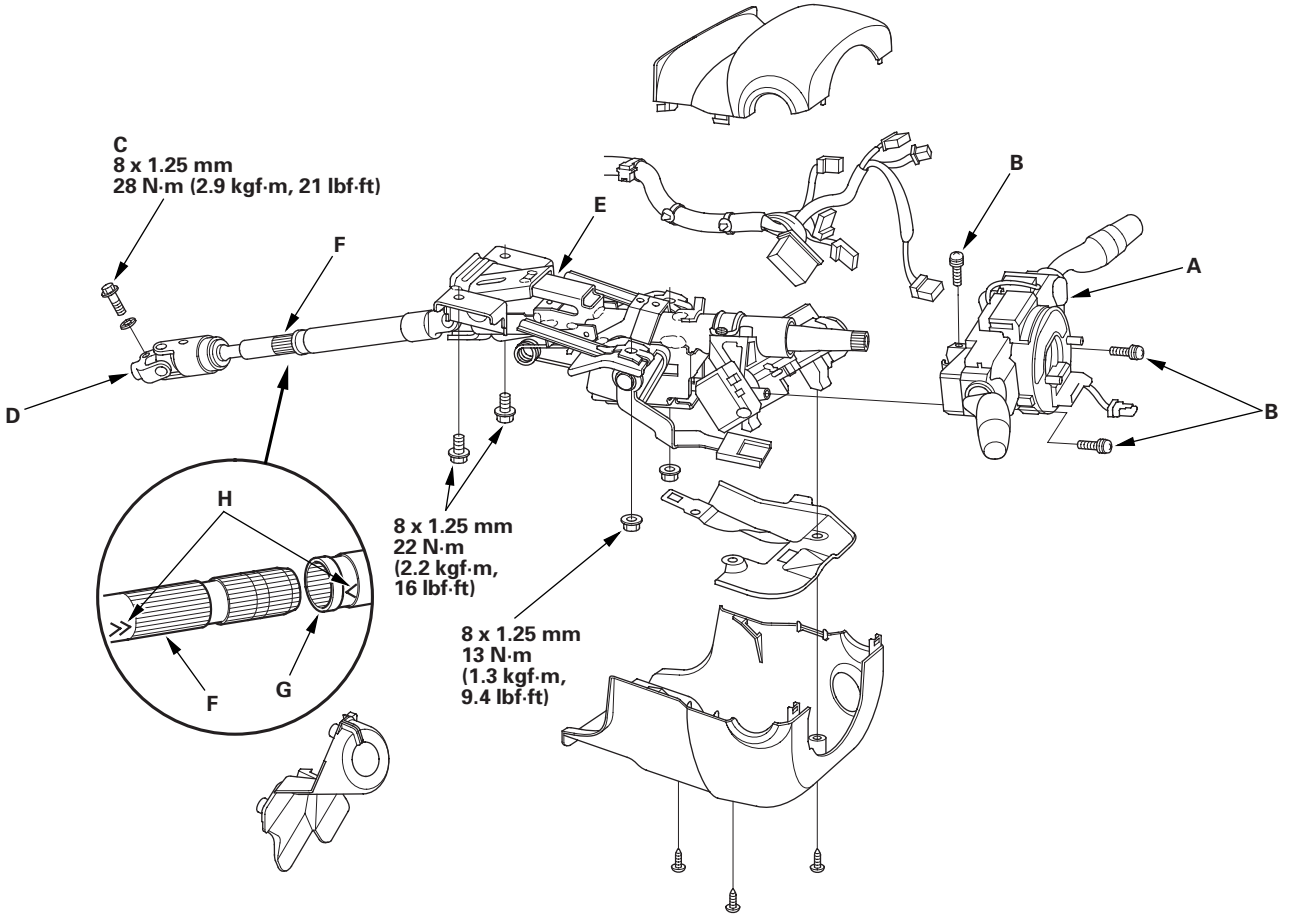
6. Release the lock lever, and adjust the steering column to the full tilt up position, and to the full telescopic in position.
7. Tighten the lock lever.
8. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.



9. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.

   NOTE: Do not release the lock lever when removing the steering column from the frame.

10. Disconnect the wire harness connectors from the combination switch assembly/cable reel (A).



11. Remove the combination switch assembly/cable reel from the steering column shaft by removing the screws (B).

12. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.

13. Remove the steering joint bolt (C), then disconnect the steering joint (D) from the pinion shaft.

14. Remove the steering column (E) by removing the attaching nuts and bolts. If the lower slide shaft (F) is removed, slip it into the upper shaft (G) by aligning the paint or stamped marks (H).

15. Remove the center guide (if equipped), and discard it. The center guide is for factory assembly only.

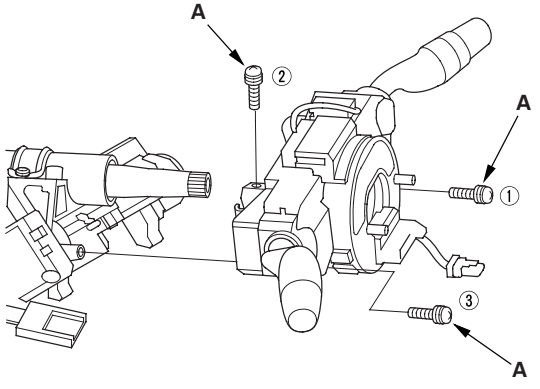
(cont'd)

Steering Column Removal and Installation (cont'd)

Installation

1. Install the steering column in the reverse order of removal, and note these items:

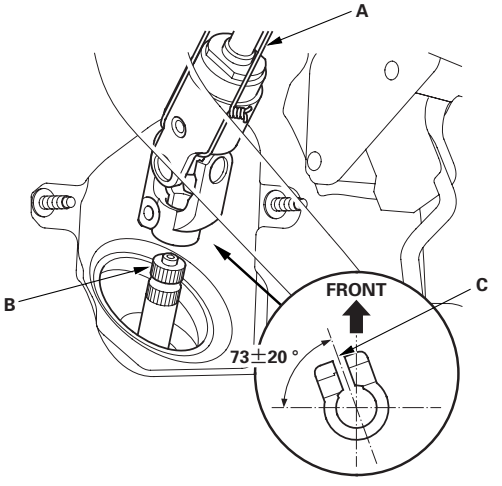
   - Make sure the wires are not caught or pinched by any parts.
   - Tighten the three screws (A) in the sequence shown.



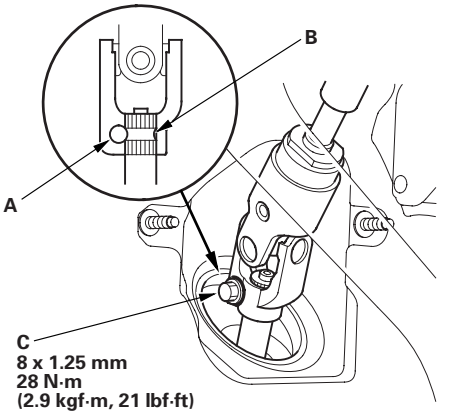
2. Center the steering rack within its stroke in the steering joint connection.

3. With the rack in the straight ahead driving position, cut the wire (A) and slip the lower end of the steering joint onto the pinion shaft (B).

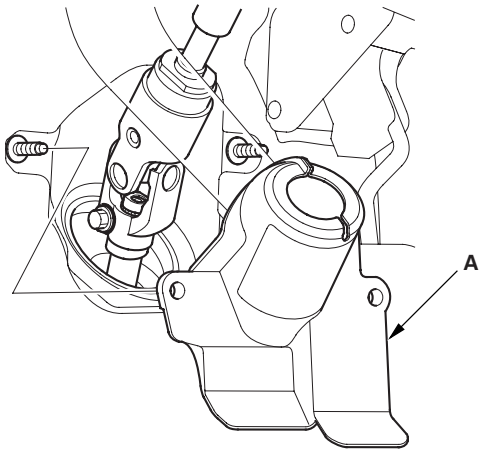
   NOTE:
   - Pinion shaft with center guide; install the steering joint by aligning the center guide.
   - Pinion shaft without center guide; position the steering column by aligning the gap (C) with the angle.



4. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, then loosely install the steering joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to the specified torque.



5. Install the steering joint cover (A).



6. Install the steering wheel (see page 17-8), and the driver's airbag (see page 24-188).

7. Install the column covers (see page 17-9).

8. Install the driver's dashboard undercover (see page 20-103).

9. Do the battery terminal reconnection procedure (see page 22-68), and do these tasks:

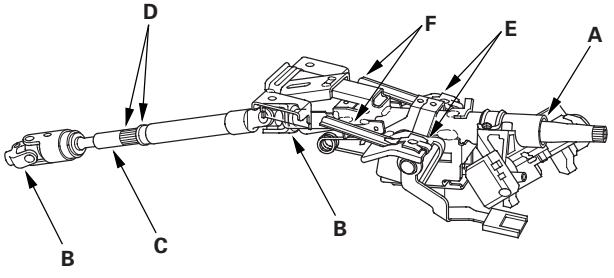
   - Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.
   - Make sure the horn and turn signal switches work properly.
   - Make sure the steering wheel switches work properly.

10. After installation, do these checks:

    - Check the steering wheel spoke angle. If the steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft splines.
    - Set the steering column to the center tilt position, and to the center telescopic position, then do the front toe inspection (see page 18-5).

Steering Column Inspection

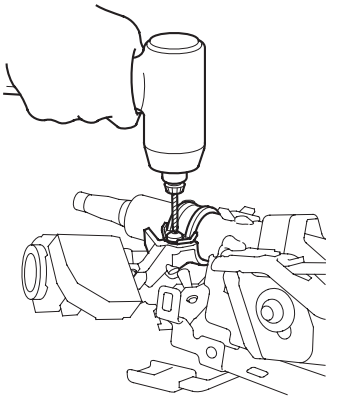
1. Remove the steering column (see page 17-10).
2. Do these checks:
   - Check the steering column ball bearing (A) and the steering joint (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
   - Check the lower slide shaft (C) for smooth movement in and out. If the lower slide shaft is removed, slip it into the upper shaft by aligning the paint or stamped marks (D). If it sticks or binds, replace the steering column as an assembly.
   - Check the sliding capsules (E) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.
   - Check the tilt mechanism and telescopic mechanism for movement and damage.
   - Check the absorbing plates (F) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.



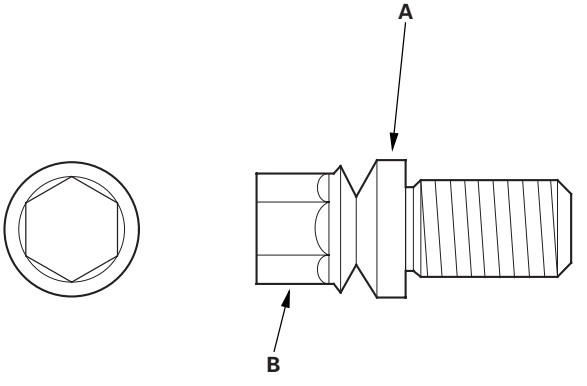
3. Install the steering column (see page 17-12).

Steering Lock Replacement

1. Remove the steering column (see page 17-10).
2. Center-punch both of the two shear bolts, and drill the heads of the bolts off with a 5 mm (0.20 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.



3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.
5. Loosely tighten the new shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.



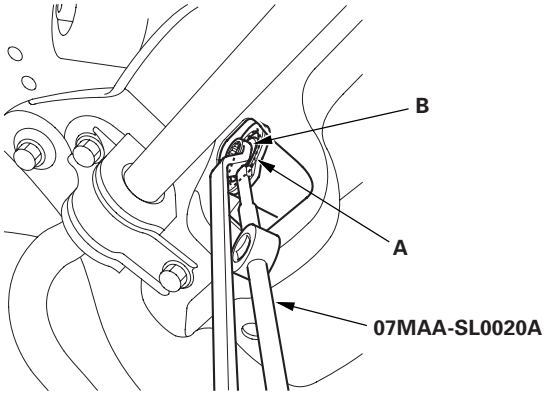
8. Rewrite the immobilizer control unit-receiver (see page 22-329), and make sure the immobilizer system works properly.
9. Install the steering column (see page 17-12).

Rack Guide Adjustment

Special Tools Required
Locknut wrench, 43 mm 07MAA-SL0020A

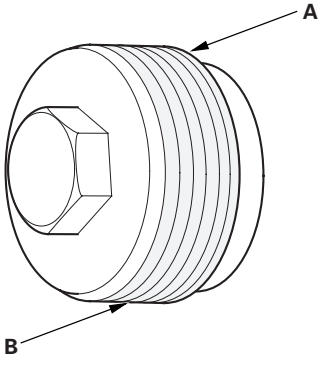
1. Set the wheels in the straight ahead position.

2. Loosen the rack guide screw locknut (A) with the locknut wrench, then remove the rack guide screw (B).

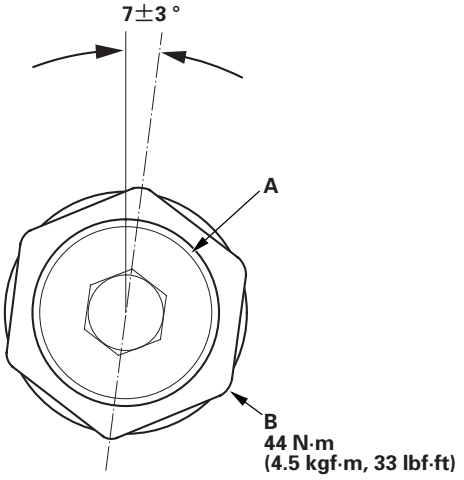


3. Remove the old sealant from the rack guide screw (A), and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads (B). Loosely install the rack guide screw on the steering gearbox.

   NOTE: If more than 5 minutes has passed after applying the sealant, remove the old sealant and residue, and reapply new sealant.



4. Tighten the rack guide screw (A) to 25 N·m (2.5 kgf·m, 18 lbf·ft), then loosen it.



5. Retighten the rack guide screw to 3.9 N·m (0.4 kgf·m, 2.9 lbf·ft), then back it off to the specified angle.

   Specified return angle: 7±3 °

6. Hold the rack guide screw stationary with a wrench, and tighten the locknut (B) by hand until it's fully seated.

7. Install the locknut wrench on the locknut, and hold the rack guide screw stationary with a wrench. Tighten the locknut to the specified torque.

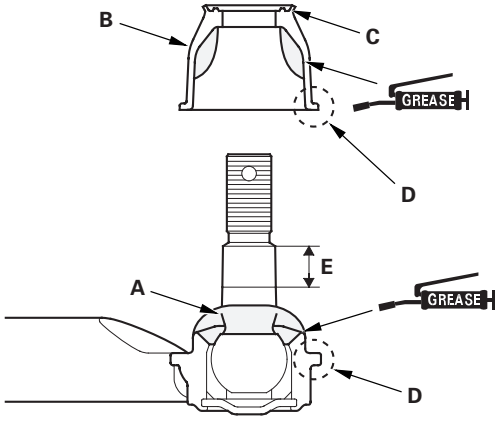
8. Check for unusual steering effort through the complete turning range.

9. Check the steering wheel rotational play (see page 17-4) and the power assist (see page 17-4).

Tie-rod End Ball Joint Boot Replacement

Special Tools Required
Bushing base 07JAF-SH20330

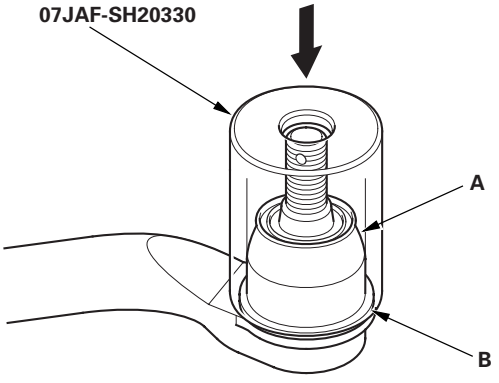
1. Disconnect the tie-rod end ball joint from the knuckle (see step 17 on page 17-67).
2. Remove the tie-rod end from the rack end.
3. Remove the tie-rod ball joint boot from the tie-rod end, and wipe the old grease off the ball pin.
4. Pack the lower area of the ball pin (A) with fresh multipurpose grease.



5. Pack the interior of the new tie-rod end ball joint boot (B) and lip (C) with fresh multipurpose grease.

   Note these items when installing new grease:
   - Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
   - Do not allow dust, dirt, or other foreign materials to enter the boot.

6. Install the new tie-rod end ball joint boot (A) using the bushing base. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

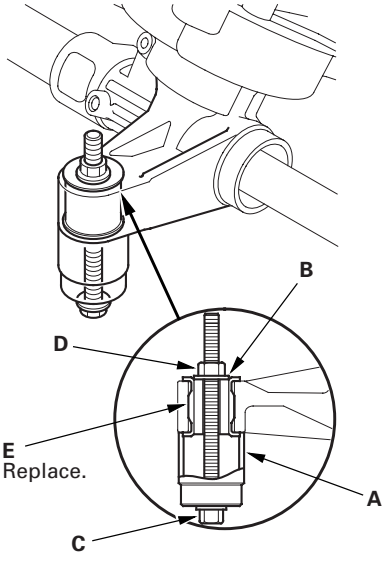


7. Install the tie-rod end to the rack end.
8. Connect the tie-rod end ball joint to the knuckle (see step 25 on page 17-76).
9. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Gearbox Mount Cushion Replacement

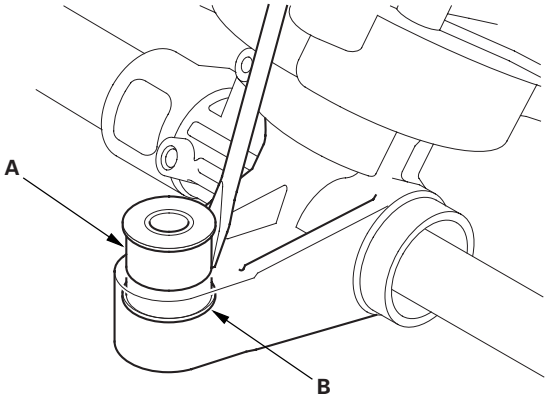
1. Remove the steering gearbox (see page 17-65).

2. Position a 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), a 10 x 105 mm flange bolt (C), and a 10 mm nut (D) as shown.



3. Hold the 10 mm nut with a wrench, and tighten the 10 x 105 mm flange bolt with another wrench. Remove the gearbox mount cushion (E).

4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place the mount cushion on the gearbox mounting cushion hole.

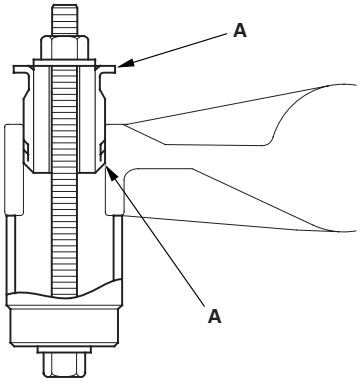


5. Using a flat-tipped screwdriver, push the edge of the mount cushion (B) until it is about 1/3 of the way into the gearbox housing.

   NOTE: Be careful not to damage the surface of the mount cushion when pushing it with the flat-tipped screwdriver.

6. Position a 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.

7. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (A) contact the gearbox flange surface.

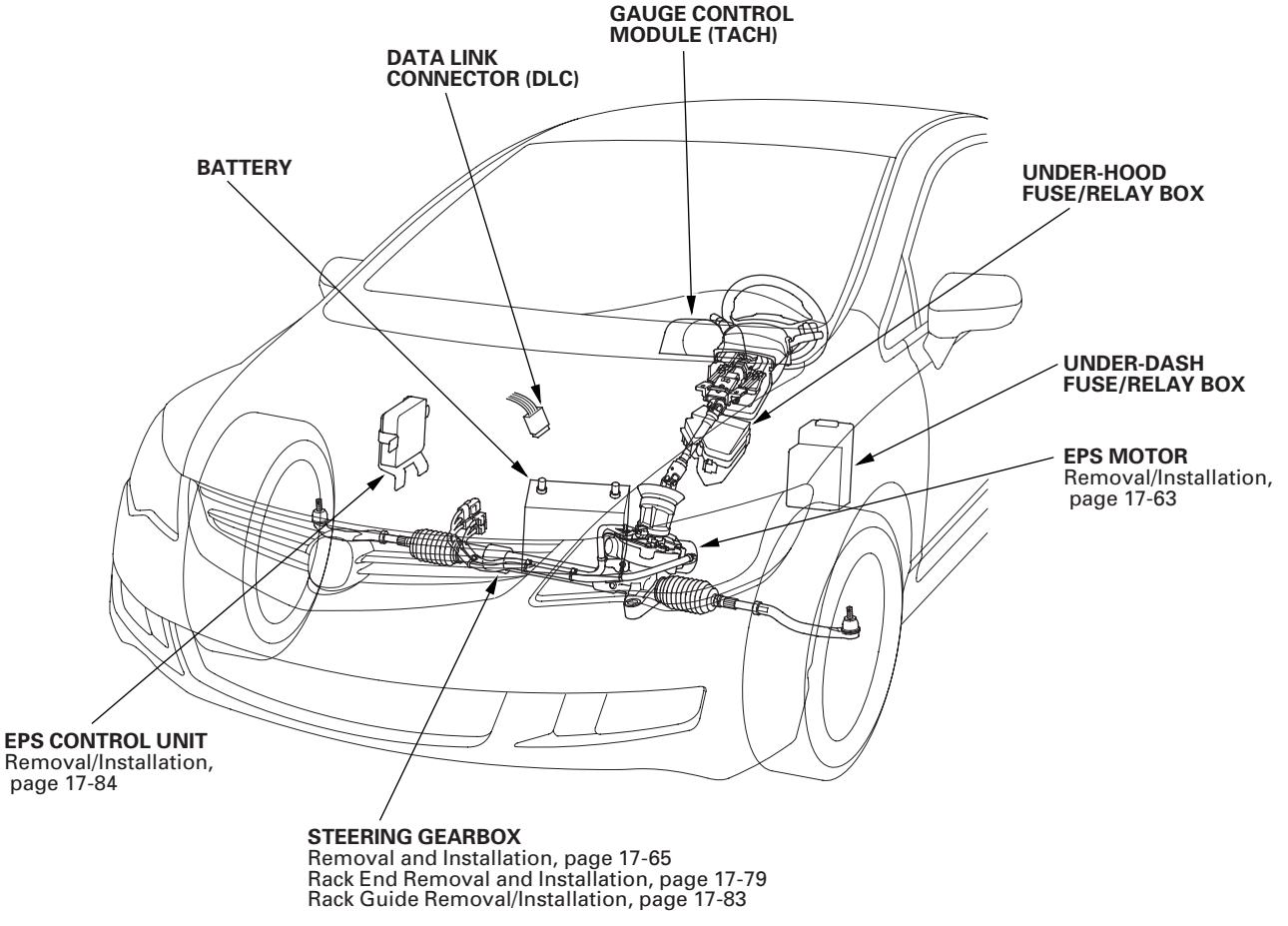


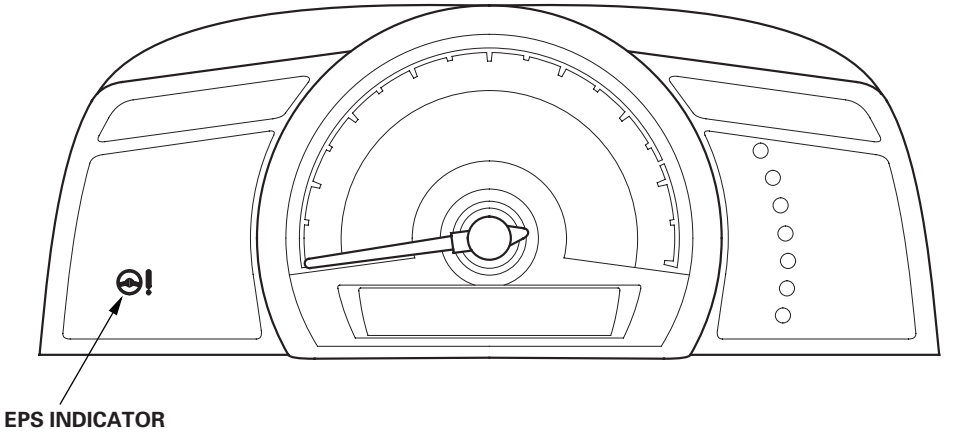
8. Install the steering gearbox (see page 17-72).

9. Check the wheel alignment, and adjust it if necessary (see page 18-5).

EPS Components

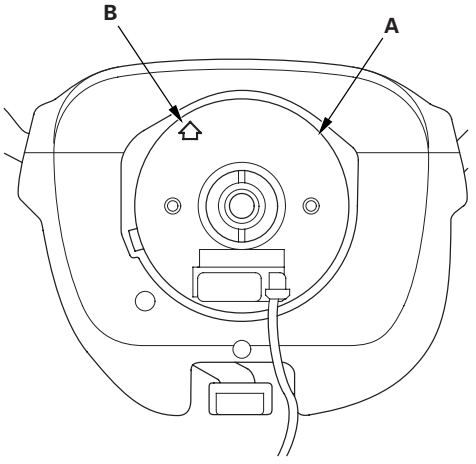
Component Location Index



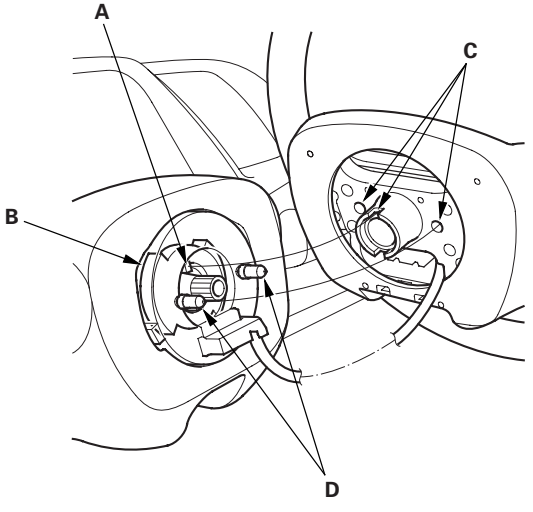


Steering Wheel Installation

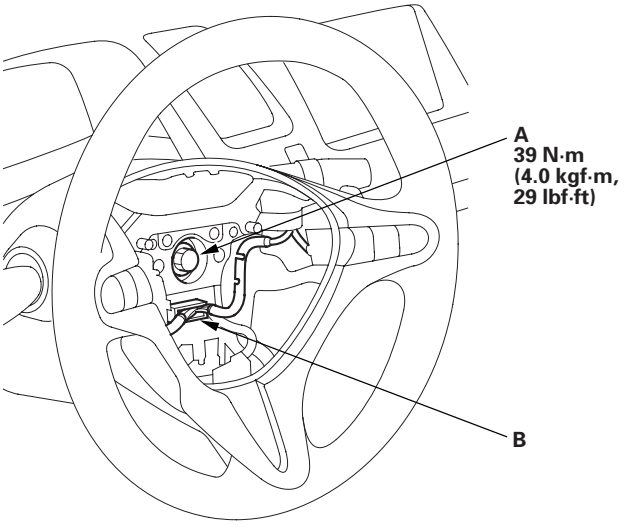
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about three full turns. The arrow mark (B) on the cable reel label should point straight up.



2. Position the two tabs (A) of the turn signal canceling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the turn signal canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



3. Install the steering wheel bolt (A), and tighten it to the specified torque. Connect the cable reel subharness connector (B). Make sure the wire harness is routed and fastened properly.



4. Install the driver's airbag, and confirm that the system is operating properly (see page 24-188).

5. Do the battery terminal reconnection procedure (see page 22-68), and do these tasks:

   - Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.
   - Make sure the horn and turn signal switches work properly.
   - Make sure the steering wheel is centered.

6. After installation, check the steering wheel spoke angle. If the steering spoke angles to the right and left are not equal (steering wheel is not centered), correct the engagement of the wheel/column shaft serrations.

General Troubleshooting Information

EPS Indicator

Under normal conditions, the EPS indicator comes on when the ignition switch is turned to ON (II), then goes off after the engine is started. This indicates that the LED and its circuit are operating correctly.
If there is a failure in the system after the engine is started, the EPS indicator will stay on, and the power assist is turned off or restricted.

When the EPS indicator comes on, the control unit memorizes the DTC. In this case, the control unit will not activate the EPS system after the engine starts again, but it keeps the EPS indicator on.

When DTC 51-01, 51-02 or 51-06 is stored in the control unit, the EPS indicator will stay on until the DTC is erased. When a problem is detected and the EPS indicator comes on, there are cases when the indicator stays on until the ignition switch is turned to LOCK (0), and cases when the indicator goes off automatically when the system returns to normal. Even though the system is operating normally, the EPS indicator will come on under the following conditions:

- The vehicle speed decreases abruptly from 20 km/h (12 mph) or more (by applying brake), and it is less than 1 km/h (1 mph) and engine speed is 2,000 rpm or above for 5 seconds (continuously) after the abrupt deceleration.
- While turning the steering wheel with the vehicle speed of 1 km/h (1 mph) or less for 20 seconds, and the engine speed is 2,000 rpm or above for at least 10 seconds.
- When the engine speed is 500 rpm or less, and the vehicle is traveling at a speed of 10 km/h (6 mph) or more for about 3 seconds.

To determine the actual cause of the problem, question the client about the conditions during which the problem occurred, taking the above conditions into consideration.

Diagnostic Trouble Code (DTC)

- If the CPU cannot be activated, or it fails, the EPS indicator comes on, but the DTC is not memorized.
- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the most recent DTC is written over the prior DTC, therefore only one occurrence is memorized.
- The lowest DTC is indicated first. The DTCs are indicated in ascending order, not in the order that they occurred.
- The DTCs are memorized in the EEPROM (non-volatile memory) therefore the memorized DTCs cannot be erased by disconnecting the battery. Do the specified procedures to clear the DTCs.

Self-diagnosis

Self-diagnosis can be classified into three categories:

- Initial diagnosis: Done right after the engine starts and until the EPS indicator goes off.
- Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned to LOCK (0).
- Steering diagnosis: Done during regular diagnosis while turning the steering wheel.

The EPS control unit dose these functions when a problem is detected by self-diagnosis:

1. Turns on the EPS indicator.

2. Memorizes the DTC.

3. Stops power assist and manual steering operation resumes.

   NOTE: For DTCs 11-01, 11-02, 12-01, 21-01, 21-02, 22-01, and 35-04 the EPS indicator will go off automatically, and the system returns to normal.

(cont'd)

General Troubleshooting Information (cont'd)

Restriction on Power Assist Operation

Repeated extreme steering force, such as turning the steering wheel continuously back-and-forth with the vehicle stopped, causes an increase of power consumption in the EPS motor. The increase of electric current causes the EPS motor to heat up. Because this heat adversely affects the system, the control unit monitors the electric current of the EPS motor.

When the control unit detects heat build-up in the EPS motor, it reduces the electric current to the EPS motor gradually to protect the system, and it restricts the power assist operation. The EPS indicator does not come on during this function.

When steering torque is not applied to the steering wheel, or when the ignition is turned to LOCK (0) and the EPS motor cools, the control unit will restore the power assist gradually until it's fully restored (after about 8 minutes).

Torque Sensor Neutral Position

The EPS control unit stores the torque sensor neutral position in the EEPROM. The torque sensor neutral position must be memorized whenever the gearbox, the EPS motor, or the EPS control unit is replaced.

NOTE: The torque sensor neutral position is not effected when erasing the DTCs.

How to Troubleshoot DTCs

The troubleshooting procedures assume that the cause of the problem is still present and the EPS indicator is still on. Following the procedure when the EPS indicator does not come on can result in incorrect diagnosis.

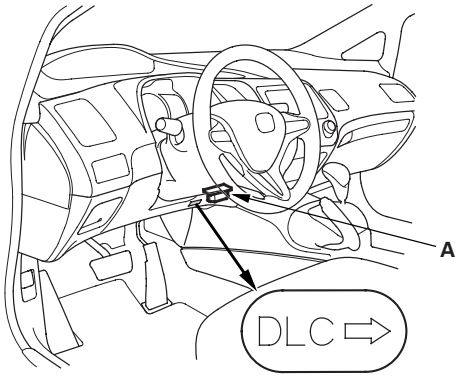
1. Question the client about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the EPS indicator came on, such as while turning, after turning, when the vehicle was at a certain speed, etc.

2. When the EPS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., in the affected circuit before you start troubleshooting.

3. After troubleshooting, clear the DTC and test-drive the vehicle. Be sure the EPS indicator does not come on.

How to Retrieve DTCs

1. With the ignition switch in LOCK (0), connect the HDS (Honda diagnostic system) to the data link connector (DLC) (A) located under the driver's side of the dashboard.

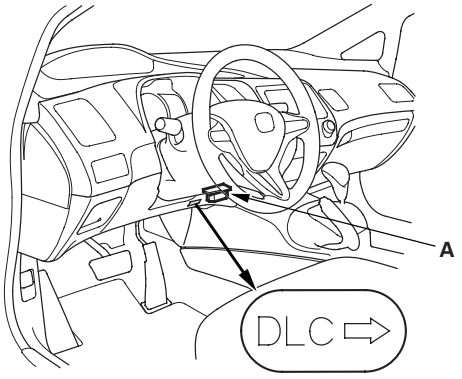


2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the EPS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting.

   NOTE: See the HDS Help menu for specific instructions.
5. Turn the ignition switch to LOCK (0).

How to Clear DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the EPS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
4. Clear the DTC(s) by following the screen prompts on the HDS.

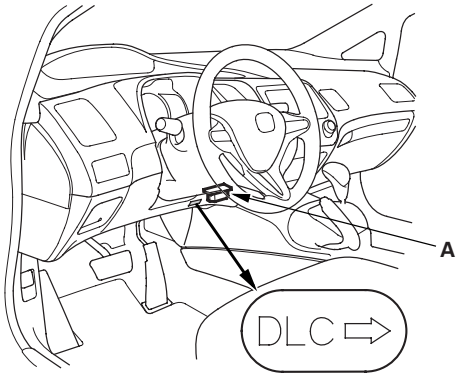
   NOTE: See the HDS Help menu for specific instructions.
5. Turn the ignition switch to LOCK (0).

Memorizing the Torque Sensor Neutral Position

The torque sensor neutral position must be memorized whenever the steering gearbox, the torque sensor, the EPS motor, or the EPS control unit is replaced. Note that the torque sensor neutral position is not affected when erasing the DTC.

NOTE: The torque sensor is temperature sensitive. When memorizing the torque sensor neutral position, the ambient temperature must be above 20±10 ℃ (68±18 ℉)

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the EPS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
4. From the EPS MENU, select MISCELLANEOUS TEST, then TORQUE SENSOR LEARN, and follow the screen prompts on the HDS.

   NOTE: See the HDS Help menu for specific instructions.
5. Turn the ignition switch to LOCK (0).

DTC Troubleshooting Index

DTC	Detection Item	Note
11-01	Low/High IG1-terminal Voltage (Initial Diagnosis)	(see page 17-33)
11-02	Low/High IG1-terminal Voltage (Regular Diagnosis)	(see page 17-33)
12-01	Low/High VBU Voltage (Regular Diagnosis)	(see page 17-34)
21-01	Excessive Change of the Vehicle Speed Signal (Regular Diagnosis)	(see page 17-35)
21-02	Comparison between the Vehicle Speed and the Engine Speed Signal (Regular Diagnosis)	(see page 17-35)
22-01	Engine Speed Signal (Initial Diagnosis)	(see page 17-37)
31-01	No Writing the Torque Sensor Neutral Position (Initial Diagnosis)	(see page 17-22)
32-01	EPS Control Unit Internal Circuit (Current Sensor) (Initial Diagnosis)	(see page 17-39)
32-02	EPS Control Unit Internal Circuit (Current Sensor) (Regular Diagnosis)	(see page 17-39)
32-07	EPS Control Unit Internal Circuit (Current Sensor) (Steering Diagnosis)	(see page 17-39)
32-08	Current Sensor (Regular Diagnosis)	(see page 17-40)
32-09	Current Sensor (Initial Diagnosis)	(see page 17-40)
33-01	Lower FET Stuck ON (Initial Diagnosis)	(see page 17-41)
33-02	Upper FET Stuck ON (Initial Diagnosis)	(see page 17-43)
33-06	Lower FET Stuck ON (Regular Diagnosis)	(see page 17-41)
33-07	Upper FET Stuck ON (Regular Diagnosis)	(see page 17-43)
34-01	Power Relay Stuck ON (Ignition Switch is in LOCK (0))	(see page 17-44)
34-02	Fail-safe Relay Stuck ON (Initial Diagnosis)	(see page 17-45)
35-01	EPS Control Unit Internal Circuit (CPU) (Initial Diagnosis/Regular Diagnosis)	(see page 17-39)
35-02	EPS Control Unit Internal Circuit (EEPROM) (Initial Diagnosis)	(see page 17-39)
35-03	EPS Control Unit Internal Circuit (EPS CPU) (Initial Diagnosis)	(see page 17-46)
35-04	EPS Control Unit Internal Circuit (CPU Communication) (Regular Diagnosis)	(see page 17-39)
35-05	EPS Control Unit Internal Circuit (EPS Motor/EPS CPU) (Initial Diagnosis)	(see page 17-46)
35-06	EPS Control Unit Internal Circuit (ITN Communication) (Regular Diagnosis)	(see page 17-39)
35-07	EPS Control Unit Internal Circuit (INHL/INHR Ports) (Initial Diagnosis/ Regular Diagnosis)	(see page 17-39)

NOTE:
- Initial diagnosis: Done right after the engine starts and until the EPS indicator goes off.
- Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned to LOCK (0).
- Steering diagnosis: Done during regular diagnosis while turning steering wheel.

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC	Detection Item	Note
36-02	EPS Control Unit Internal Circuit (INH Output Circuit) (Initial Diagnosis)	(see page 17-39)
37-01	EPS Control Unit Internal Circuit (Step-up Circuit) (Initial Diagnosis)	(see page 17-39)
51-01	Low/High Voltage for the Torque Sensor (VT1 and VT2) (Regular Diagnosis)	(see page 17-46)
51-02	Torque Sensor (VT3 Differential-amplification Function) (Regular Diagnosis)	(see page 17-50)
51-03	Torque Sensor (VT1, VT2 Rapid-change) (Regular Diagnosis)	(see page 17-50)
51-06	Torque Sensor (VT1, VT2 Average) (Regular Diagnosis)	(see page 17-50)
51-07	Torque Sensor (VT1, VT2 Initial Check) (Initial Diagnosis)	(see page 17-50)
61-04	Open/Short in the EPS Motor Harness (Steering Diagnosis)	(see page 17-53)
71-01	EPS Motor Angle Sensor (SIN/COS Signals) (Steering Diagnosis)	(see page 17-55)
71-02	EPS Motor Angle Sensor (Neutral Position Learning of SIN/COS) (Initial Diagnosis)	(see page 17-55)
71-03	EPS Motor Angle Sensor (SIN/COS Signals) (Steering Diagnosis)	(see page 17-55)
71-04	EPS Motor Angle Sensor (Check Signals) (Regular Diagnosis)	(see page 17-58)
71-05	EPS Motor Angle Sensor (SIN/COS Signals Charging Amount) (Steering Diagnosis)	(see page 17-55)
71-06	EPS Motor Angle Sensor (Neutral Position of SIN/COS) (Initial Diagnosis)	(see page 17-55)

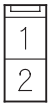
NOTE:
- Initial diagnosis: Done right after the engine starts and until the EPS indicator goes off.
- Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned to LOCK (0).
- Steering diagnosis: Done during regular diagnosis while turning steering wheel.

Symptom Troubleshooting Index

Symptom	Diagnostic procedure
HDS does not communicate with the EPS control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-204)
EPS indicator does not come on	Symptom Troubleshooting (see page 17-60)
EPS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 17-60)
EPS indicator is not on, no DTCs are stored, but there is no power assist or power assist is reduced	1. Check the EPS motor power wires between the EPS control unit and the EPS motor for a short to body ground. Repair as needed. 2. If the EPS motor power wires are OK, replace the EPS motor (short in the EPS motor) (see page 17-63). 3. Check the power and body ground connections at the EPS control unit.

System Description

EPS Control Unit Inputs and Outputs for Connector A (2P) (Connector disconnected)

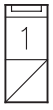


Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal sign	Description	Signal
1	BLK	PG (Power ground)	Ground for the actuator EPS motor	Continuity to ground
2	WHT	+B (Plus battery)	Power source for the actuator EPS motor	Battery voltage at all times

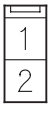
EPS Control Unit Inputs and Outputs for Connector B (2P) (Connector disconnected)



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Signal
1	GRN	H-W	Drives the actuator EPS motor	———

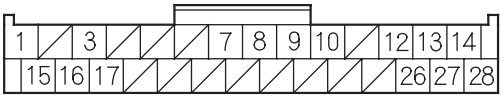
EPS Control Unit Inputs and Outputs for Connector C (2P) (Connector disconnected)



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Signal
1	RED	H-U	Drives the actuator EPS motor	———
2	BLU	H-V	Drives the actuator EPS motor	———

EPS Control Unit Inputs and Outputs for Connector D (28P) (Connector disconnected)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal sign	Description	Signal
1	WHT	CAN-H (CAN-HI)	CAN communication circuit	———
3	BLU	NEP (Engine pulse)	Detects tachometer signal	With engine running: pulses
7	BRN	SCS (Service check signal)	Detects service check connector signal	With service check signal not grounded: battery voltage
8	LT GRN	VS2 (Voltage sensor 2)	Detects torque sensor signal	———
9	BRN	PVF (Voltage fade)	Drives the torque sensor	
10	GRN	VS1 (Voltage sensor 1)	Detects torque sensor signal	
12	PNK	S1 (Signal 1)	Detects motor angle sensor signal	
13	BLU	R1 (EPS Motor angle sensor 1)	Detects motor angle sensor signal	
14	BRN	S2 (Signal 2)	Detects motor angle sensor signal	
15	RED	CAN-L (CAN-LO)	CAN communication circuit	
16	YEL *1 GRY *2	IG1 (Ignition 1)	Power source for activating the system	With ignition switch ON (II): battery voltage
17	LT BLU	K-LINE (Data link connector)	Communicates with HDS	With service check signal opened: about 5.0 V
26	BRN	S3 (Signal 3)	Detects motor angle sensor signal	———
27	PNK	R2 (EPS Motor angle sensor 2)	Detects motor angle sensor signal	
28	BLU	S4 (Signal 4)	Detects motor angle sensor signal	

* 1: '06 model
* 2: '07-09 models

(cont'd)

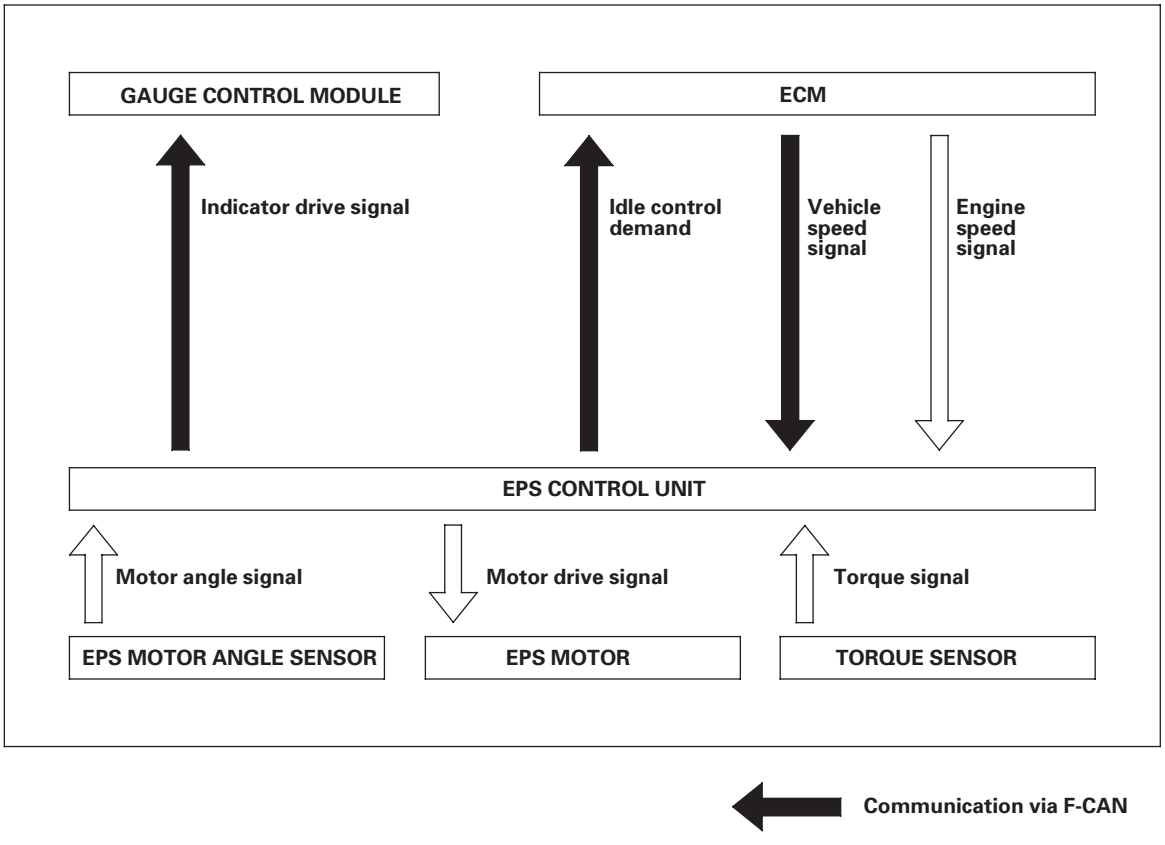
System Description (cont'd)

System Outline

The power steering system adopts the electric power steering assisting for the control force of the steering wheel in the driving force of the electric motor.

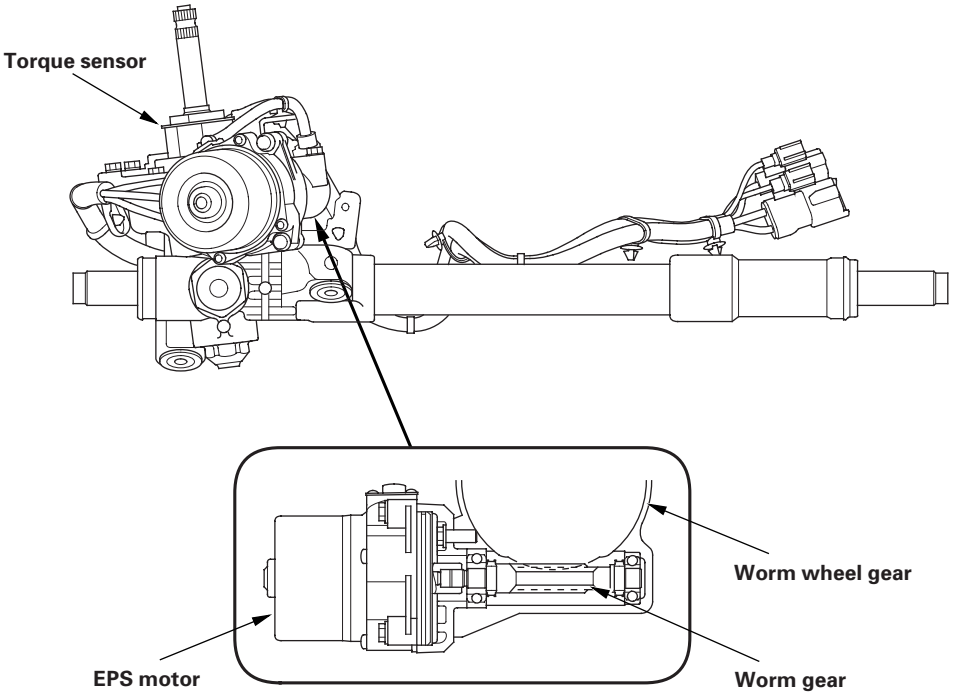
The EPS control unit is doing an appropriate steering force control according to the running situation of the vehicle (at time of low speed, lightness, by the control of emphasis and high-speed running time, control with the steady weight and the control which will be switched from low speed to high speed smoothly later) by the EPS motor.

The EPS control unit is designed for use with an automotive power steering for the primary purpose of controlling the assist motor (brushless motor) for the power steering by using as inputs the steering torque signals received from the ''steering torque sensor'' installed in the steering gearbox as well as the speed signals received from the ''vehicle speed sensor'' installed in the vehicle. In addition to the above function, the EPS control unit also provides the failsafe function, self diagnosis function and motor output limiting function.



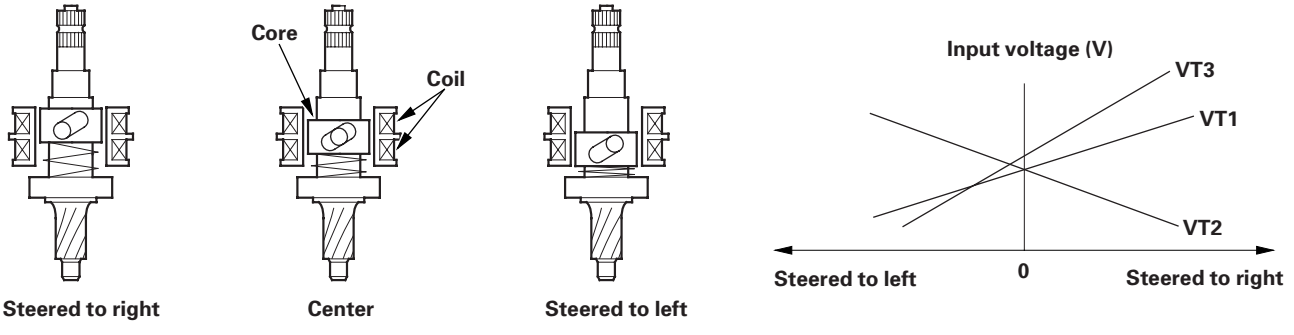
Steering Gearbox

The EPS motor engages with a pinion and one worm wheel gear, which is transmitted to a direct pinion, to move a rack.



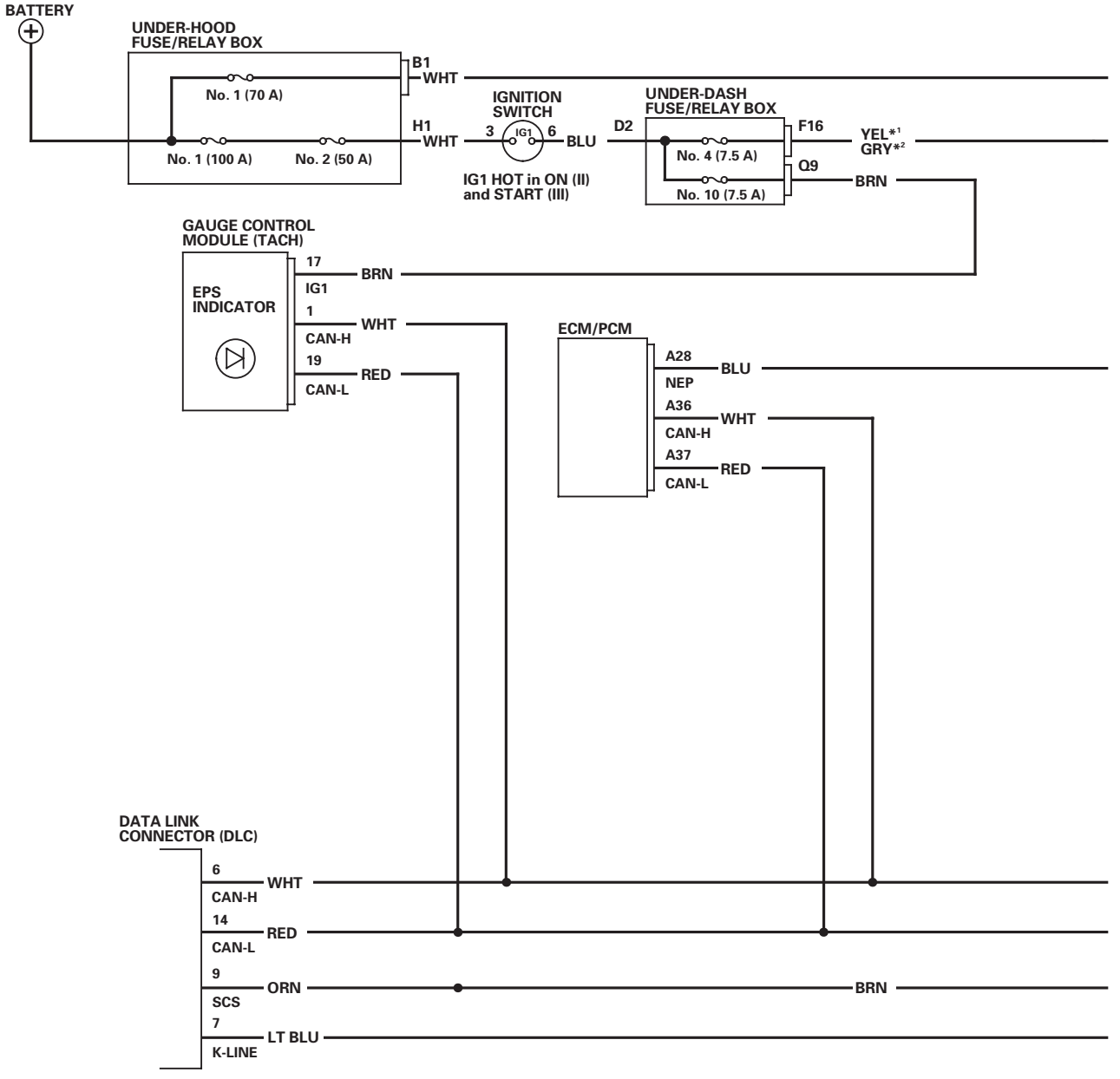
Torque Sensor

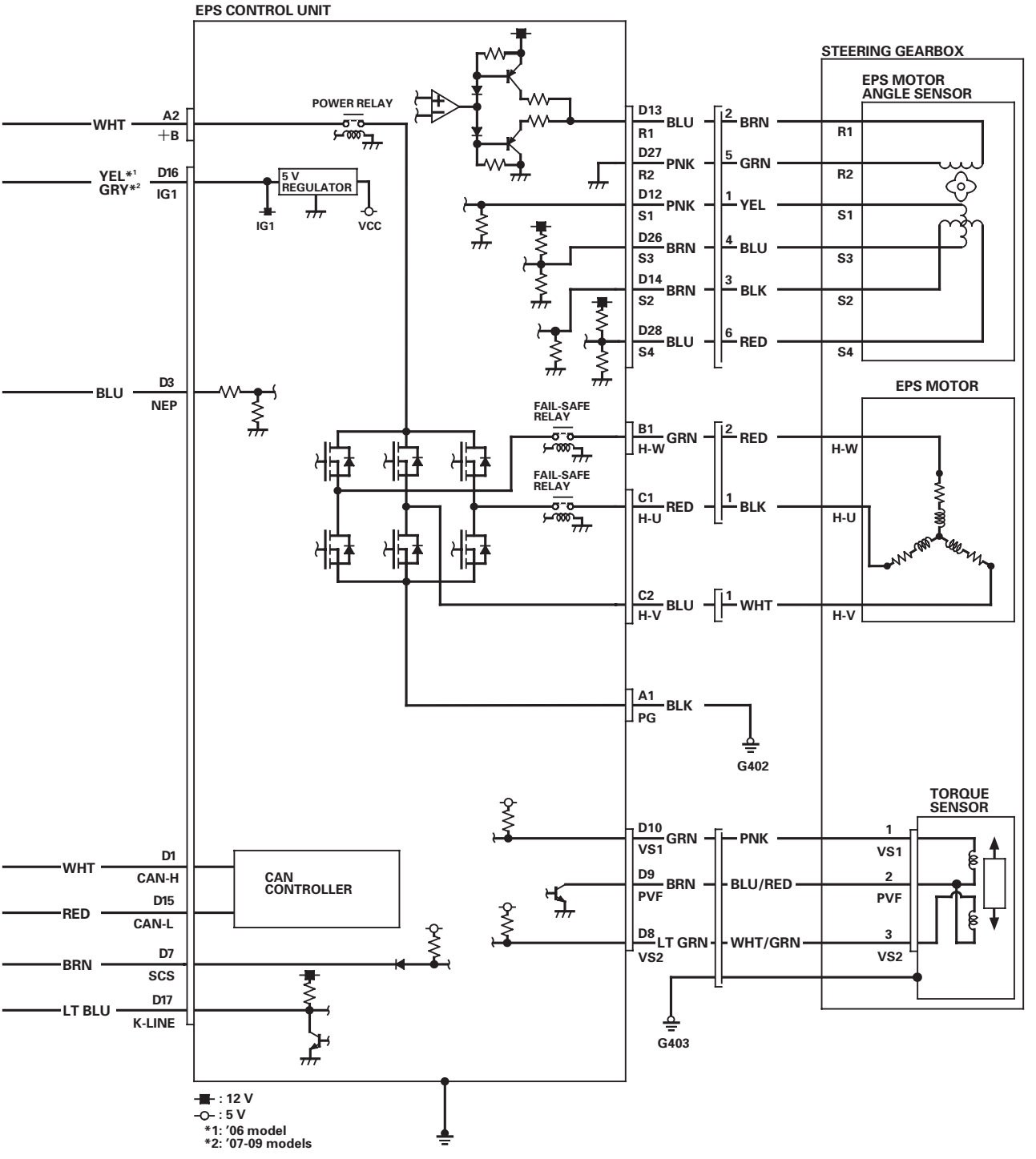
When the steering wheel is turned, twist occurs in the torsion bar between the steering side of the input shaft and the output shaft on the road reaction force side. Inductance is changed by the movement of the core. The amount this voltage changes (varies with the amount of movement, and direction of the core) is amplified with the interface circuitry of the sensor coil, and output to the EPS control unit as a steer signal.



EPS Components

Circuit Diagram



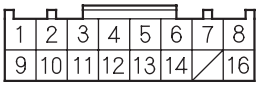

EPS CONTROL UNIT
POWER RELAY
5 V REGULATOR
IG1
VCC
FAIL-SAFE RELAY
FAIL-SAFE RELAY
CAN CONTROLLER
WHT
A2
+B
YEL*1
GRY*2
D16
IG1
BLU
D3
NEP
WHT
D1
CAN-H
RED
D15
CAN-L
BRN
D7
SCS
LT BLU
D17
K-LINE
D13
R1
BLU
D27
R2
PNK
D12
S1
PNK
D26
S3
BRN
D14
S2
BRN
D28
S4
BLU
B1
H-W
GRN
C1
H-U
RED
C2
H-V
BLU
A1
PG
BLK
G402
D10
VS1
GRN
D9
PVF
BRN
D8
VS2
LT GRN
G403
STEERING GEARBOX
EPS MOTOR ANGLE SENSOR
2
BRN
5
GRN
1
YEL
4
BLU
3
BLK
6
RED
R1
R2
S1
S3
S2
S4
EPS MOTOR
2
RED
1
BLK
1
WHT
H-W
H-U
H-V
TORQUE SENSOR
PNK
BLU/RED
WHT/GRN
1
VS1
2
PVF
3
VS2
: 12 V
: 5 V
*1: '06 model
*2: '07-09 models

(cont'd)

Circuit Diagram (cont'd)

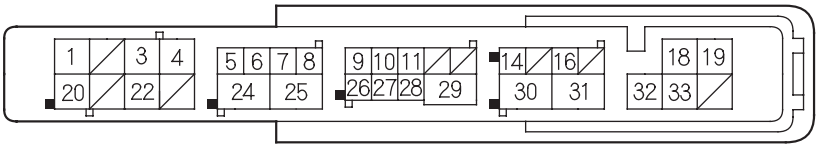
UNDER-HOOD FUSE/RELAY BOX CONNECTOR B (1P)

UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (16P)



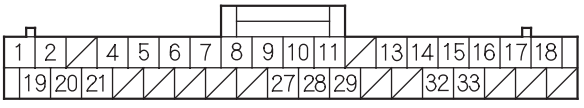
Wire side of female terminals

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



Wire side of female terminals

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



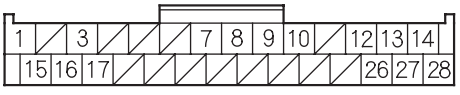
EPS CONTROL UNIT CONNECTOR A (2P)

EPS CONTROL UNIT CONNECTOR B (2P)

Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)

EPS CONTROL UNIT CONNECTOR D (28P)



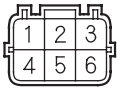
TORQUE SENSOR 3P CONNECTOR

Wire side of female terminals

EPS MOTOR 1P CONNECTOR

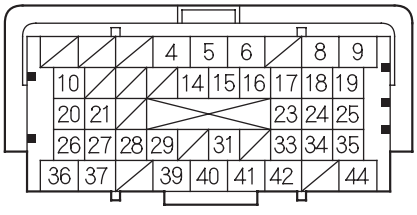
EPS MOTOR 2P CONNECTOR

EPS MOTOR ANGLE SENSOR 6P CONNECTOR

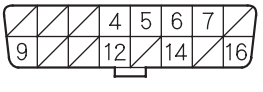


Terminal side of male terminals

ECM/PCM CONNECTOR A (44P)



DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

DTC Troubleshooting

DTC 11-01: Low/High IG1-terminal Voltage (Initial Diagnosis)

DTC 11-02: Low/High IG1-terminal Voltage (Regular Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.
5. Wait at least 60 seconds.

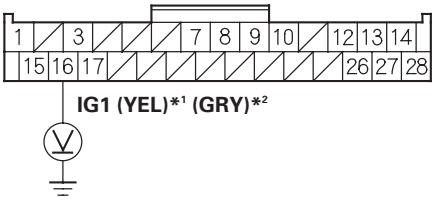
   Does the EPS indicator come on?

   YES—Go to step 6.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■

6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector D (28P).
8. Turn the ignition switch to ON (II).
9. Wait at least 60 seconds.
10. Measure the voltage between EPS control unit connector D (28P) terminal No. 16 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

***1: '06 model**
***2: '07-09 models**

Is there battery voltage?

YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

NO—If there is no voltage, or the voltage is lower than specified, repair an open or high resistance in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the EPS control unit. If the wire checks OK, check the battery (see page 22-67), and troubleshoot the alternator regulator circuit (see page 4-28). ■

DTC Troubleshooting (cont'd)

DTC 12-01: Low/High VBU Voltage (Regular Diagnosis)

1. Turn the ignition switch to ON (II).
2. Check the BATTERY in the EPS DATA LIST with the HDS.

   Is the voltage at 9.2—17.4 V?

   YES—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■

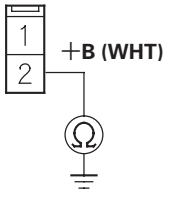
   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Check the No. 1 (70 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES—Reinstall the checked fuse, then go to step 13.

   NO—Go to step 5.
5. Disconnect the EPS control unit connector A (2P).
6. Check for continuity between EPS control unit connector A (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the EPS control unit and the No. 1 (70 A) fuse in the under-hood fuse/relay box. ■

NO—Install a new No. 1 (70 A) fuse in the under-hood fuse/relay box, then go to step 7.

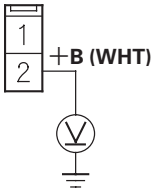
7. Reconnect the EPS control unit connector A (2P).
8. Turn the ignition switch to ON (II).
9. Clear the DTC with the HDS.
10. Turn the ignition switch to LOCK (0).
11. Start the engine.
12. Check for DTCs with the HDS.

    Is DTC 12-01 indicated?

    YES—Replace the EPS control unit (see page 17-84). ■

    NO—Troubleshooting is complete. If any other DTCs are indicated, go to the indicated DTC's troubleshooting. ■
13. Disconnect EPS control unit connector A (2P) and connector D (28P).
14. Measure the voltage between EPS control unit connector A (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

NO—Repair open in the wire between the EPS control unit and the No. 1 (70 A) fuse in the under-hood fuse/relay box. ■

DTC 21-01: Excessive Change of the Vehicle Speed Signal (Regular Diagnosis)

DTC 21-02: Comparison between the Vehicle Speed and the Engine Speed Signal (Regular Diagnosis)

NOTE:
- If the MIL is on, troubleshoot the fuel and emissions systems first.
- Even though the system is operating normally, the EPS indicator will come on caused by the detecting condition of DTC 21-01 or DTC 21-02 when you raise the engine speed with the vehicle stopped.
- Clear the DTC related to the ABS/VSA.

1. Turn the ignition switch to LOCK (0).
2. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11), and allow all wheels to rotate freely.
3. Connect the HDS to the data link connector (DLC).
4. Turn off VSA by using the VSA OFF switch.
5. Start the engine, run the vehicle in the 4th (M/T), or D position (A/T).
6. Check the VEHICLE SPEED in the EPS DATA LIST with the HDS.

   Is the vehicle speed indicated?

   YES—The system is OK at this time. ■

   NO—Go to step 7.
7. Check for DTCs in the fuel and emissions system (M/T) or A/T system (A/T) with the HDS.

   Is DTC P0720, P0721, P0722 or P0723 indicated?

   YES—Troubleshoot the indicated DTC(s). ■

   NO—Go to step 8.
8. Start the engine, and check the tachometer.

   Is the tachometer working correctly?

   YES—Go to step 9.

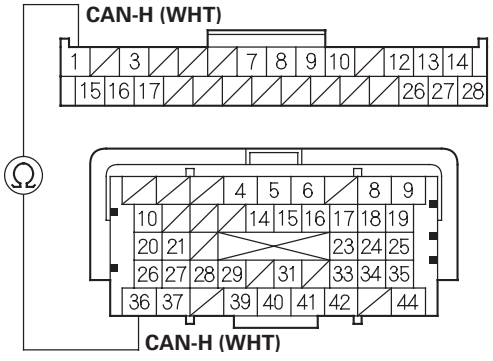
   NO—Troubleshoot the gauge control module (tach) (see page 22-241). ■
9. Turn the ignition switch to LOCK (0).
10. Short the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (44P) and EPS control unit connector D (28P).

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and ECM/PCM connector A (44P) terminal No. 36.

EPS CONTROL UNIT CONNECTOR D (28P)
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

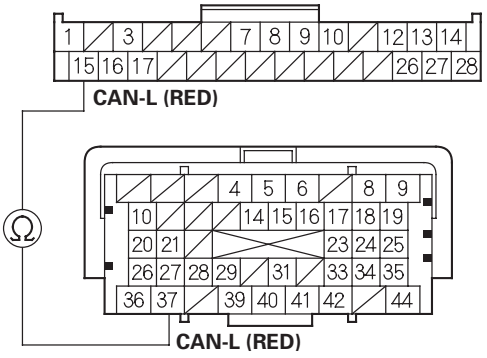
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the EPS control unit and the ECM/PCM. ■

13. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and ECM/PCM connector A (44P) terminal No. 37.

EPS CONTROL UNIT CONNECTOR D (28P)
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

Is there continuity?

YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

NO—Repair open in the wire between the EPS control unit and the ECM/PCM. ■

DTC 22-01: Engine Speed Signal (Initial Diagnosis)

NOTE: If the MIL indicator is on, troubleshoot the fuel and emissions systems first.

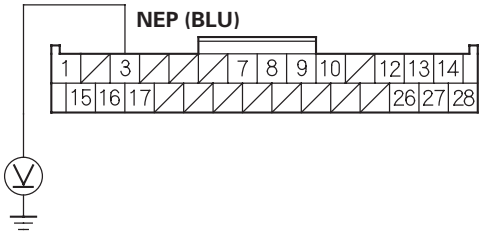
1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Start the engine.
4. Check the ENGINE SPEED in the EPS DATA LIST with the HDS.

   Is there 0 rpm at idle?

   YES—Go to step 5.

   NO—The system is OK at this time. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect EPS control unit connector D (28P).
7. Start the engine.
8. Measure the voltage between EPS control unit connector D (28P) terminal No. 3 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there any voltage?

YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

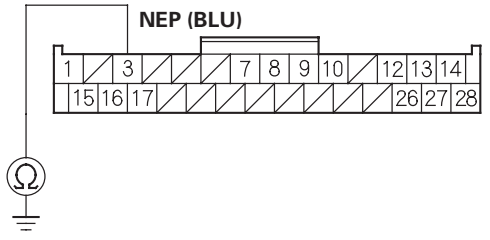
NO—Go to step 9.

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0).
10. Short the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (44P).
12. Check for continuity between EPS control unit connector D (28P) terminal No. 3 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

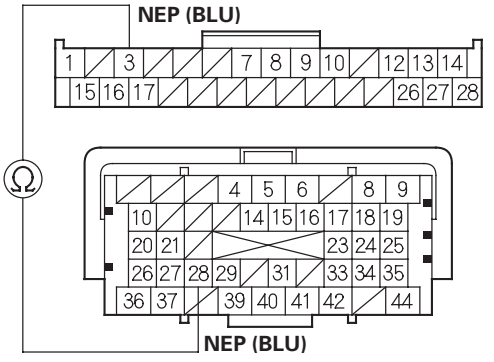
Is there continuity?

YES—Repair short to body ground in the wire between the EPS control unit and the ECM/PCM. ■

NO—Go to step 13.

13. Check for continuity between EPS control unit connector D (28P) terminal No. 3 and ECM/PCM connector A (44P) terminal No. 28.

EPS CONTROL UNIT CONNECTOR D (28P)
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

Is there continuity?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then go to step 1, and recheck. If the ECM/PCM was updated and DTCs are not indicated, troubleshooting is complete. If the ECM/PCM was substituted and DTCs are not indicated, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the EPS control unit and the ECM/PCM. ■

DTC 32-01: EPS Control Unit Internal Circuit (Current Sensor) (Initial Diagnosis)

DTC 32-02: EPS Control Unit Internal Circuit (Current Sensor) (Regular Diagnosis)

DTC 35-01: EPS Control Unit Internal Circuit (CPU) (Initial Diagnosis/Regular Diagnosis)

DTC 35-02: EPS Control Unit Internal Circuit (EEPROM) (Initial Diagnosis)

DTC 35-04: EPS Control Unit Internal Circuit (CPU Communication) (Regular Diagnosis)

DTC 35-06: EPS Control Unit Internal Circuit (ITN Communication) (Regular Diagnosis)

DTC 35-07: EPS Control Unit Internal Circuit (INHL/INHR Ports) (Initial Diagnosis/Regular Diagnosis)

DTC 36-02: EPS Control Unit Internal Circuit (INH Output Circuit) (Initial Diagnosis)

DTC 37-01: EPS Control Unit Internal Circuit (Step-up Circuit) (Initial Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 5.
   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
5. Check for DTCs with the HDS.

   Is DTC 32-01, 32-02, 35-01, 35-02, 35-04, 35-06, 35-07, 36-02, or 37-01 indicated?

   YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■
   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■

DTC 32-07: EPS Control Unit Internal Circuit (Current Sensor) (Steering Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.
5. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 6.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
6. Check for DTCs with the HDS.

   Is DTC 32-07 indicated?

   YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 32-08: Current Sensor (Regular Diagnosis)

DTC 32-09: Current Sensor (Initial Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.
5. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

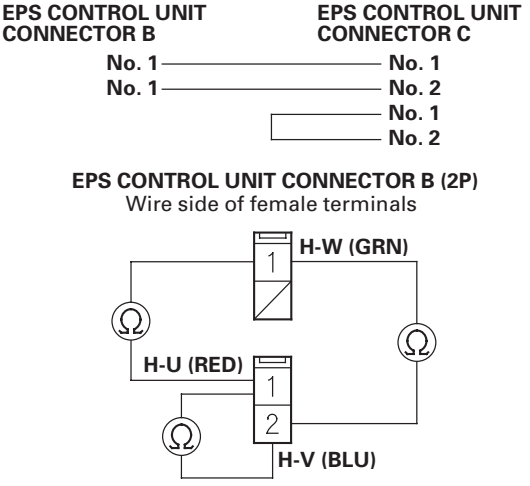
   YES—Go to step 6.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
6. Check for DTCs with the HDS.

   Is DTC 32-08 or 32-09 indicated?

   YES—Go to step 7.

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■
7. Turn the ignition switch to LOCK (0).
8. Disconnect EPS control unit connector B (2P) and connector C (2P).
9. Check for continuity between the following terminals of the EPS control unit connector B (2P) and connector C (2P).



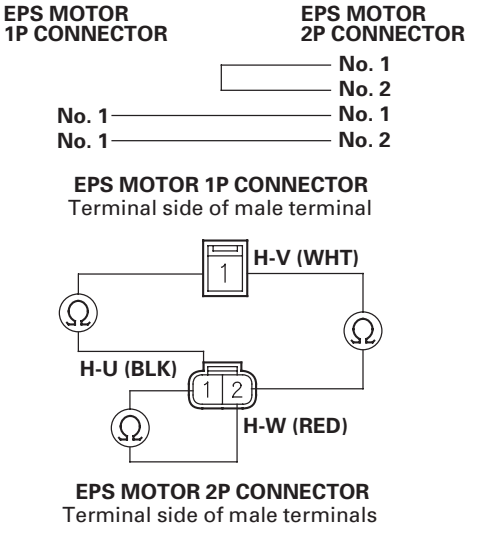
Is there continuity?

YES—Check for loose terminals in the EPS control unit connectors and EPS motor connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

NO—Go to step 10.

10. Disconnect the EPS motor 1P connector and EPS motor 2P connector.

11. On the EPS motor side, check for continuity between the following terminals of the EPS motor 1P and EPS motor 2P connector.



Is there continuity?

YES—Repair open in the wire between the EPS control unit and EPS motor. ■

NO—Open in the EPS motor wire, or EPS motor internal circuit, replace the EPS motor (see page 17-63). ■

DTC 33-01: Lower FET Stuck ON (Initial Diagnosis)

DTC 33-06: Lower FET Stuck ON (Regular Diagnosis)

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0).

4. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 5.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■

5. Check for DTCs with the HDS.

   Is DTC 33-01 or 33-06 indicated?

   YES—Go to step 6.

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■

6. Turn the ignition switch to LOCK (0).

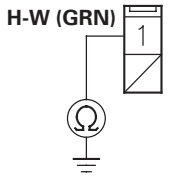
7. Disconnect EPS control unit connector B (2P) and connector C (2P).

(cont'd)

DTC Troubleshooting (cont'd)

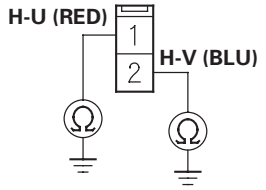
8. Check for continuity between body ground and EPS control unit connector B (2P) terminal No. 1, connector C (2P) terminal No. 1, and connector C (2P) terminal No. 2 individually.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)



Wire side of female terminals

Is there continuity?

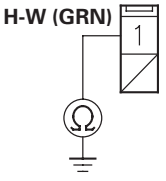
YES—Go to step 9.

NO—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84).■

9. Disconnect the EPS motor 1P connector and EPS motor 2P connector.

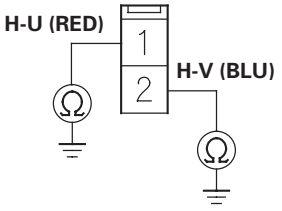
10. Check for continuity between body ground and EPS control unit connector B (2P) terminal No. 1, connector C (2P) terminal No. 1, and connector C (2P) terminal No. 2 individually.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the EPS control unit and EPS motor.■

NO—Short to body ground in the EPS motor wire; or a short in the EPS motor internal circuit, replace the EPS motor (see page 17-63).■

DTC 33-02: Upper FET Stuck ON (Initial Diagnosis)

DTC 33-07: Upper FET Stuck ON (Regular Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 5.

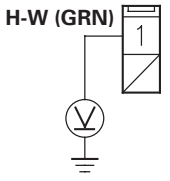
   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
5. Check for DTCs with the HDS.

   Is DTC 33-02 or 33-07 indicated?

   YES—Go to step 6.

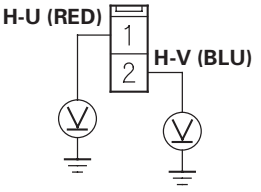
   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector B (2P) and connector C (2P).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between body ground and EPS control unit connector B (2P) terminal No. 1, connector C (2P) terminal No. 1, and connector C (2P) terminal No. 2 individually.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 10.

NO—Check for loose terminals in the EPS control unit connectors and the EPS motor connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

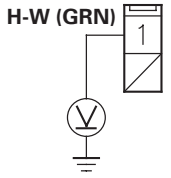
10. Turn the ignition switch to LOCK (0).

(cont'd)

DTC Troubleshooting (cont'd)

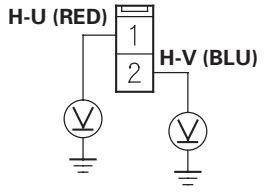
11. Disconnect the EPS motor 1P connector and EPS motor 2P connector.
12. Turn the ignition switch to ON (II).
13. Measure the voltage between body ground and EPS control unit connector B (2P) terminal No. 1, connector C (2P) terminal No. 1, and connector C (2P) terminal No. 2 individually.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the EPS control unit and the EPS motor. ■

NO—Short to power in the EPS motor wire; or a short in the EPS motor internal circuit, replace the EPS motor (see page 17-63). ■

DTC 34-01: Power Relay Stuck ON (Ignition Switch is in LOCK (0))

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II).

   Does the EPS indicator come on?

   YES—Go to step 5.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
5. Check for DTCs with the HDS.

   Is DTC 34-01 indicated?

   YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■

DTC 34-02: Fail-safe Relay Stuck ON (Initial Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II).

   Does the EPS indicator come on?

   YES—Go to step 5.

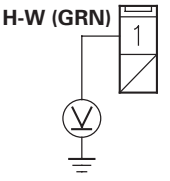
   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
5. Check for DTCs with the HDS.

   Is DTC 34-02 indicated?

   YES—Go to step 6.

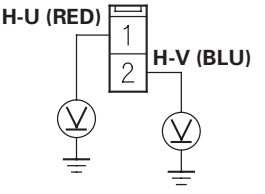
   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector B (2P) and connector C (2P).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between body ground and EPS control unit connector B (2P) terminal No. 1, connector C (2P) terminal No. 1, and connector C (2P) terminal No. 2 individually.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the EPS control unit and the EPS motor. ■

NO—Replace the EPS control unit (see page 17-84). ■

DTC Troubleshooting (cont'd)

DTC 35-03: EPS Control Unit Internal Circuit (EPS CPU) (Internal Diagnosis)

DTC 35-05: EPS Control Unit Internal Circuit (EPS Motor/EPS CPU) (Internal Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II).

   Does the EPS indicator come on?

   YES—Go to step 5.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
5. Start the engine.
6. Wait 10 seconds or more.
7. Check for DTCs with the HDS.

   Is DTC 35-03 or 35-05 indicated?

   YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■

DTC 51-01: Low/High Voltage for the Torque Sensor (VT1 and VT2) (Regular Diagnosis)

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Turn the ignition switch to ON (II).
4. Check the ADVT1 in the DATA LIST with the HDS.

   Is the voltage at 0.90—3.55 V?

   YES—Go to step 5.

   NO—Go to step 6.
5. Check the ADVT2 in the DATA LIST with the HDS.

   Is the voltage at 1.02—3.73 V?

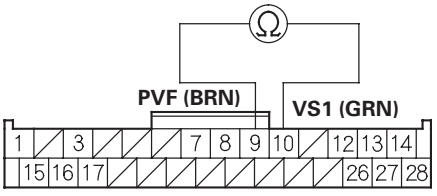
   YES—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■

   NO—Go to step 6.
6. Turn the ignition switch to LOCK (0).

7. Disconnect EPS control unit connector D (28P).

8. Measure the resistance between EPS control unit connector D (28P) terminals No. 9 and No. 10.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

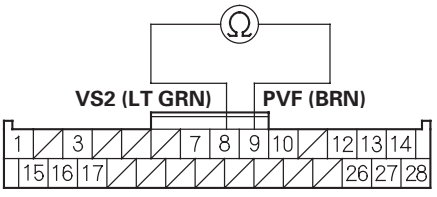
Is the resistance between 12— 15 Ω ?

YES—Go to step 9.

NO—Go to step 13.

9. Measure the resistance between EPS control unit connector D (28P) terminals No. 8 and No. 9.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is the resistance between 12— 15 Ω ?

YES—Go to step 10.

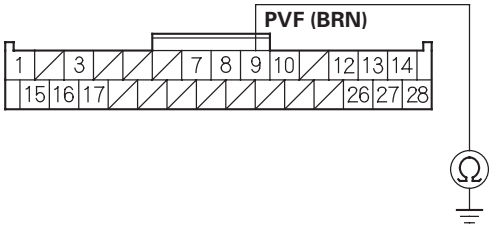
NO—Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

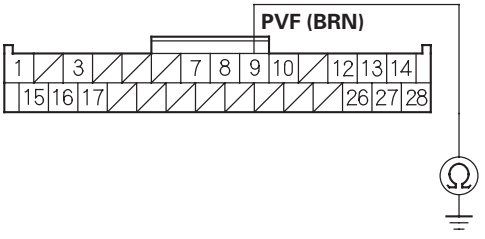
YES—Go to step 11.

NO—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

11. Disconnect the torque sensor 3P connector from the steering gearbox.

12. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

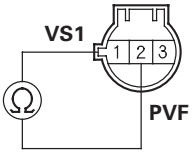
YES—Repair short to body ground in the wire between the torque sensor and the EPS control unit. ■

NO—Faulty torque sensor (short in the sensor internal circuit), replace the steering gearbox (see page 17-65). ■

13. Disconnect the torque sensor 3P connector from the steering gearbox.

14. On the sensor side, measure the resistance between torque sensor 3P connector terminals No. 1 and No. 2.

TORQUE SENSOR 3P CONNECTOR



Terminal side of male terminals

Is the resistance between 12—15 Ω ?

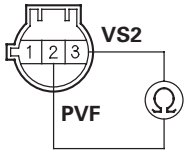
YES—Repair open or short between the PNK and BLU/RED wires in the torque sensor circuit between the torque sensor and the EPS control unit. ■

NO—Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see page 17-65). ■

15. Disconnect the torque sensor 3P connector from the steering gearbox.

16. On the sensor side, measure the resistance between torque sensor 3P connector terminals No. 2 and No. 3.

TORQUE SENSOR 3P CONNECTOR



Terminal side of male terminals

Is the resistance between 12—15 Ω ?

YES—Repair open or short between the WHT/GRN and BLU/RED wires in the torque sensor circuit between the torque sensor and the EPS control unit. ■

NO—Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see page 17-65). ■

DTC Troubleshooting (cont'd)

DTC 51-02: Torque Sensor (VT3 Differential-amplification Function) (Regular Diagnosis)

DTC 51-03: Torque Sensor (VT1, VT2 Rapid Change) (Regular Diagnosis)

DTC 51-06: Torque Sensor (VT1, VT2 Average) (Regular Diagnosis)

DTC 51-07: Torque Sensor (VT1, VT2 Initial Check) (Initial Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.

   Does the EPS indicator come on?

   YES—Go to step 5.

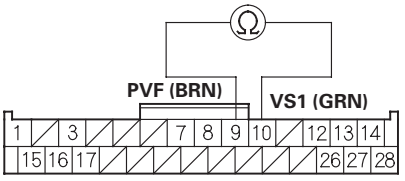
   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time.■
5. Check for DTCs with the HDS.

   Is DTC 51-02, 51-03, 51-06, or 51-07 indicated?

   YES—Go to step 6.

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time.■
6. Turn the ignition switch to LOCK (0).
7. Disconnect EPS control unit connector D (28P).
8. Measure the resistance between EPS control unit connector D (28P) terminals No. 9 and No. 10.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

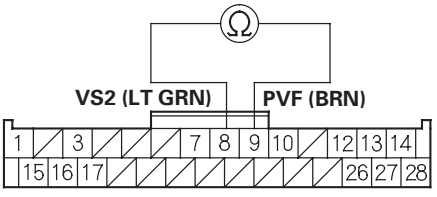
Is the resistance between 12—15 Ω ?

YES—Go to step 9.

NO—Go to step 13.

9. Measure the resistance between EPS control unit connector D (28P) terminals No. 8 and No. 9.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

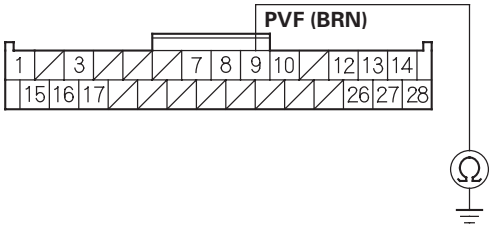
Is the resistance between 12—15 Ω ?

YES—Go to step 10.

NO—Go to step 15.

10. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

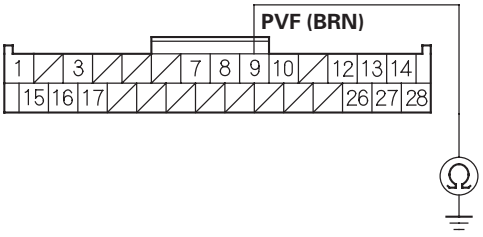
YES—Go to step 11.

NO—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

11. Disconnect the torque sensor 3P connector from the steering gearbox.

12. Check for continuity between EPS control unit connector D (28P) terminal No. 9 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the torque sensor and the EPS control unit. ■

NO—Faulty torque sensor (short in the sensor internal circuit), replace the steering gearbox (see page 17-65). ■

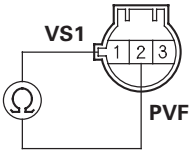
(cont'd)

DTC Troubleshooting (cont'd)

13. Disconnect the torque sensor 3P connector from the steering gearbox.

14. On the sensor side, measure the resistance between torque sensor 3P connector terminals No. 1 and No. 2.

TORQUE SENSOR 3P CONNECTOR



Terminal side of male terminals

Is the resistance between 12—15 Ω ?

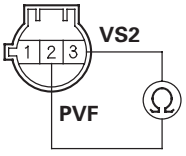
YES—Repair open or short between the PNK and BLU/RED wires in the torque sensor circuit between the torque sensor and the EPS control unit. ■

NO—Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see page 17-65). ■

15. Disconnect the torque sensor 3P connector from the steering gearbox.

16. On the sensor side, measure the resistance between torque sensor 3P connector terminals No. 2 and No. 3.

TORQUE SENSOR 3P CONNECTOR



Terminal side of male terminals

Is the resistance between 12—15 Ω ?

YES—Repair open or short between the BLU/RED and WHT/GRN wires in the torque sensor circuit between the torque sensor and the EPS control unit. ■

NO—Faulty torque sensor (short or open in the internal circuit), replace the steering gearbox (see page 17-65). ■

DTC 61-04: Open/Short in EPS Motor Harness (Steering Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.
5. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

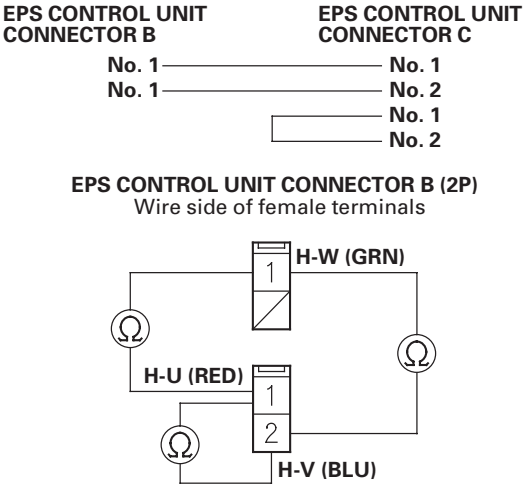
   YES—Go to step 6.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
6. Check for DTCs with the HDS.

   Is DTC 61-04 indicated?

   YES—Go to step 7.

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■
7. Turn the ignition switch to LOCK (0).
8. Disconnect the EPS control unit connector B (2P) and connector C (2P).
9. Check for continuity between the following terminals of the EPS control unit connector B (2P) and connector C (2P).



Is there continuity?

YES—Go to step 10.

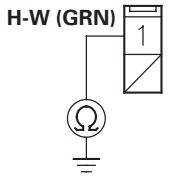
NO—Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

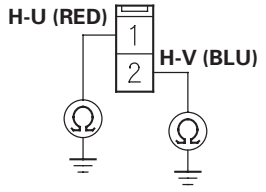
10. Check for continuity between body ground and EPS control unit connector B (2P) terminal No. 1, connector C (2P) terminal No. 1, and connector C (2P) terminal No. 2 individually.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)



Wire side of female terminals

Is there continuity?

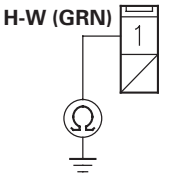
YES—Go to step 11.

NO—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84).■

11. Disconnect the EPS motor 1P connector and the EPS motor 2P connector.

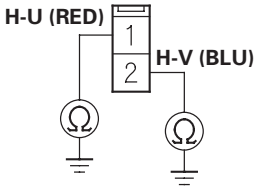
12. Check for continuity between body ground and EPS control unit connector B (2P) terminal No. 1, connector C (2P) terminal No. 1, and connector C (2P) terminal No. 2 individually.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

EPS CONTROL UNIT CONNECTOR C (2P)



Wire side of female terminals

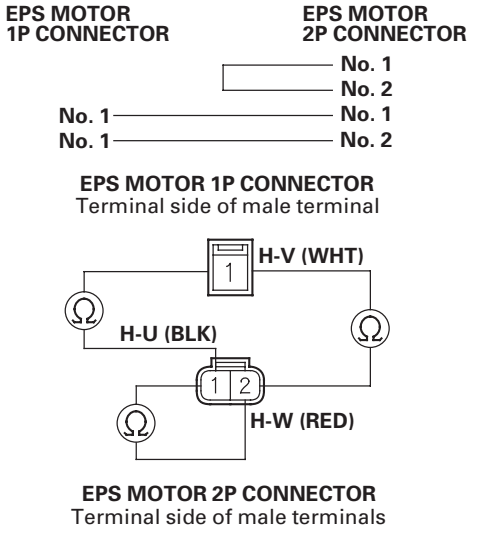
Is there continuity?

YES—Repair short to body ground in the wire between the EPS control unit and the EPS motor.■

NO—Short to the body ground in the EPS motor wire, or the EPS motor internal circuit, replace the EPS motor (see page 17-65).■

13. Disconnect the EPS motor 1P connector and the EPS motor 2P connector.

14. On the EPS motor side, check for continuity between the following terminals of the EPS motor 1P and the EPS motor 2P connector.



Is there continuity?

YES—Repair open in the wire between the EPS control unit and the EPS motor. ■

NO—Open in the EPS motor wire, or EPS motor internal circuit, replace the EPS motor (see page 17-63). ■

DTC 71-01: EPS Motor Angle Sensor (SIN/COS Signals) (Steering Diagnosis)

DTC 71-02: EPS Motor Angle Sensor (Neutral Position Learning of SIN/COS) (Initial Diagnosis)

DTC 71-03: EPS Motor Angle Sensor (SIN/COS Signals) (Steering Diagnosis)

DTC 71-05: EPS Motor Angle Sensor (SIN/COS Signals Charging Amount) (Steering Diagnosis)

DTC 71-06: EPS Motor Angle Sensor (Neutral Position of SIN/COS) (Initial Diagnosis)

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0).

4. Start the engine.

5. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 6.

   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■

6. Check for DTCs with the HDS.

   Is DTC 71-01, 71-02, 71-03, 71-05 or 71-06 indicated?

   YES—Go to step 7.

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■

7. Turn the ignition switch to LOCK (0).

8. Disconnect EPS control unit connector D (28P).

(cont'd)

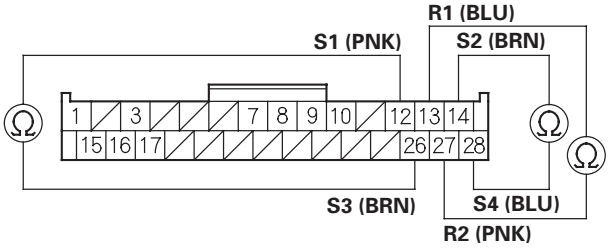
DTC Troubleshooting (cont'd)

9. Measure the resistance between the following terminals of EPS control unit connector D (28P).

EPS CONTROL UNIT CONNECTOR D (28P)

No. 13 (R1)	No. 27 (R2)
No. 12 (S1)	No. 26 (S3)
No. 14 (S2)	No. 28 (S4)

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

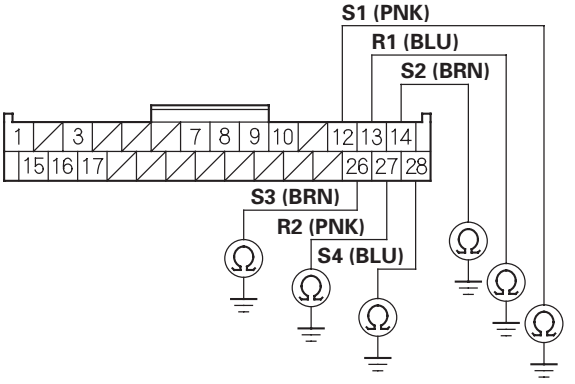
Is the resistance between R1-R2 13—25 Ω, S1-S3 26—49 Ω, and S2-S4 26—49 Ω?

YES—Go to step 10.

NO—Go to step 13.

10. Check for continuity between body ground and EPS control unit connector D (28P) terminal No. 12, terminal No. 13, terminal No. 14, terminal No. 26, terminal No. 27, and terminal No. 28 individually.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

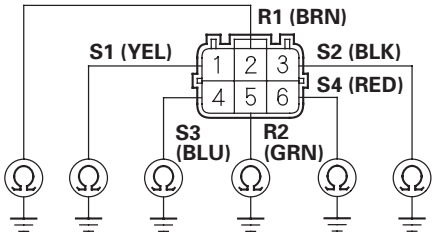
YES—Go to step 11.

NO—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84).■

11. Disconnect the EPS motor angle sensor 6P connector.

12. On the sensor side, check for continuity between body ground and EPS motor angle sensor 6P connector terminal No. 1, terminal No. 2, terminal No. 3, terminal No. 4, terminal No. 5, and terminal No. 6 individually.

EPS MOTOR ANGLE SENSOR 6P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Faulty EPS motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the EPS motor (see page 17-63). ■

NO—Repair short to body ground in the wire between the EPS motor angle sensor 6P connector and the EPS control unit. ■

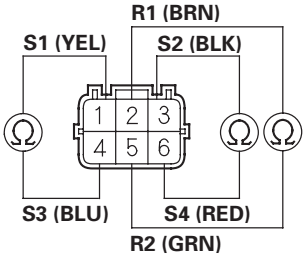
13. Disconnect the EPS motor angle sensor 6P connector.

14. On the sensor side, measure the resistance between the following terminals of the EPS motor angle sensor 6P connector.

EPS MOTOR ANGLE SENSOR 6P CONNECTOR

No. 2 (R1)	No. 5 (R2)
No. 1 (S1)	No. 4 (S3)
No. 3 (S2)	No. 6 (S4)

EPS MOTOR ANGLE SENSOR 6P CONNECTOR



Terminal side of male terminals

Is the resistance between R1-R2 13—25 Ω, S1-S3 26—49 Ω, and S2-S4 26—49 Ω?

YES—Open, or short to body ground in the wire between the EPS motor angle sensor 6P connector and the EPS control unit. ■

NO—Faulty EPS motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the EPS motor (see page 17-63). ■

DTC Troubleshooting (cont'd)

DTC 71-04: EPS Motor Angle Sensor (Check Signals) (Regular Diagnosis)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Start the engine.
5. Turn the steering wheel to the right or left, and wait 10 seconds or more.

   Does the EPS indicator come on?

   YES—Go to step 6.

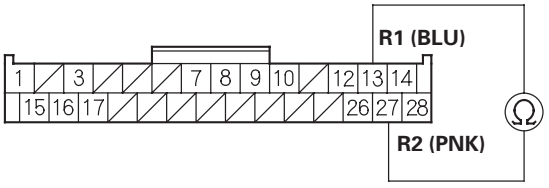
   NO—Check for loose terminals or poor connections. If the connections are good, the system is OK at this time. ■
6. Check for DTCs with the HDS.

   Is DTC 71-04 indicated?

   YES—Go to step 7.

   NO—Troubleshoot the indicated DTC. If there are no DTCs, the system is OK at this time. ■
7. Turn the ignition switch to LOCK (0).
8. Disconnect the EPS control unit connector D (28P).
9. Measure the resistance between the EPS control unit connector D (28P) terminal No. 13 and No. 27.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

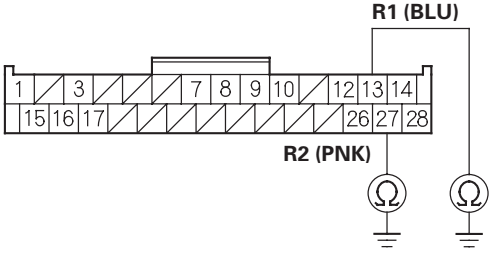
Is the resistance between 13—25 Ω ?

YES—Go to step 10.

NO—Go to step 13.

10. Check for continuity between body ground and the EPS control unit connector D (28P) terminal No. 13 and the terminal No. 27 individually.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

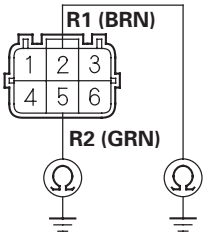
YES—Go to step 11.

NO—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

11. Disconnect the EPS motor angle sensor 6P connector.

12. On the sensor side check for continuity between body ground and EPS motor angle sensor 6P connector terminal No. 2 and the terminal No. 5 individually.

EPS MOTOR ANGLE SENSOR 6P CONNECTOR



Terminal side of male terminals

Is there continuity?

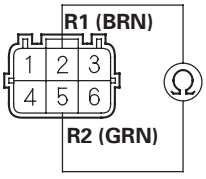
YES—Faulty EPS motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the EPS motor (see page 17-63). ■

NO—Repair short to body ground in the wire between the EPS motor angle sensor 6P connector and the EPS control unit. ■

13. Disconnect the EPS motor angle sensor 6P connector.

14. On the sensor side measure the resistance between the EPS motor angle sensor 6P connector terminals No. 2 and No. 5.

EPS MOTOR ANGLE SENSOR 6P CONNECTOR



Terminal side of male terminals

Is the resistance between 13—25?

YES—Open, or short to body ground in the wire between the EPS motor angle sensor 6P connector and EPS control unit. ■

NO—Faulty EPS motor angle sensor (internal failure), or short to body ground in the wire (sensor side), replace the EPS motor (see page 17-63). ■

Symptom Troubleshooting

EPS indicator does not come on

1. Turn the ignition switch to ON (II), and watch the EPS indicator.

   Does the EPS indicator come on?

   YES—The system is OK at this time. ■

   NO—Troubleshoot the gauge control module (tach) (see page 22-241). ■

EPS indicator does not go off, and no DTCs are stored

NOTE: Check for gauge DTCs with the HDS (see page 22-3). If gauge DTCs are stored, troubleshoot those DTCs first.

1. Turn the ignition switch to LOCK (0).
2. Check the No. 4 (7.5 A) fuse in the under-dash fuse/relay box.

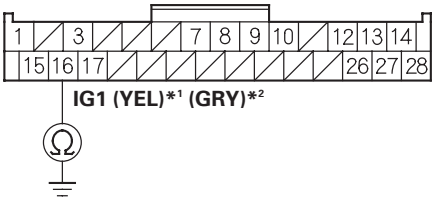
   Is the fuse OK?

   YES—Reinstall the checked fuse, then go to step 5.

   NO—Go to step 3.

3. Disconnect EPS control unit connector D (28P).
4. Check for continuity between EPS control unit connector D (28P) terminal No. 16 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

***1: '06 model**
***2: '07-09 models**

Is there continuity?

YES—Repair short to body ground in the wire between the EPS control unit and the No. 4 (7.5 A) fuse in the under-dash fuse/relay box. ■

NO—Install a new No. 4 (7.5 A) fuse in the under-dash fuse/relay box, then go to step 5.

5. Reconnect EPS control unit connector D (28P).

6. Turn the ignition switch to ON (II), and watch the EPS indicator.

   Does the EPS indicator come on, then go off?

   YES—Troubleshooting is complete. ■

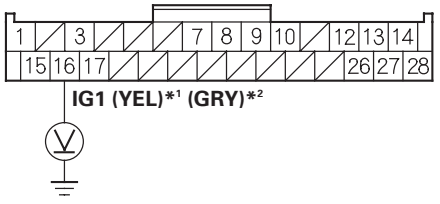
   NO—Replace the EPS control unit (see page 17-84). ■

7. Disconnect EPS control unit connector D (28P).

8. Turn the ignition switch to ON (II).

9. Measure the voltage between EPS control unit connector D (28P) terminal No. 16 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

***1: '06 model**
***2: '07-09 models**

Is there battery voltage?

YES—Go to step 10.

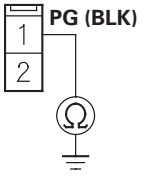
NO—Repair open in the wire between the EPS control unit and under-dash fuse/relay box. ■

10. Turn the ignition switch to LOCK (0).

11. Disconnect EPS control unit connector A (2P).

12. Check for continuity between EPS control unit connector A (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the EPS control unit and body ground (G402). ■

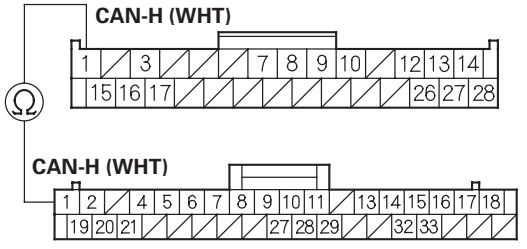
(cont'd)

Symptom Troubleshooting (cont'd)

13. Disconnect the gauge control module (tach) 36P connector.

14. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and gauge control module (tach) 36P connector terminal No. 1.

EPS CONTROL UNIT CONNECTOR D (28P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

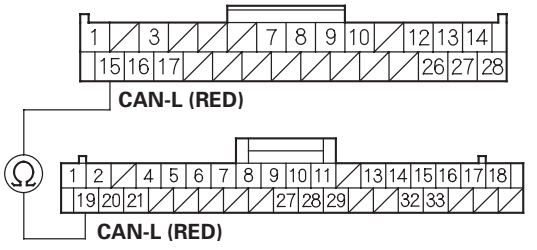
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the EPS control unit and the gauge control module (tach). ■

15. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and gauge control module (tach) 36P connector terminal No. 19.

EPS CONTROL UNIT CONNECTOR D (28P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the EPS control unit connectors, and repair if necessary. If no poor connections are found, replace the EPS control unit (see page 17-84). ■

NO—Repair open in the wire between the EPS control unit and the gauge control module (tach). ■

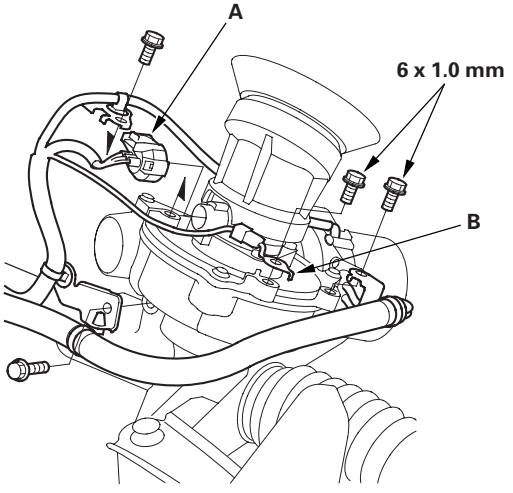
EPS Motor Removal and Installation

Removal

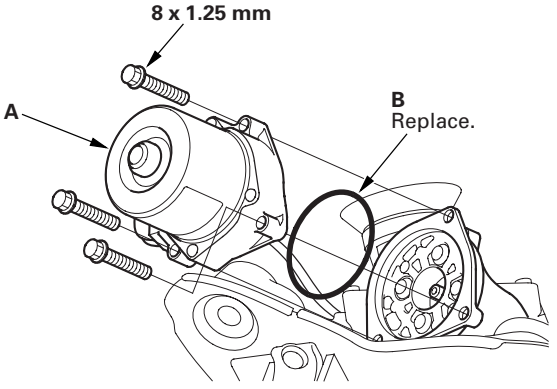
NOTE:
- Do not allow dust, dirt, or other foreign materials to enter the gearbox.
- Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

1. Remove the steering gearbox (see page 17-65).

2. Disconnect the torque sensor 3P connector (A) from the steering gearbox, then remove the wire harness clamp bolts and the ground terminal (B).



3. Remove the EPS motor (A) from the steering gearbox, then remove the O-ring (B) and discard it.



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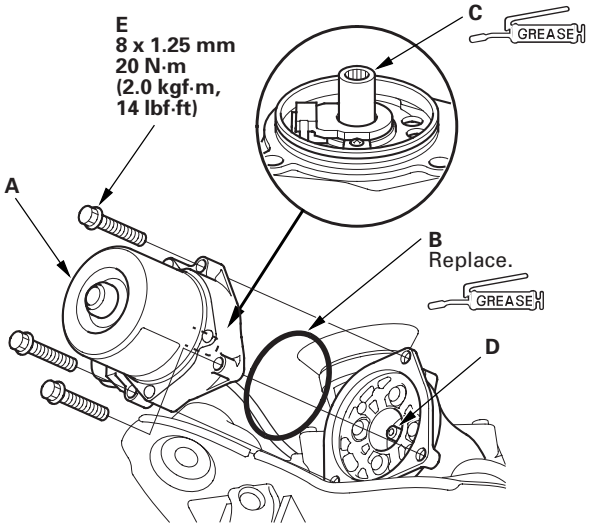
EPS Motor Removal and Installation (cont'd)

Installation

1. Clean the mating surface of the EPS motor (A) and the steering gearbox.



2. Apply a thin coat of silicone grease to the new O-ring (B), and carefully fit it on the EPS motor.

3. Apply steering grease into the EPS motor shaft (C).

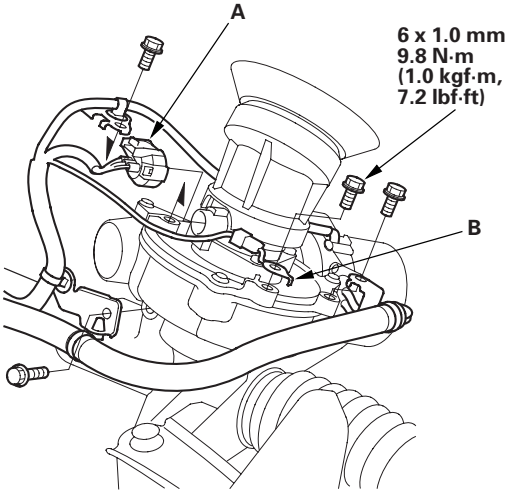
4. Set the EPS motor on the gearbox by engaging the EPS motor shaft and the worm shaft (D).

5. Turn the EPS motor two or three times to the right and left about 45 degrees. Make sure the EPS motor is evenly seated on the steering gearbox, and that the O-ring is not pinched between the mating surfaces.

6. Loosely install the motor mount bolts(E), then turn the steering shaft two or three times to the right and left about 45 degrees.

7. Tighten the motor mount bolts to the specified torque.

8. Connect the torque sensor 3P connector (A) to the steering gearbox, then install the wire harness clamp bolts and the ground terminal (B).



9. Finish the installation, and note these items:

   - Make sure the torque sensor 3P connector is properly connected.
   - Make sure the EPS motor and the EPS wires are not caught or pinched by any parts.

10. Install the steering gearbox (see page 17-72).

Steering Gearbox Removal and Installation

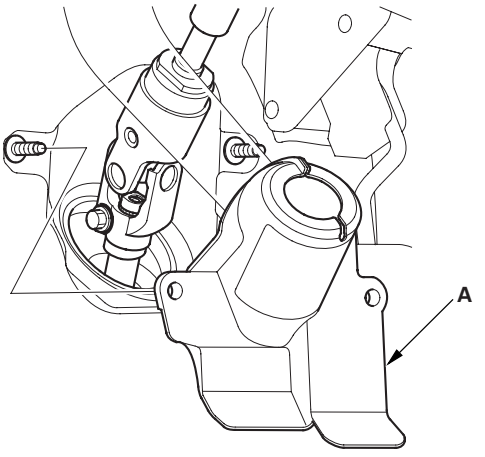
Special Tools Required
- Ball joint remover, 28 mm 07MAC-SL0A202
- Engine hanger adapter VSB02C000015 *
- Front subframe adaptor VSB02C000016 *
- 2006 Civic engine hanger VSB02C000025 *
- Engine support hunger, A and Reds AAR-T1256 *

* : These special tools are available through Honda Canada Inc. Technical Tools Department; FAX # 866-398-8665/e-mail: ch_technicaltools@ch. honda. com

Note these items during removal:
- Use solvent and a brush, wash any oil and dirt off the end of the steering gearbox. Avoid any electrical parts. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint, or damage to the cable reel may occur.

Removal

1. Do the battery terminal disconnection procedure (see page 22-68).
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
3. Remove the front wheels.
4. Remove the driver's airbag (see page 24-188), and the steering wheel (see page 17-6).
5. Remove the driver's dashboard undercover (see page 20-103).
6. Remove the steering joint cover (A).



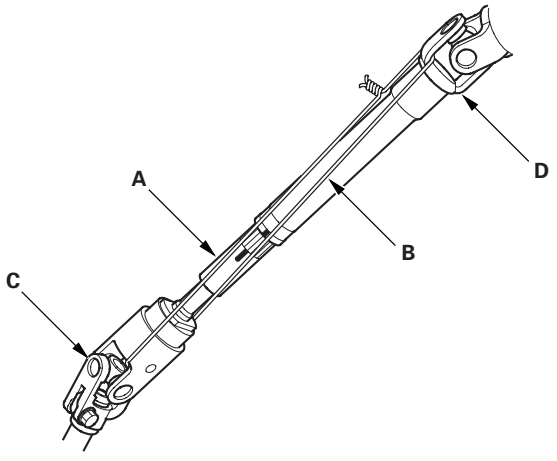
(cont'd)

Steering Gearbox Removal and Installation (cont'd)

7. Release the lock lever, and adjust the steering column to the full tilt up position, and to the full telescopic in position.

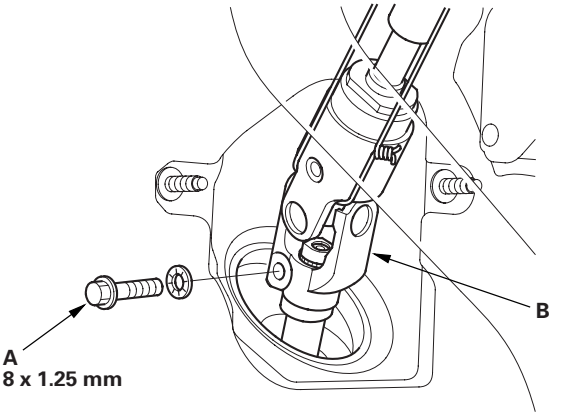
8. Tighten the lock lever.

9. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

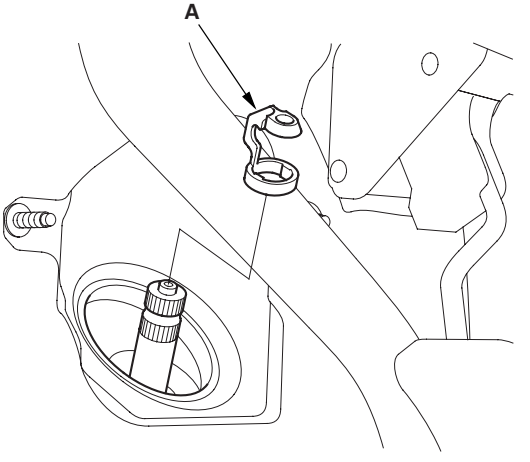


10. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.

11. Remove the steering joint bolt (A), and disconnect the steering joint by moving the steering joint (B) toward the column.



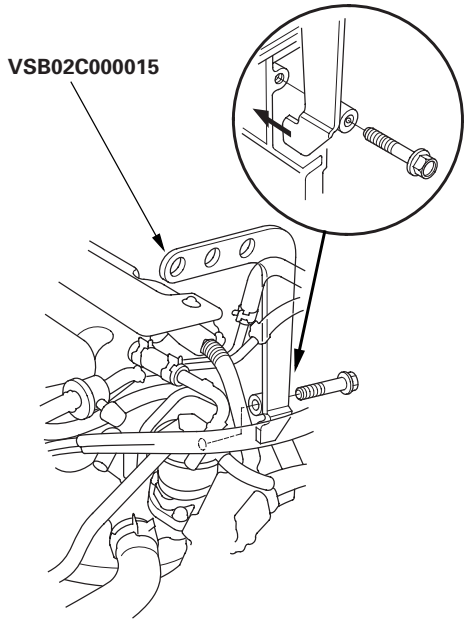
12. Remove the center guide (A) (if equipped), and discard it. The center guide is for factory assembly use only.



13. Remove the cowl cover and under cowl panel (see page 20-163).

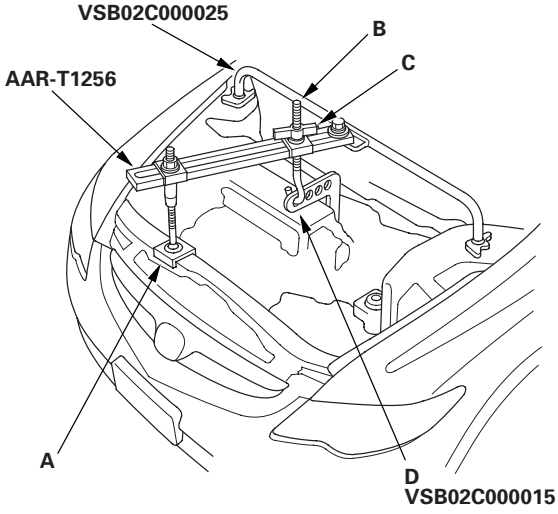
14. Remove the air cleaner housing (see page 11-345).

15. Attach the engine hanger adapter (VSB02C000015) to the threaded hole in the cylinder head.

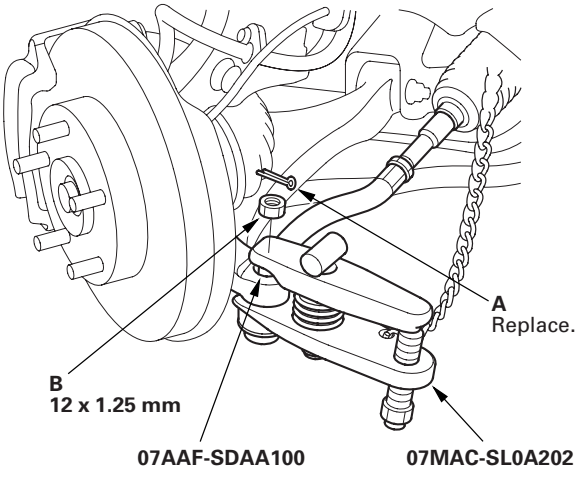


16. Install the front leg assembly (A), hook (B), and wing nut (C) from an A and Reds engine support hanger (AAR-T1256) onto the 2006 Civic engine hanger (VSB02C000025). Carefully position the engine hanger on the vehicle, and attach the hook to the forward hole in the engine hanger adapter (D). Tighten the wing nut by hand to lift and support the engine/transmission assembly.

    NOTE: Use care when working around the windshield.



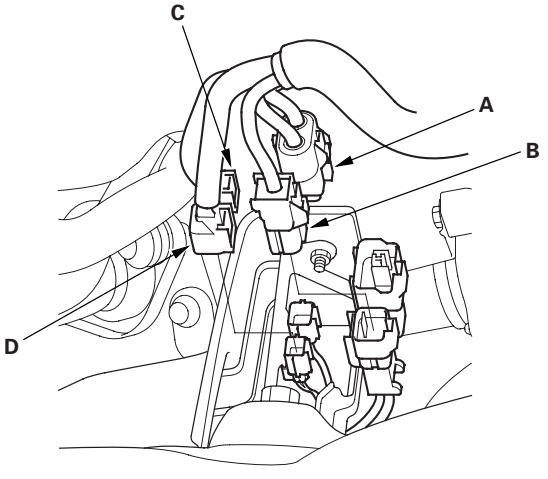
17. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.



18. Separate the tie-rod ball joint and the knuckle using the ball joint remover (see page 18-12).

19. Remove the front splash shield (see page 20-172).

20. Disconnect the EPS motor connector A (2P), the EPS motor connector B (1P), torque sensor 4P connector (C), the EPS motor angle sensor 6P connector (D), from passenger's side of the steering gearbox. Wrap the connectors with vinyl tape to avoid contamination from grease or water.



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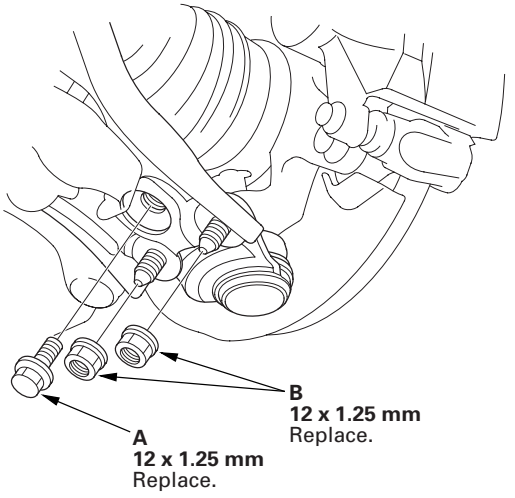
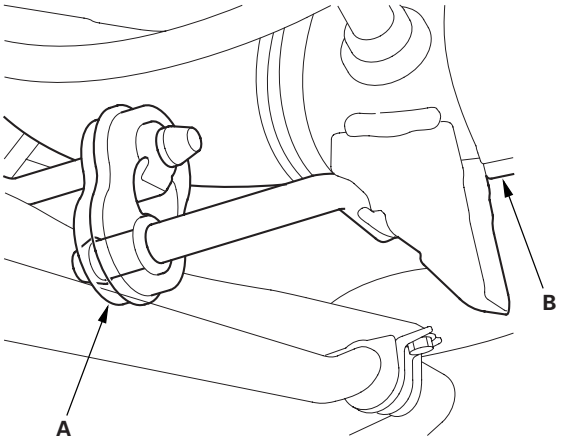
Steering Gearbox Removal and Installation (cont'd)

21. Remove the lower ball joint mounting bolt (A) and the self-locking nuts (B) from the lower arm.

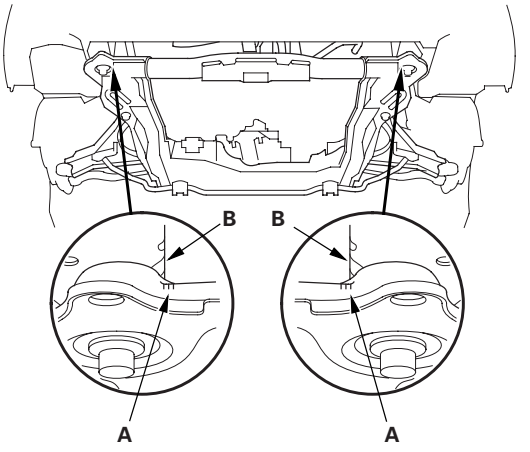


22. Disconnect the lower arm from the lower ball housing.

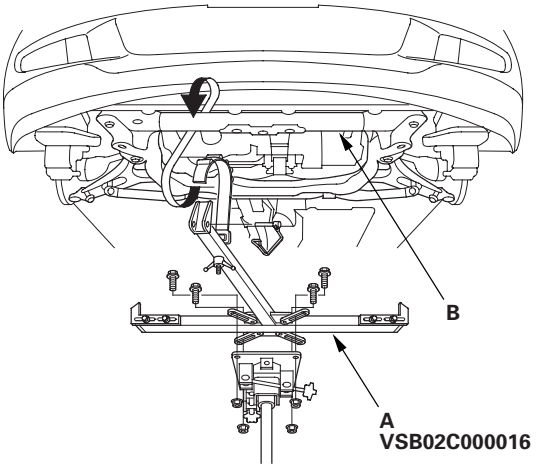
23. Remove the exhaust hanger (A) from the three way catalytic converter (TWC) (B).



24. Note the reference marks (A) on both sides of the subframe that line up with the body (B).

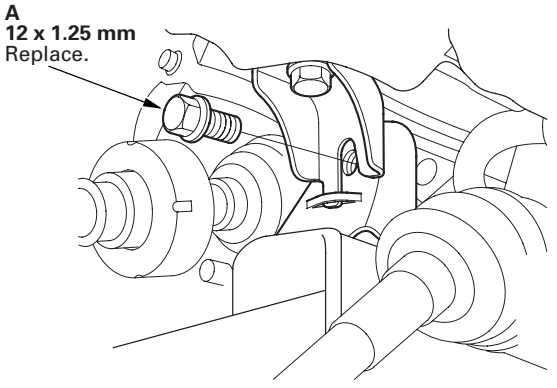


25. Attach the front subframe adaptor (VSB02C000016) (A) to the front subframe (B) and the transmission jack (model number LSL-W9371) or the powertrain lift (model number OTC-1585), then tighten the front subframe adaptor screw.

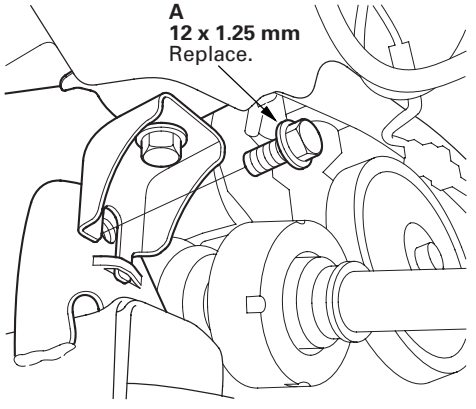


26. Make sure the front subframe is securely supported by the jack with the front subframe adaptor.

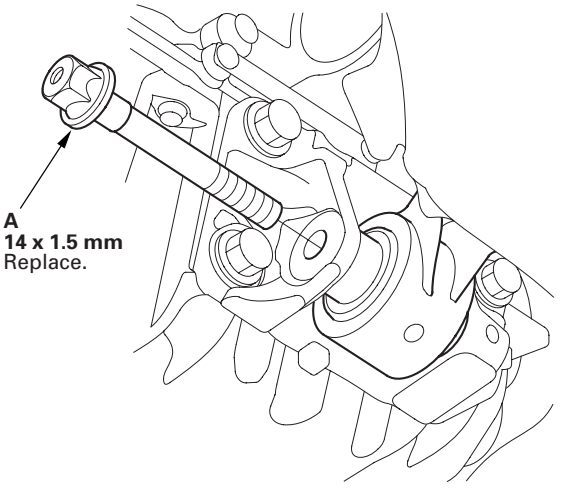
27. Remove the front subframe middle mount bolt (A) from the left side.



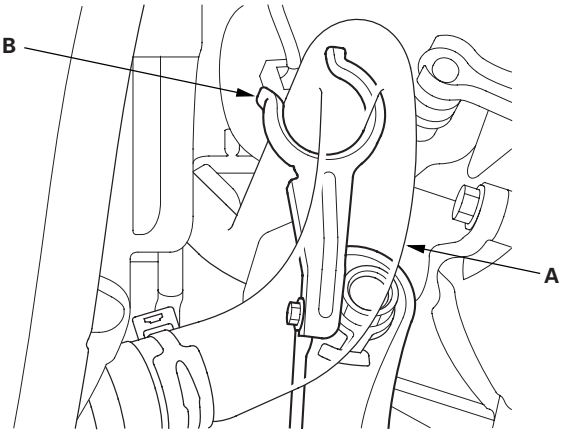
28. Remove the front subframe middle mount bolt (A) from the right side.



29. Remove the lower torque rod mounting bolt (A).



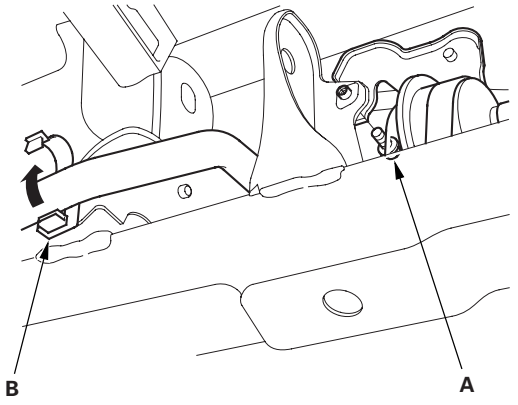
30. Remove the lower radiator hose (A) from the radiator hose stay (B).



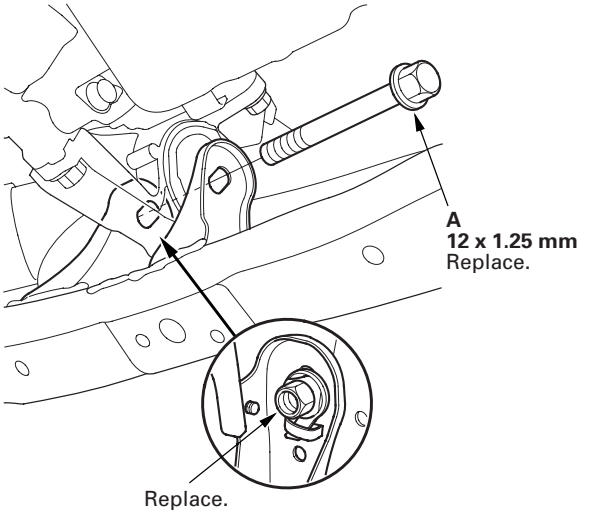
(cont'd)

Steering Gearbox Removal and Installation (cont'd)

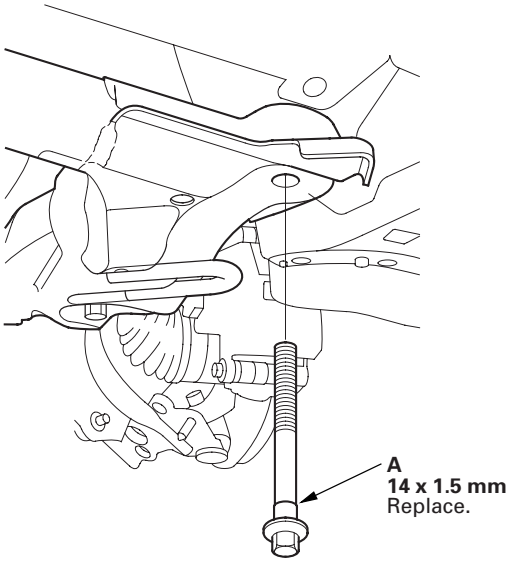
31. A/T: Remove the ATF filter mounting bolt (A), then open the ATF cooler hose clamp (B) on the front subframe.



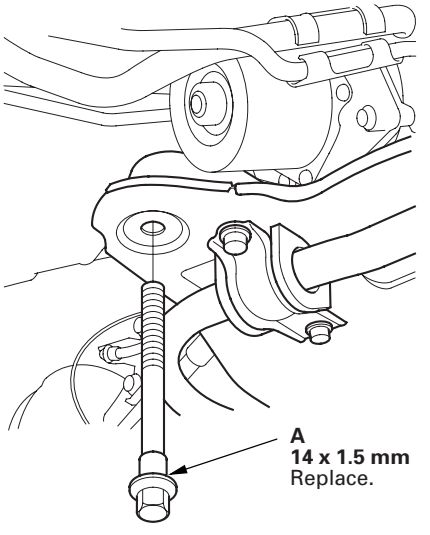
32. M/T: Remove the front engine mounting bolt (A).



33. Remove the front subframe front mounting bolts (A) from the right and left sides of the vehicle.

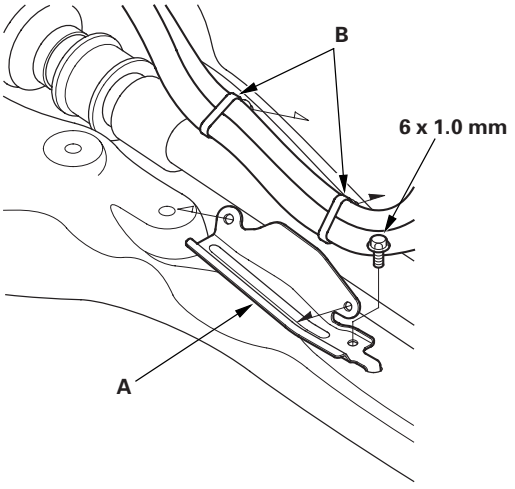


34. Remove the front subframe rear mounting bolts (A) from the right and left sides of the vehicle.

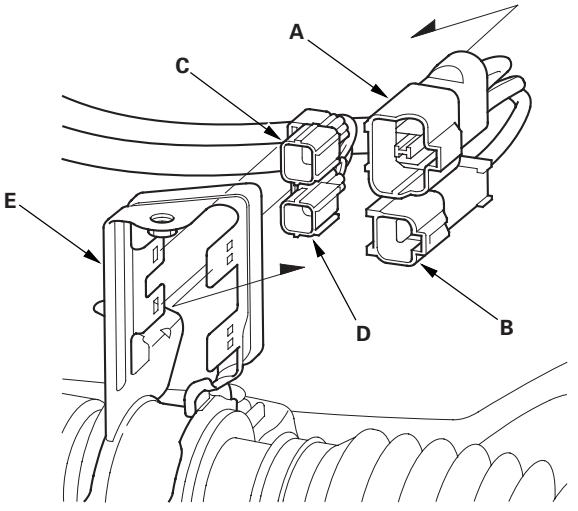


35. Lower the front subframe and steering gearbox as an assembly by lowering the jack slowly.

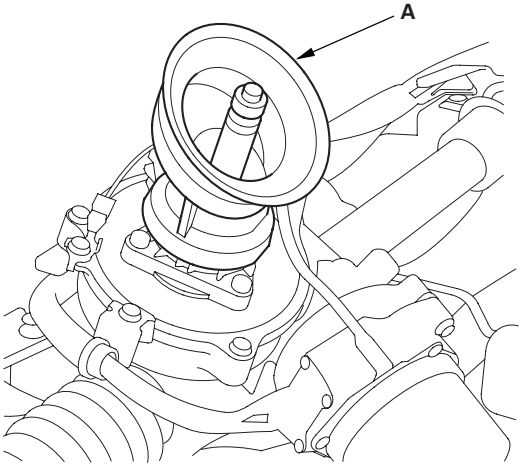
36. Remove the harness clamp bracket (A) from the front subframe, then remove the harness clips (B).



37. Remove the EPS motor connector A (2P), the EPS motor connector B (1P), torque sensor 4P connector (C), the EPS motor angle sensor 6P connector (D) from the passenger's side of the gearbox mounting bracket (E).



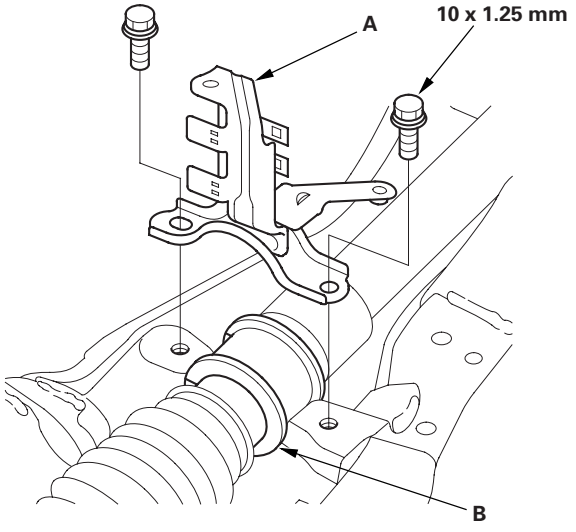
38. Remove the pinion shaft grommet (A) from the top of the torque sensor.



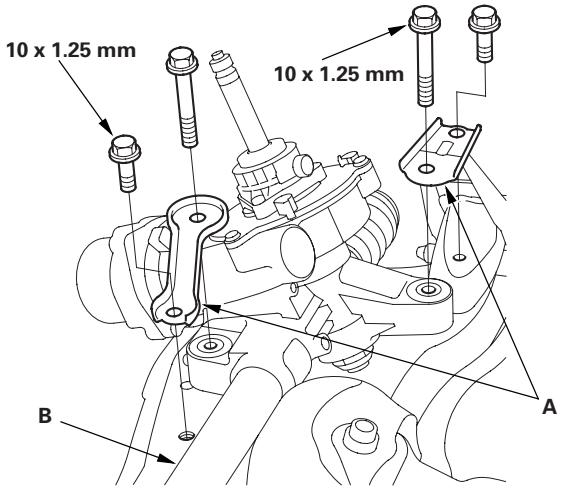
(cont'd)

Steering Gearbox Removal and Installation (cont'd)

39. Remove the two 10 mm bolts from the right side of the steering gearbox, then remove the gearbox mounting bracket (A) and the mounting cushion (B).



40. Remove the four 10 mm flange bolts from the left side of the steering gearbox, then remove the stiffener plates (A).

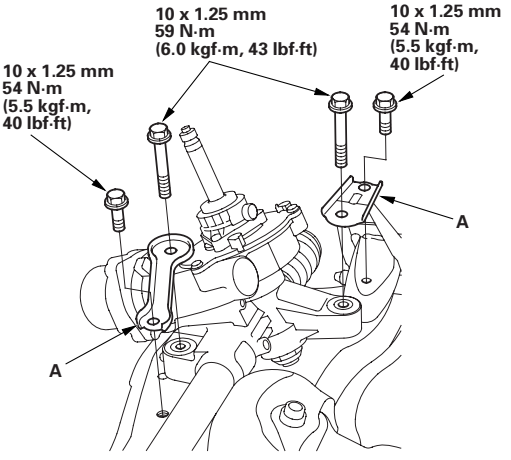


41. Remove the steering gearbox (B) from the front subframe.

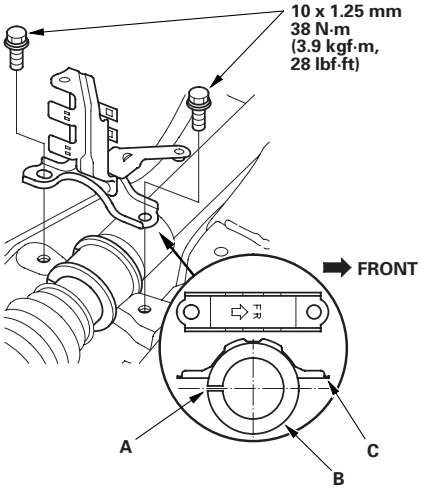
Installation

1. Place the steering gearbox in position on the front subframe.

2. Loosely install the stiffener plates (A) and the gearbox mounting bolts on the left side of the steering gearbox.



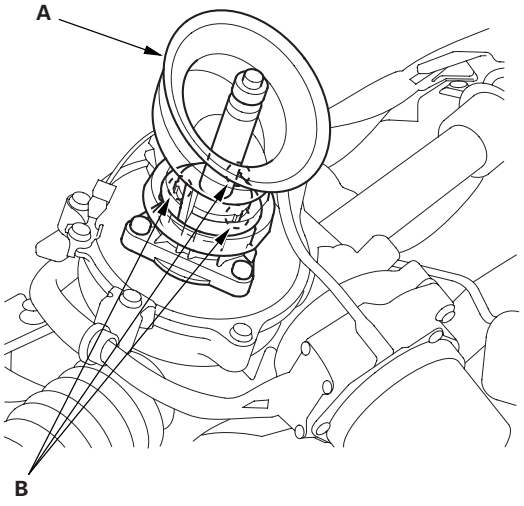
3. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the right side of the steering gearbox securely.



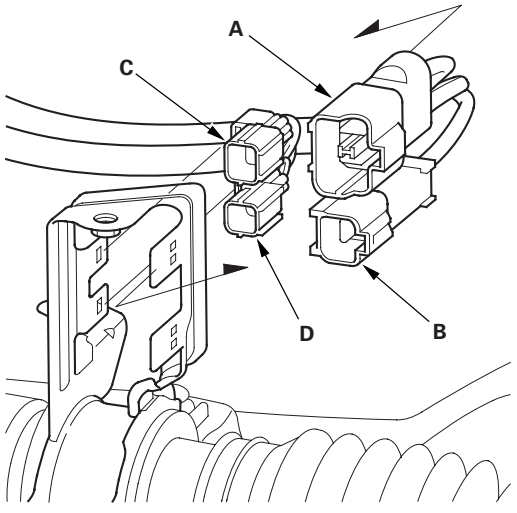
4. Install the gearbox mounting bracket (C) over the mounting cushion, and loosely install the two 10 mm bolts.

5. Tighten the 10 mm bolts on both sides of the steering gearbox to the specified torque alternately in two or more steps.

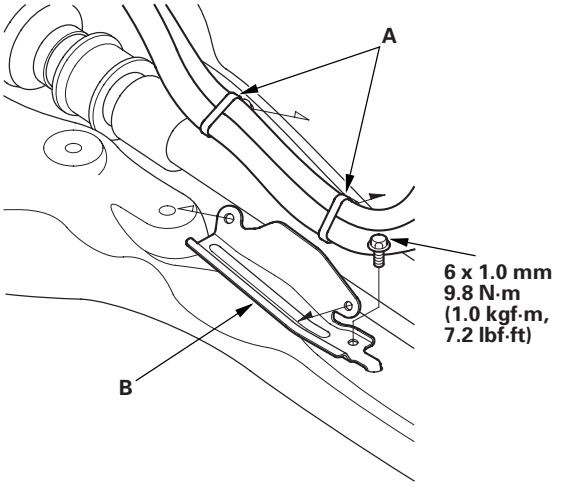
6. Install the pinion shaft grommet (A). Align the slot in the pinion shaft grommet with the lug portion (B) on the torque sensor. The grommet must not have a gap at the mating surface of the grommet and the torque sensor.



7. Install the EPS motor connector A (2P), the EPS motor connector B (1P), torque sensor 4P connector (C), the EPS motor angle sensor 6P connector (D) on the right side of the gearbox mounting bracket.



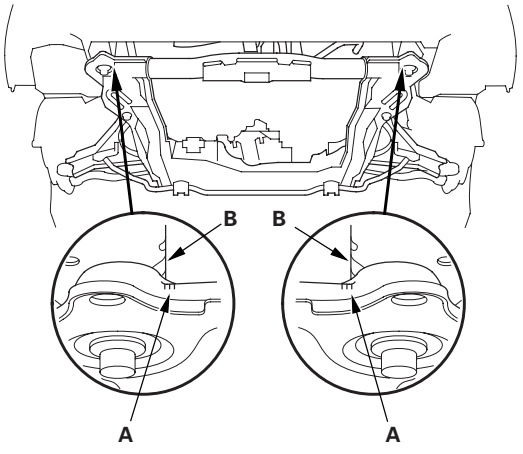
8. Install the harness clips (A) to the harness clamp bracket (B), then install the harness clamp bracket to the front subframe.



9. Carefully raise the front subframe with the front subframe adaptor and the transmission jack or the powertrain lift until the front subframe is in position, then loosely install the new front subframe mounting bolts.

   NOTE: Be sure that the pinion shaft grommet is in place securely. Check whether the pinion shaft grommet is not turning up. Incorrect installation can cause leakage of water, mud, and noise.

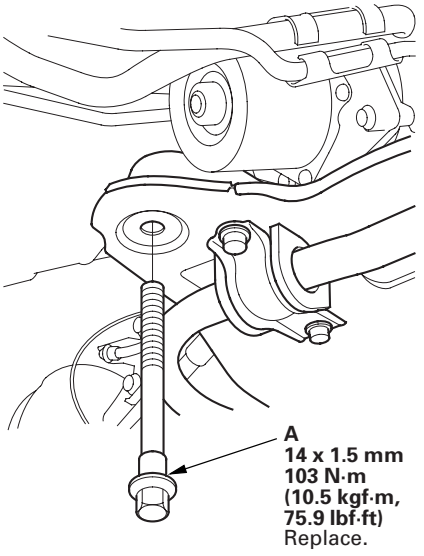
10. Align the front subframe reference marks (A) to the body (B), as noted during removal.



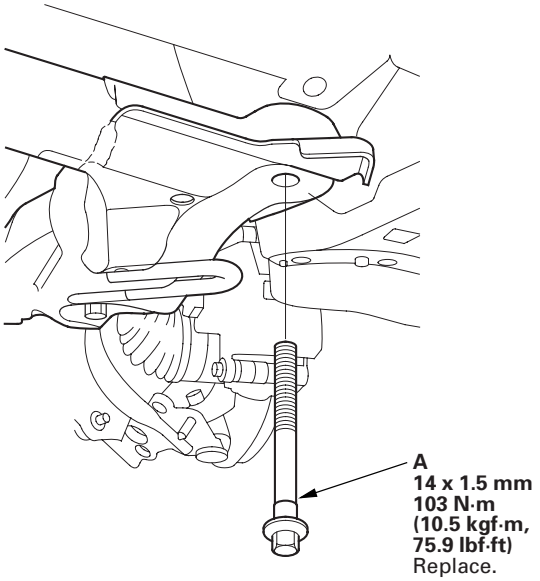
(cont'd)

Steering Gearbox Removal and Installation (cont'd)

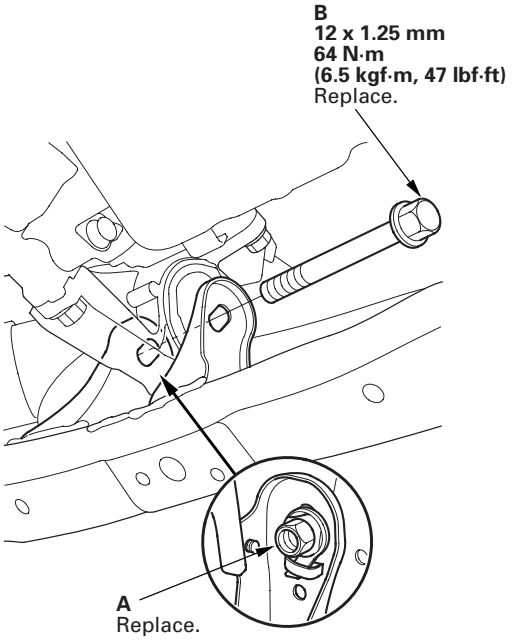
11. Install the new front subframe rear mounting bolts (A), and tighten them to the specified torque.



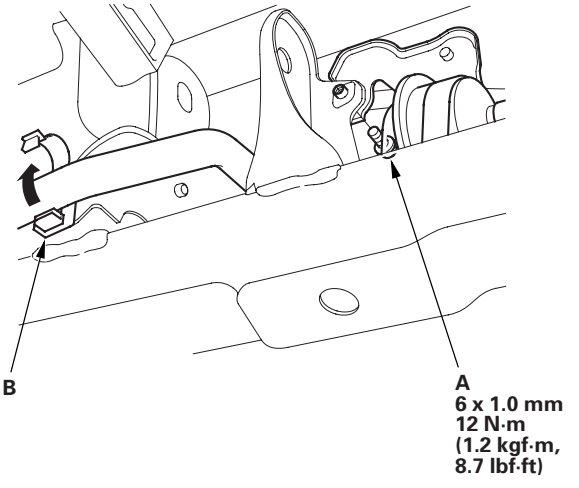
12. Install the new front subframe front mounting bolts (A), and tighten them to the specified torque.



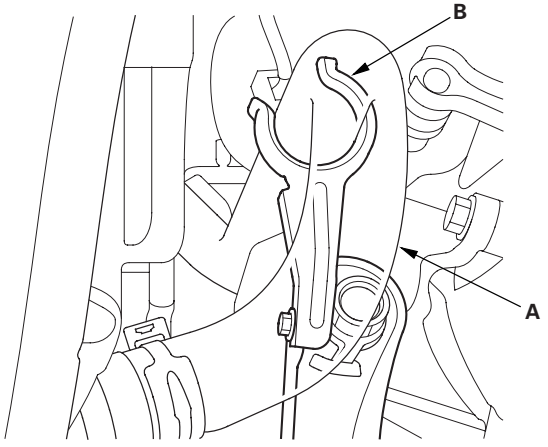
13. M/T: Install the new nut (A) and the new front engine mounting bolt (B), and tighten the mounting bolt to the specified torque.



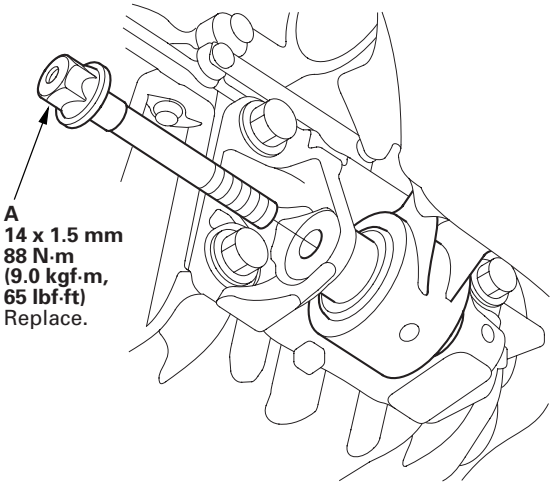
14. A/T: Install the ATF filter mounting bolt (A), then clamp the ATF cooler hose with the clamp (B).



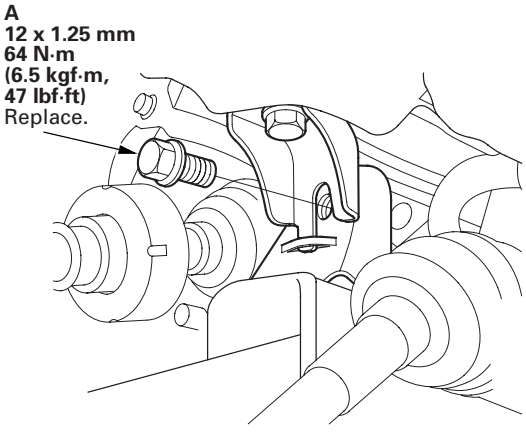
15. Install the lower radiator hose (A) to the radiator hose stay (B).



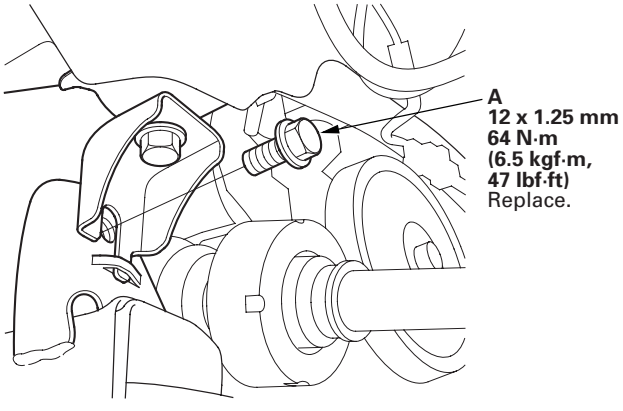
16. Install the new lower torque rod mounting bolt (A), and tighten to the specified torque.



17. Install the new front subframe middle mount bolt (A) on the left side, and tighten it to the specified torque.



18. Install the new front subframe middle mount bolt (A) on the right side, and tighten it to the specified torque.

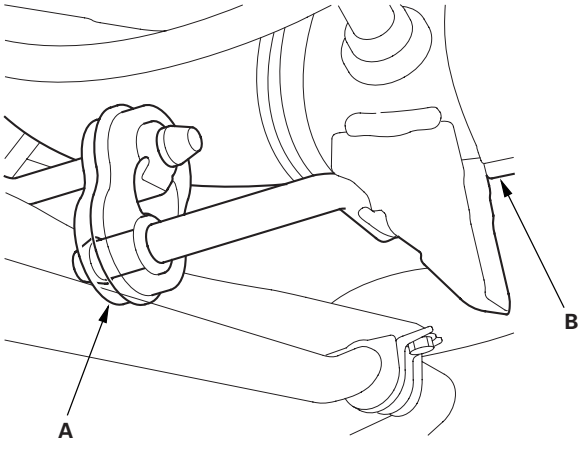


19. Lower the transmission jack supporting the front subframe.

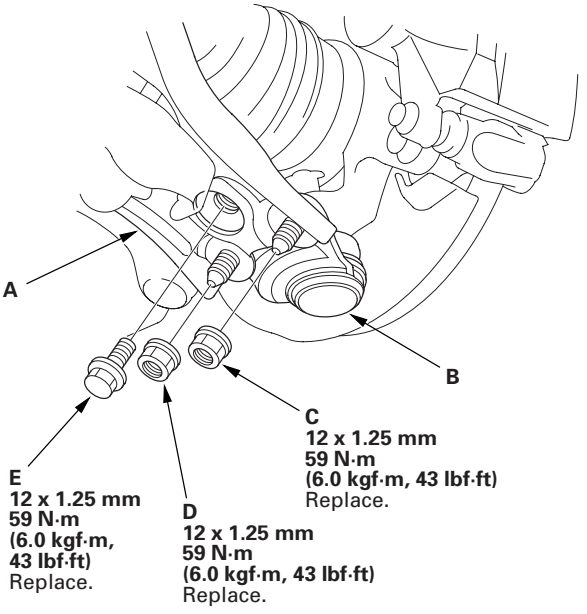
(cont'd)

Steering Gearbox Removal and Installation (cont'd)

20. Install the exhaust hanger (A) to the three way catalytic converter (TWC) (B).

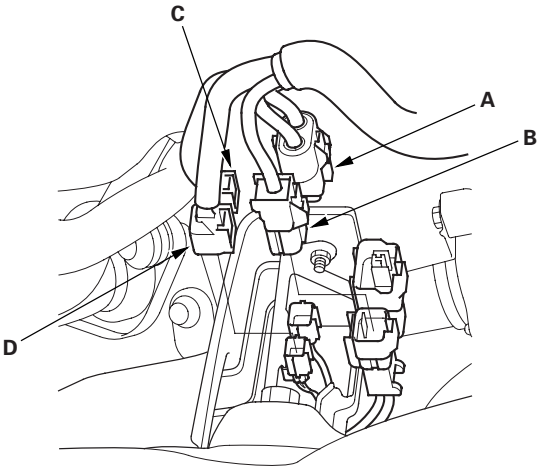


21. Connect the lower arm (A) to the lower ball joint (B).



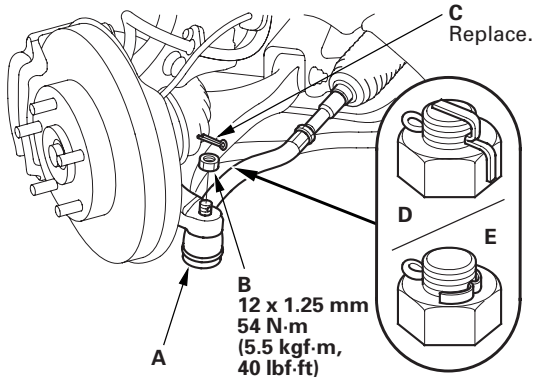
22. Install a new flange bolt and the new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the self-locking nut on the front (C), the self-locking nut on the rear (D), then the flange bolt (E).

23. Remove the vinyl tape, then connect the EPS motor connector A (2P), the EPS motor connector B (1P), torque sensor 4P connector (C), the EPS motor angle sensor 6P connector (D) to the steering gearbox. Make sure to push these connectors until you hear a click so that the connectors are secured.



24. Install the front splash shield (see page 20-172).

25. Wipe off any grease contamination from the ball joint tapered section and the threads. Reconnect the tie-rod ends (A) to the steering knuckles. Install the 12 mm nut (B) and tighten it.



26. Install the new cotter pin (C), and bend it as shown (D) or (E).

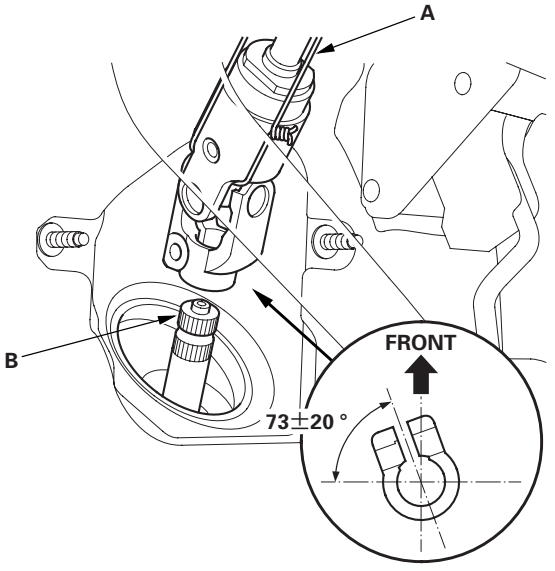
27. Install the front wheel, then set the wheels in the straight ahead position.

    NOTE: Before installing the wheel, clean the mating surfaces between the brake disc and inside of the wheel.

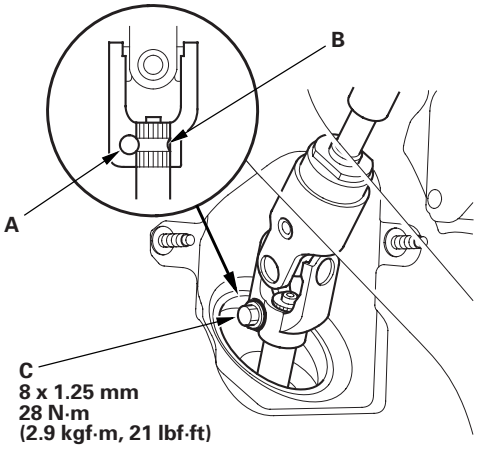
28. Lower the vehicle.

29. Center the steering rack within its stroke in the steering joint connection.

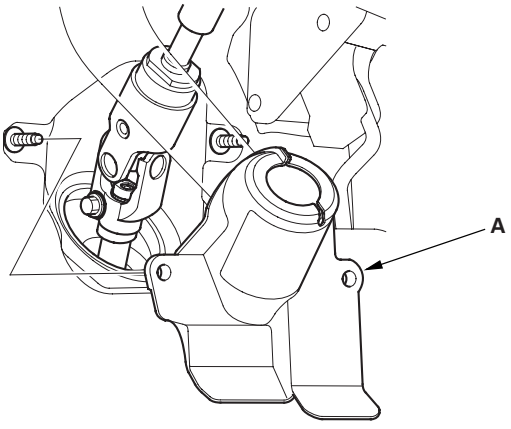
30. With the rack in the straight ahead driving position, cut the wire (A) and slip the lower end of the steering joint onto the pinion shaft (B) in the range shown.



31. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove of the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to the specified torque.



32. Install the steering joint cover (A).



33. Install the driver's dashboard under cover (see page 20-103).

(cont'd)

Steering Gearbox Removal and Installation (cont'd)

34. Install the steering wheel (see page 17-8).

35. With the tires raised off the ground (vehicle on a lift), check for the following symptoms by turning the steering wheel fully to the right and left several times.

Symptom	Probable cause
Rubbing sound coming from the lower steering column area.	Steering column joint is contacting the cover.
Grating sound from the lower steering column area, or a rough feeling during steering.	Poor engagement of the pinion shaft serrations.
Noise from around the steering wheel during steering.	Poor engagement of the SRS cable reel with the steering wheel, or a damaged cable reel.

36. Install the air cleaner housing (see page 11-345).

37. Install the under cowl panel and cowl cover (see page 20-163).

38. Do the battery terminal reconnection procedure (see page 22-68), and do these tasks:

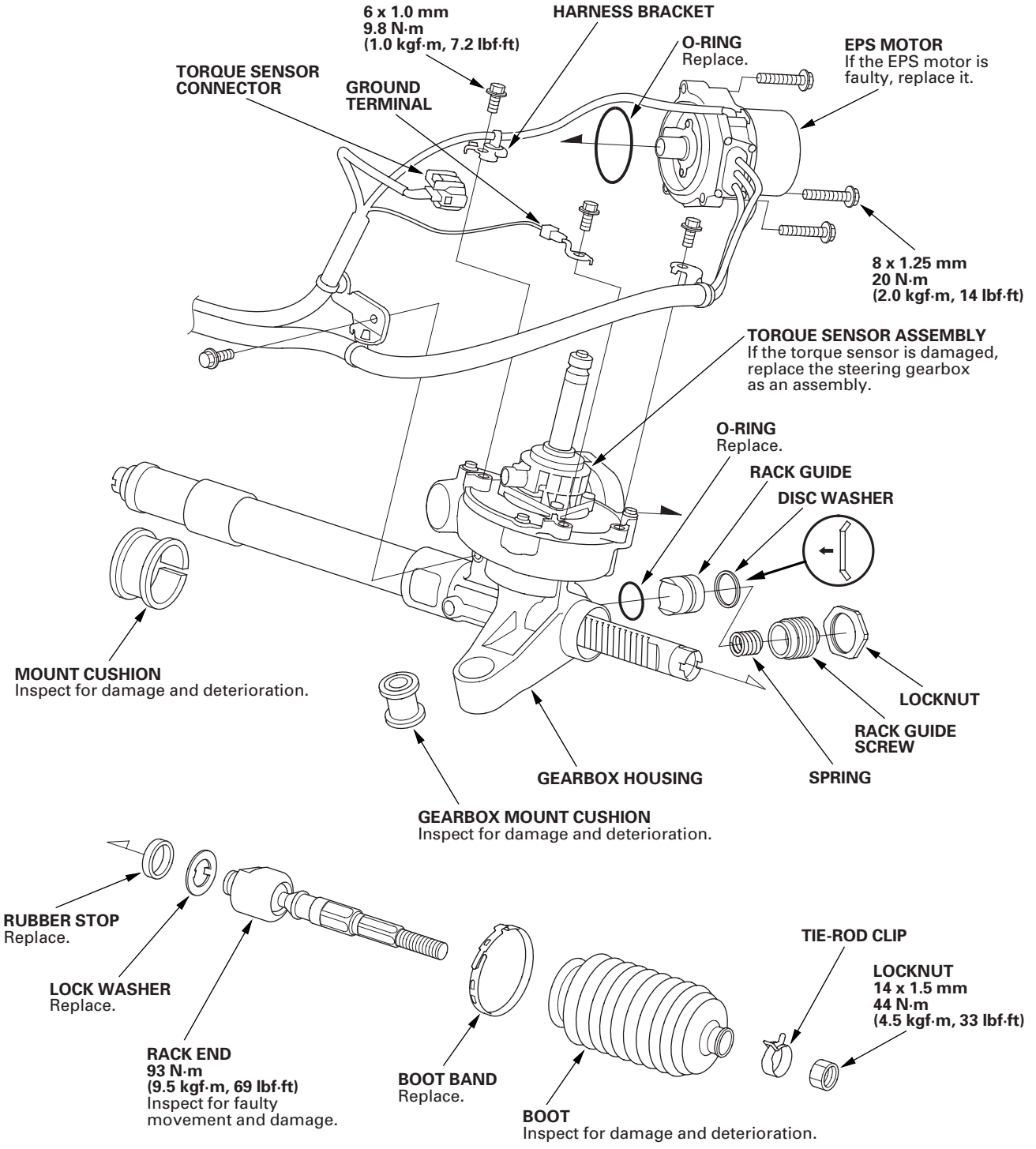
    - Turn the ignition switch to ON (II) and check that the SRS indicator comes on for about 6 seconds and then goes off.
    - Make sure the horn and turn signal switches work properly.
    - Make sure the steering wheel switches work properly.

39. After installation, do the following checks:

    - Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft splines.
    - Set the steering column to the center tilt position, and to the center telescopic position, then check the wheel alignment and adjust (see page 18-5).
    - Make sure the steering wheel spokes are centered.
    - Start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.
    - Do the memorizing for the torque sensor neutral position (see page 17-22).

Rack End Removal and Installation

Exploded view



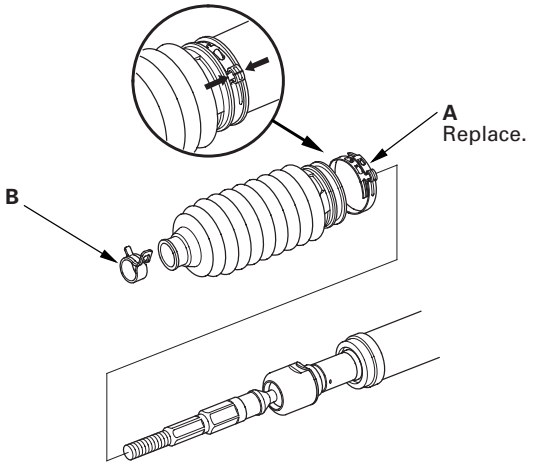
(cont'd)

Rack End Removal and Installation (cont'd)

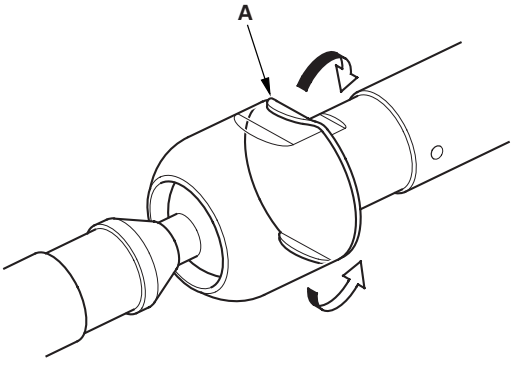
Removal

NOTE: Do not allow dust, dirt, or other foreign materials to enter the steering gearbox.

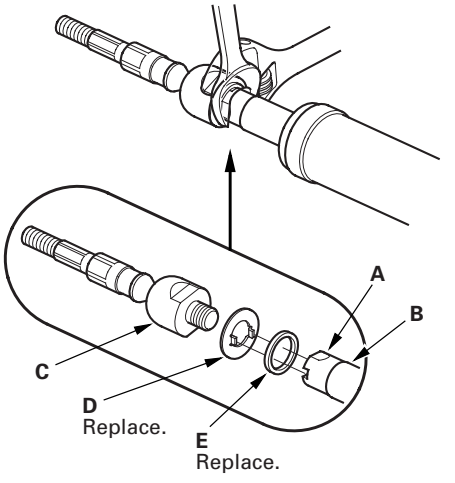
1. Remove the boot bands (A), and discard them. Remove the tie-rod clips (B), and pull the boots away from the ends of the gearbox.



2. Unbend the lock washer (A).



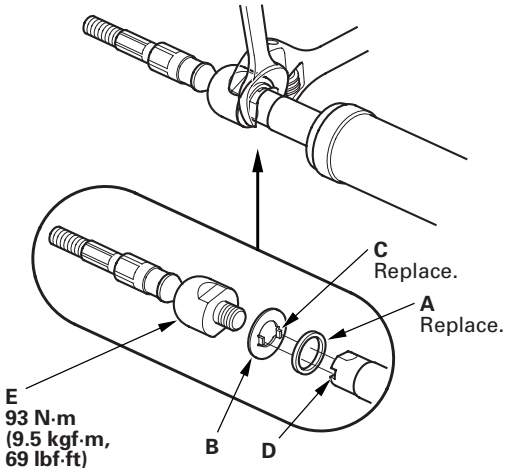
3. Hold the surface sections (A) of the steering rack (B) with one wrench, and unscrew both rack ends (C) with another wrench. Be careful not to damage the rack shaft surface with the wrench.



4. Remove the lock washer (D) and rubber stop (E).

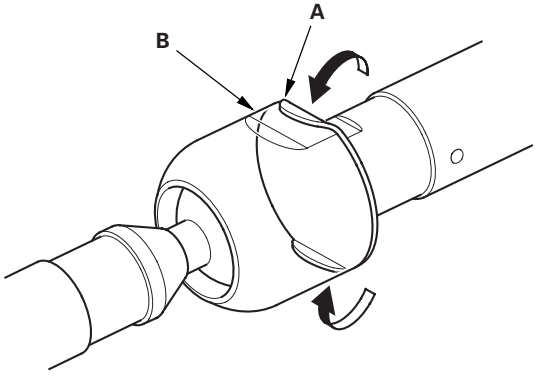
Installation

1. Install a new rubber stop (A) and a new lock washer (B). Align the lock washer tabs (C) with the slots (D) on the rack end (E) while holding the lock washer in place. Repeat this step for the other side of the rack shaft.

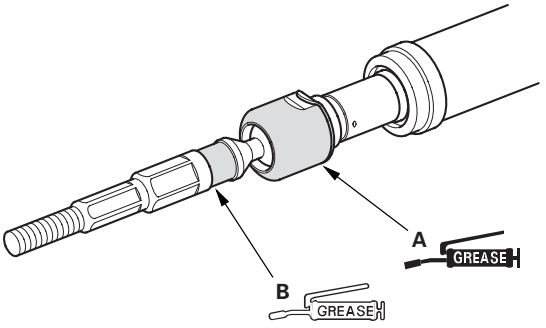


2. Hold the flat surface sections of the steering rack with one wrench, and tighten both rack ends with another wrench. Be careful not to damage the rack surface with the wrench.

3. Bend the lock washer (A) back against the flat spots (B) on the rack end ball joint housing.



4. Apply multipurpose grease to the circumference of the rack end joint housing (A) and lock washer.



(P/N 08798-9013)

5. Apply a light coat of silicone grease (P/N 08798-9013) to the boot fitting grooves (B) on the rack ends.

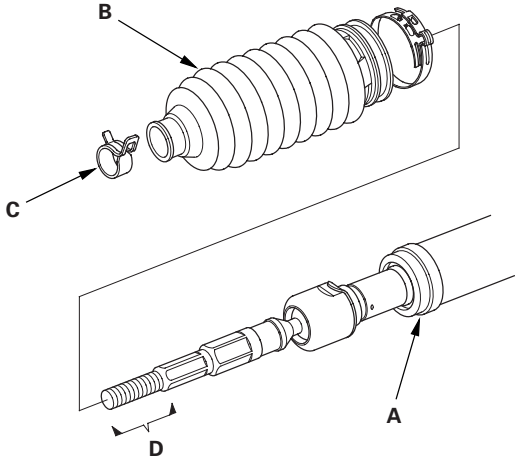
   NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

(cont'd)

Rack End Removal and Installation (cont'd)

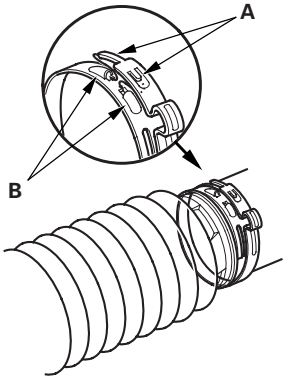
6. Center the steering rack within its stroke.

7. Clean off any grease or contamination from the boot installation grooves (A) around the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.

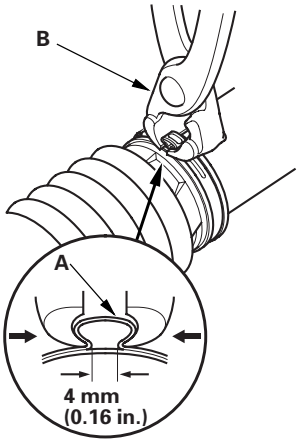


8. After installing the boots, wipe the grease off the thread section (D) of the rack end.

9. Install the new boot bands by aligning the tabs (A) with the holes (B) of the band.



10. Close the ear portion (A) of the band with commercially available pincers Oetiker 1098 or equivalent (B).



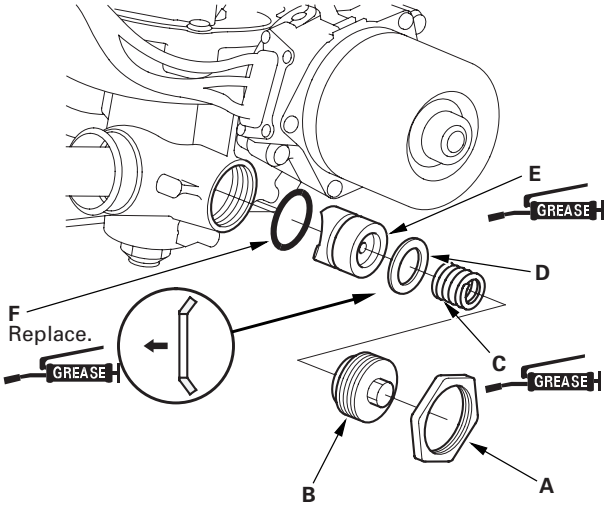
11. Slide the rack shaft right and left to be certain that the boots are not deformed or twisted.

Rack Guide Removal/Installation

NOTE: During removal/installation, do not allow dust, dirt, or other foreign materials to enter the steering gearbox.

1. Remove the steering gearbox (see page 17-65).

2. Loosen the locknut (A), then remove the rack guide screw (B), the spring (C), the disc washer (D), and the rack guide (E).



3. Remove the O-ring (F) from the rack guide. Wipe the grease off the sliding surface of the rack guide.

4. Apply multipurpose grease to the new O-ring, then install it to the rack guide.

5. Apply multipurpose grease to the sliding surface and the circumference of the rack guide, and install it onto the gearbox housing. Wipe the grease off the threaded section of the housing.

6. Apply multipurpose grease to both ends of the spring, and install it onto the gearbox housing.

7. Install the disc washer with its convex side facing the rack guide.

8. Remove the old sealant from the rack guide screw and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads. Loosely install the rack guide screw on the steering gearbox.

   NOTE: If more than 5 minutes has passed after applying the sealant, remove the old sealant and residue, and apply new sealant.

9. Loosely install the locknut.

10. Adjust the rack guide screw (see page 17-15). After adjusting, check that the rack moves smoothly by sliding the rack right and left.

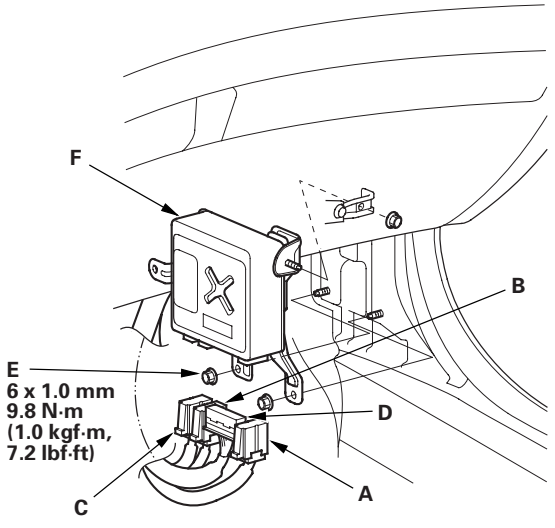
EPS Control Unit Removal/Installation

1. Do the battery terminal disconnection procedure (see page 22-68).

2. Remove the passenger's dashboard lower cover (see page 20-102).

3. Remove the passenger's side kick panel (see page 20-66).

4. Disconnect EPS control unit connectors A (2P), connector B (2P), connector C (2P), and connector D (28P).



5. Remove the nuts (E) from the EPS control unit (F).

6. Remove the EPS control unit.

7. Install the EPS control unit in the reverse order of removal.

8. Do the battery terminal reconnection procedure (see page 22-68), and do these tasks:

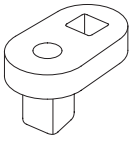
   - Make sure the horn and turn signal switches work properly.
   - Make sure the steering wheel switches work properly.
   - If the EPS control unit is replaced, the EPS control unit must memorize the torque sensor neutral position (see page 17-22).

9. After installation, start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.

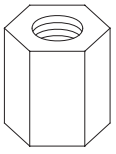
Suspension

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAA-SVAA100	Strut Nut Adapter	1
②	07AAF-SDAA100	Ball Joint Thread Protector, 12 mm	1
③	07AAF-SVAA100	Bushing Driver	1
④	07AAF-SVAA200	Receiver Set	1
⑤	07GAD-SD40101	Attachment, 78 x 90 mm	1
⑥	07GAF-SD40100	Hub Dis/Assembly Tool, 42 mm	1
⑦	07GAF-SE00100	Hub Dis/Assembly Tool, 40 mm	1
⑧	07GAF-SE00200	Attachment, 40 mm	1
⑨	07MAC-SL0A102	Ball Joint Remover, 32 mm	1
⑩	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑪	071AF-S3VA000	Ball Joint Thread Protector, 14 mm	1
⑫	07746-0010500	Attachment, 62 x 68 mm	1
⑬	07749-0010000	Driver Handle	1
⑭	07965-SD90100	Support Base	1



①



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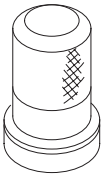

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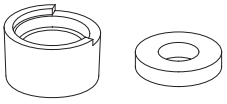

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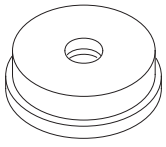

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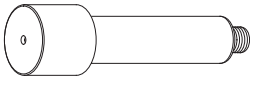

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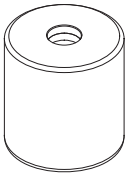

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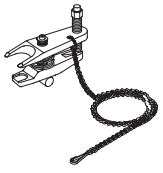

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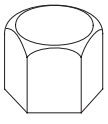

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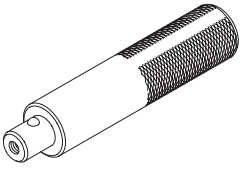

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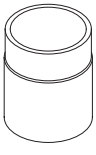
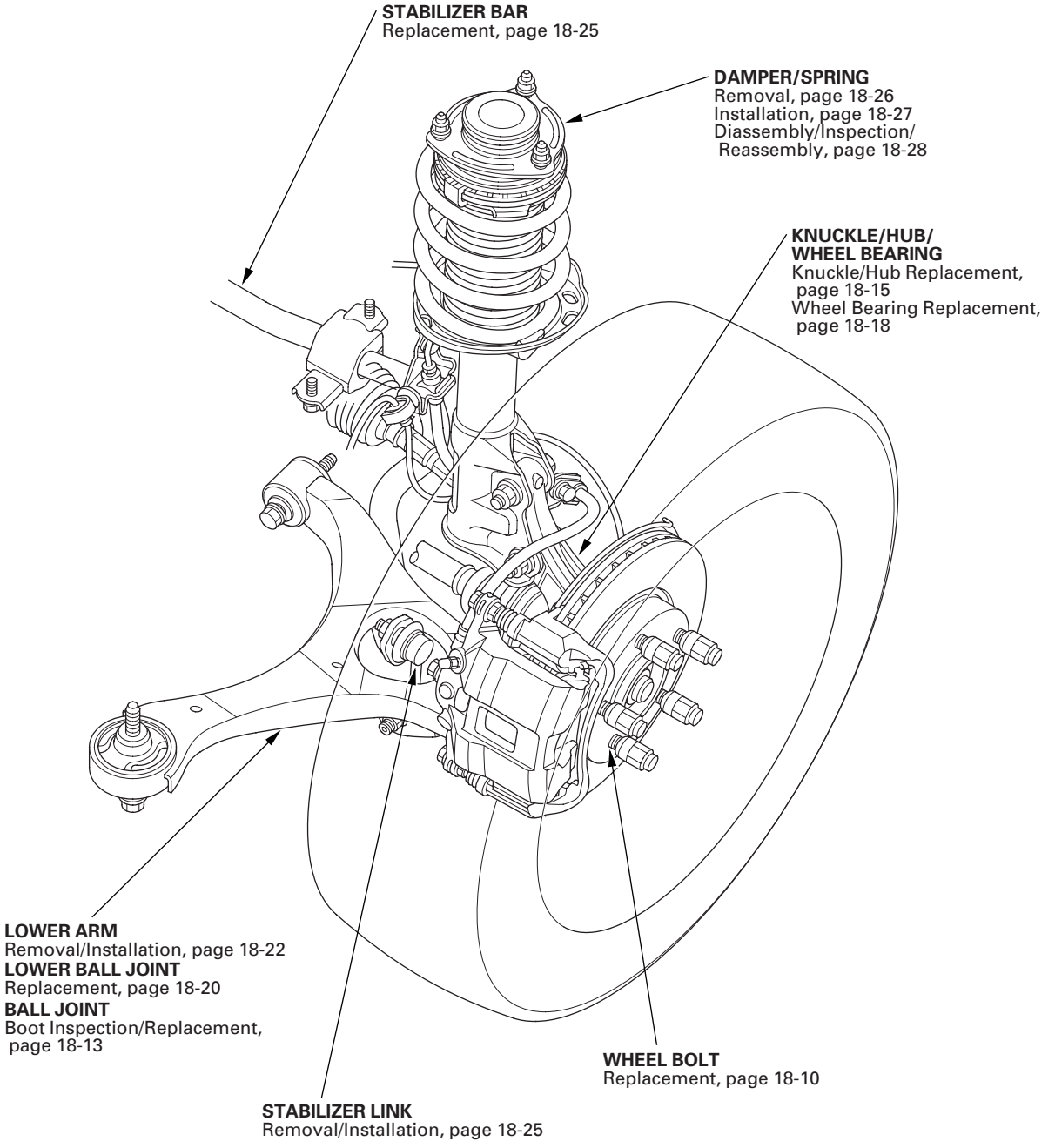


⑭

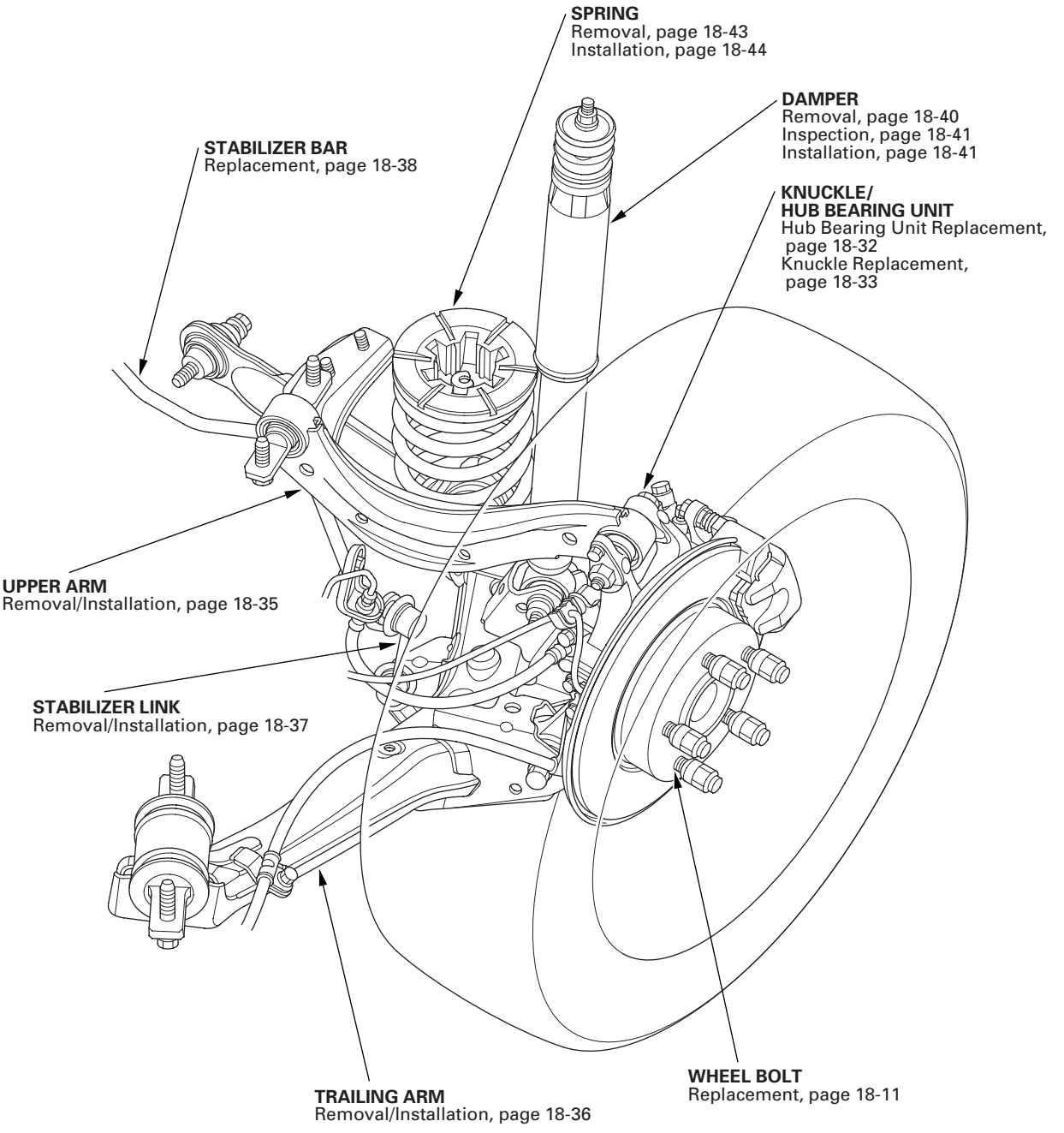
Component Location Index

Front Suspension



Component Location Index (cont'd)

Rear Suspension



Wheel Alignment

The suspension can be adjusted for front camber, front toe, and rear toe. However, each of these adjustments are related to each other. For example, when you adjust camber, the toe will change. Therefore, you must adjust the front wheel alignment whenever you adjust camber or toe.

Pre-Alignment Checks

For proper inspection and adjustment of the wheel alignment, do these checks:

1. Release the parking brake to avoid an incorrect measurement.

2. Make sure the suspension is not modified.

3. Make sure the fuel tank is full, and that the spare tire, the jack, and the tools are in place on the vehicle.

4. Check the tire size and tire pressure.

   Tire size ('06-08 models):
   Except Type S model:
   Front/Rear: P205/55R16 89H
   Type S model:
   Front/Rear: P215/45R17 87V

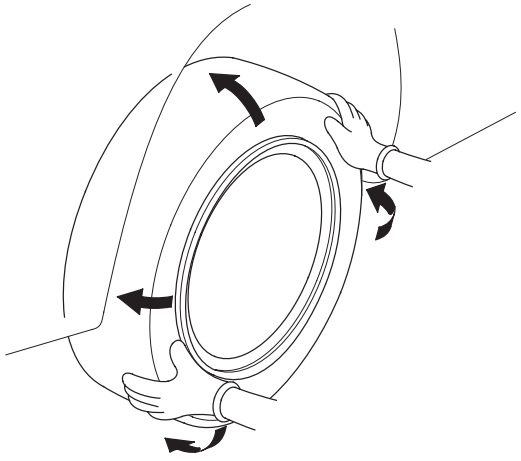
   Tire size ('09 model):
   Front/Rear: P215/45R17 87V

   Tire Pressure ('06-08 models) (at cold):
   Except Type S model:
   Front/Rear: 220 kPa (2.2 kgf/cm², 32 psi)
   Type S model:
   Front/Rear: 230 kPa (2.3 kgf/cm², 33 psi)

   Tire Pressure ('09 model) (at cold):
   Front/Rear: 230 kPa (2.3 kgf/cm², 33 psi)

5. Check the runout of the wheels and tires (see page 18-9).

6. Check the suspension ball joints (Hold a tire with your hands, and move it up and down and right and left to check for movement).



7. Before doing alignment inspections, be sure to remove all extra weight from the vehicle, and no one should be inside the vehicle (driver or passengers).

8. Bounce the vehicle up and down several times to stabilize the suspension.

9. Check that the steering column is set at the center tilt and telescopic position.

Caster Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Check the caster angle.

   Caster angle: 7 ° 00 ' ±1 °

   - If the measurement is within specifications, measure the camber angle.
   - If the measurement is not within specifications, check for bent or damaged suspension components.

(cont'd)

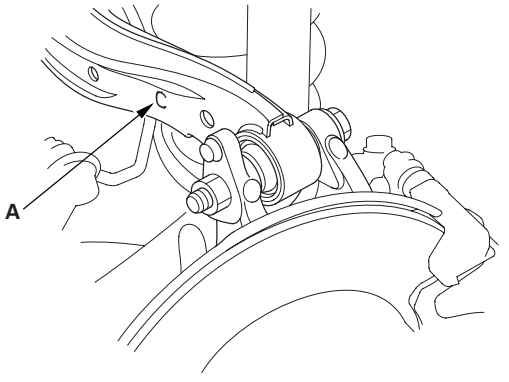
Wheel Alignment (cont'd)

Camber Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Check the camber angle.

   NOTE:
   - There are two types of rear upper arms. Those that are marked with "C" (A), and those with no marks. Be sure to use the correct alignment specifications.
   - If the measurement is within specification, measure the toe-in.
   - If the measurement for the front camber is outside the specification, go to front camber adjustment.
   - If the measurement for the rear camber is outside the specification, check for bent or damaged suspension components.

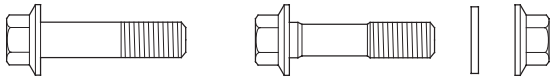


Camber angle:
Front: 0 °00 ′ ±30 ′
(Maximum difference between the front right and left side: 0 °35 ′)
Rear (without "C" marks on the upper arm):
—1 °30 ′ $^{+1°05′}_{-0°45′}$
Rear (with "C" marks on the upper arm):
—0 °45 ′ $^{+1°05′}_{-0°45′}$

Front Camber Adjustment

The front camber can be adjusted by exchanging one or both of the damper pinch bolts with a smaller diameter adjusting bolt. The difference between the adjusting bolt diameter and the pinch bolt hole diameter allows for a small range of adjustment.

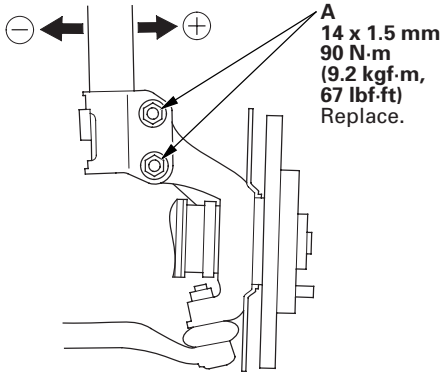
Damper pinch bolt **Adjusting bolt set: P/N 04512-SNA-305**



1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheels.

3. Loosen the damper pinch bolts (A), and adjust the camber angle by moving the bottom of the damper within the range of the damper pinch bolt free play.



4. Tighten the damper pinch bolts to the specified torque.

5. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheels.

6. Lower the vehicle to the ground, and bounce the front of the vehicle up and down several times to stabilize the suspension.

7. Measure the camber angle.

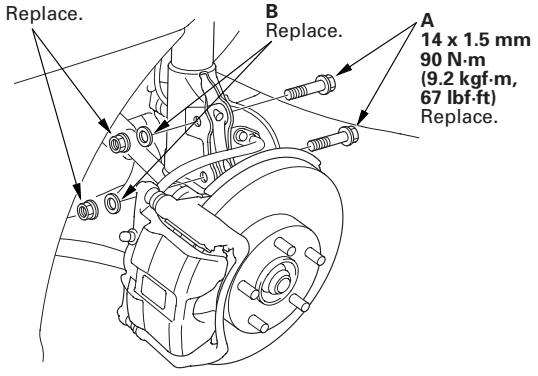
   - If the measurement is within specification, measure the toe.
   - If the measurement is not within specification, go to step 8.

8. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

9. Remove the front wheels.

10. Replace the damper pinch bolts with the adjusting bolts (A), and adjust the camber angle.

    NOTE:
    - Install the washers (B) included adjusting bolt set between the front damper and self-locking nut.
    - The camber angle can be adjusted up to ±25 ′ (center of tolerance) by replacing one damper pinch bolt with the adjusting bolt.
    - The camber angle can be adjusted up to 50 ′ by replacing both damper pinch bolts with the adjusting bolts.



11. Tighten the adjusting bolts to the specified torque value.

12. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheels.

13. Lower the vehicle to the ground, and bounce the front of the vehicle up and down several times to stabilize the suspension.

14. Measure the camber angle. If the camber angle is not within specification, repeat steps 8 through 13 to readjust the camber angle. If the camber measurement is correct, measure toe-in, and adjust it if necessary.

Front Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

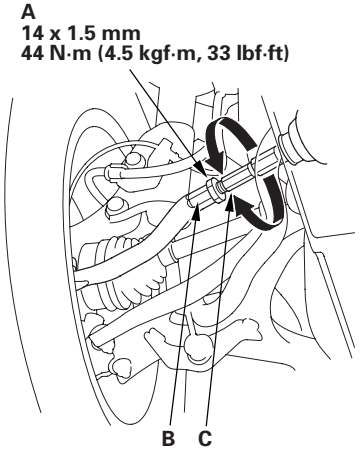
1. Set the steering column to the middle tilt and center telescopic positions. Center the steering wheel spokes, and install a steering wheel holder tool.

2. Check the toe with the wheels pointed straight ahead.

   Front toe-in: 0±2 mm (0±0.08 in.)

   - If adjustment is required, go to step 3.
   - If no adjustment is required, go to rear toe inspection/adjustment.

3. Loosen the tie-rod locknuts (A) while holding the flat surface sections (B) of the tie-rod end with a wrench, and turn both tie-rods (C) until the front toe is within specifications.



4. After adjusting, tighten the tie-rod locknuts to the specified torque value. Reposition the rack-end boot if it is twisted or displaced.

5. Go to rear toe inspection/adjustment.

(cont'd)

Wheel Alignment (cont'd)

Rear Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

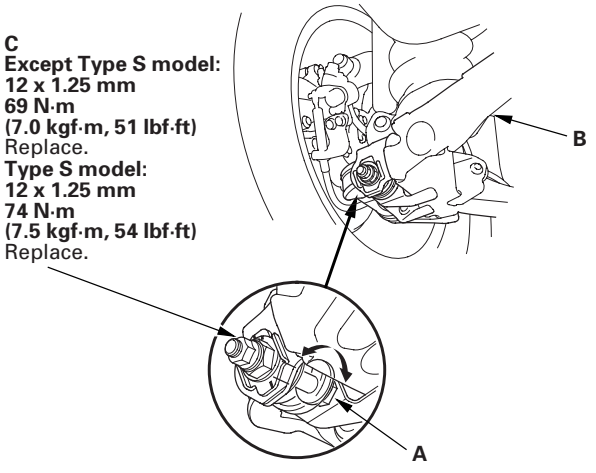
1. Release the parking brake to avoid an incorrect measurement.

2. Check the toe.

   Rear toe-in: 2^{+2}_{-1} mm ($0.08^{+0.08}_{-0.04}$ in.)

   - If adjustment is required, go to step 3.
   - If no adjustment is required, go to turning angle inspection.

3. Hold the adjusting bolt (A) on the trailing arm (B), and loosen the self-locking nut (C).



4. Replace the self-locking nut with a new one, and lightly tighten it.

   NOTE:
   - Always use a new self-locking nut whenever it has been tightened to the specified torque.
   - Reassemble the adjusting bolt and the adjusting cam plate with the eccentric facing up.

5. Adjust the rear toe by turning the adjusting bolt until the toe is correct.

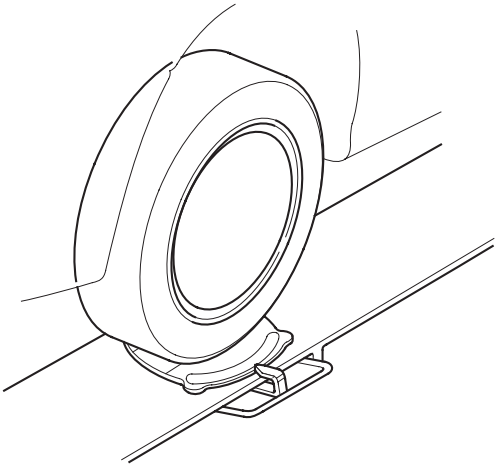
6. Tighten the self-locking nut to the specified torque value while holding the adjusting bolt.

Turning Angle Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

   Turning angle:
   Inward wheel: 38 ° 46 ′ ±2 °
   Outward wheel (reference): 31 ° 14 ′

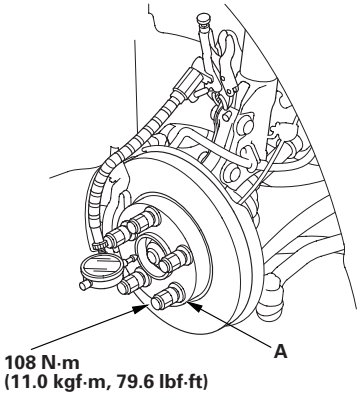


2. If the measurement is not within the specifications, even up both sides of the tie-rod threaded section length while adjusting the front toe. If it is correct, but the turning angle is not within the specifications, check for bent or damaged suspension components.

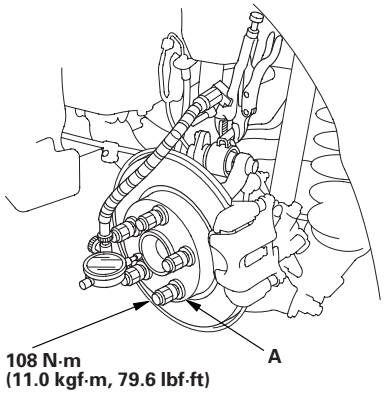
Wheel Bearing End Play Inspection

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11).
2. Remove the wheels.
3. Install suitable flat washers (A) and the wheel nuts. Tighten the nuts to the specified torque to hold the brake disc securely against the hub.

Front



Rear



4. Attach the dial gauge. Place the dial gauge against the hub flange.
5. Measure the bearing end play while moving the brake disc inward and outward.

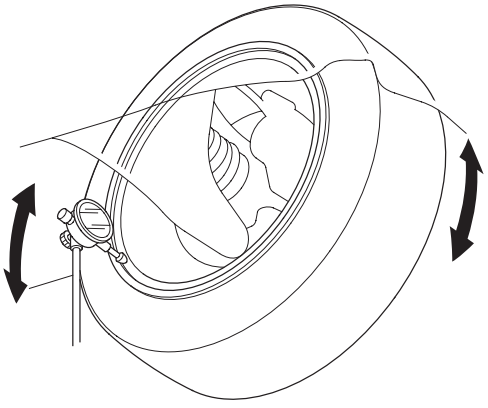
Wheel bearing end play:
Front/Rear: 0—0.05 mm (0—0.002 in.)

6. If the bearing end play measurement is more than the standard, replace the wheel bearing or the hub bearing unit.

Wheel Runout Inspection

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11).
2. Check for bent or deformed wheels.
3. Set up the dial gauge as shown, and measure the axial runout by turning the wheel.

Front and rear wheel axial runout:
Standard: 0—0.7 mm (0—0.03 in.)
Service limit: 2.0 mm (0.08 in.)

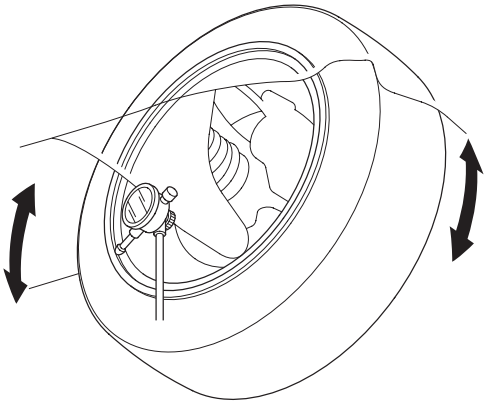


(cont'd)

Wheel Runout Inspection (cont'd)

4. Reset the dial gauge to the position shown, and measure the radial runout.

   Front and rear wheel radial runout:
   Standard: 0—0.7 mm (0—0.03 in.)
   Service limit: 1.5 mm (0.06 in.)



5. If the wheel runout is not within the specification, check the wheel bearing end play (see page 18-9), and make sure the mating surfaces on the brake disc and the inside of the wheel are clean.

6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Wheel Bolt Replacement

Special Tools Required
Ball joint remover, 28 mm 07MAC-SL0A202

NOTICE

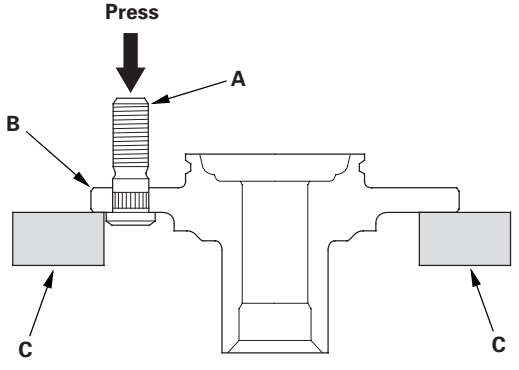
- Do not use a hammer or impact tools (pneumatic or electric) to remove and install the wheel bolts.
- Be careful not to damage the threads of the wheel bolts.

Front

1. Remove the front hub (see page 18-15).

2. Separate the wheel bolt (A) from the hub (B) using a hydraulic press. Support the hub with hydraulic press attachments (C) or equivalent tools.

   NOTE: Before installing the new wheel bolt, clean the mating surfaces, on the bolt and the hub.



3. Insert the new wheel bolt into the hub while aligning the splined surfaces on the hub hole with the wheel bolt.

   NOTE:
   - Degrease all around the wheel bolt.
   - Make sure the wheel bolt is installed vertically in relation to the hub disc surface.

4. Install the wheel bolt using a hydraulic press until the wheel bolt shoulder is fully seated.

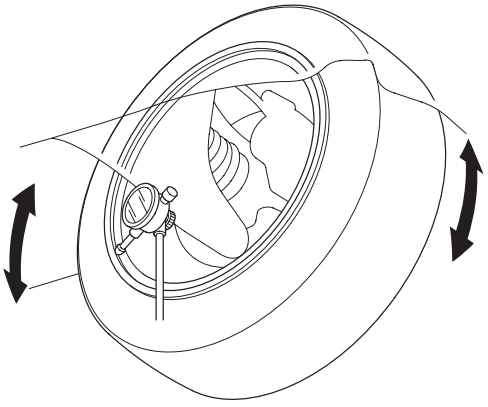
5. Install the front hub (see page 18-15).

   NOTE: If you cannot tighten the wheel nut to the specified torque value when installing the wheel, replace the front hub as an assembly.

Wheel Runout Inspection (cont'd)

4. Reset the dial gauge to the position shown, and measure the radial runout.

   Front and rear wheel radial runout:
   Standard: 0—0.7 mm (0—0.03 in.)
   Service limit: 1.5 mm (0.06 in.)



5. If the wheel runout is not within the specification, check the wheel bearing end play (see page 18-9), and make sure the mating surfaces on the brake disc and the inside of the wheel are clean.

6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Wheel Bolt Replacement

Special Tools Required
Ball joint remover, 28 mm 07MAC-SL0A202

NOTICE

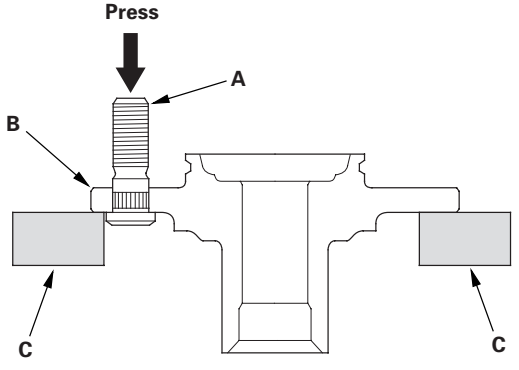
- Do not use a hammer or impact tools (pneumatic or electric) to remove and install the wheel bolts.
- Be careful not to damage the threads of the wheel bolts.

Front

1. Remove the front hub (see page 18-15).

2. Separate the wheel bolt (A) from the hub (B) using a hydraulic press. Support the hub with hydraulic press attachments (C) or equivalent tools.

   NOTE: Before installing the new wheel bolt, clean the mating surfaces, on the bolt and the hub.



3. Insert the new wheel bolt into the hub while aligning the splined surfaces on the hub hole with the wheel bolt.

   NOTE:
   - Degrease all around the wheel bolt.
   - Make sure the wheel bolt is installed vertically in relation to the hub disc surface.

4. Install the wheel bolt using a hydraulic press until the wheel bolt shoulder is fully seated.

5. Install the front hub (see page 18-15).

   NOTE: If you cannot tighten the wheel nut to the specified torque value when installing the wheel, replace the front hub as an assembly.

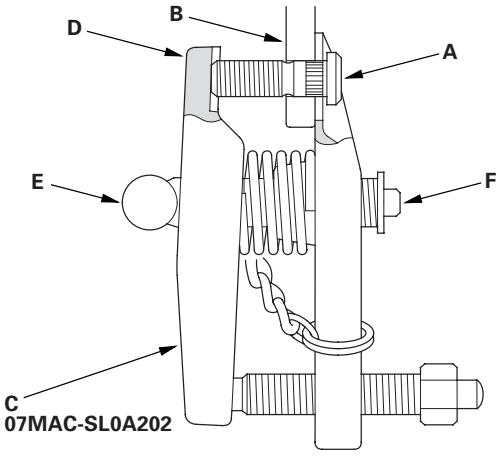
Rear

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the rear brake disc (see page 19-34).

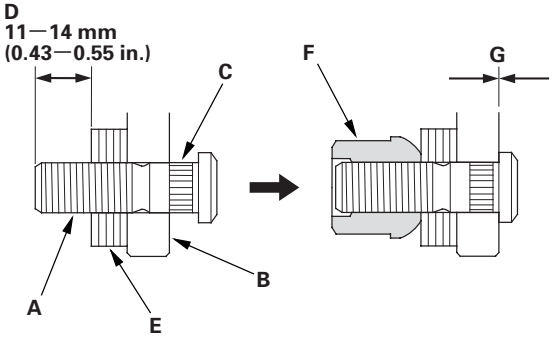
3. Separate the wheel bolt (A) from the hub (B) using the ball joint remover (C), and keep the jaw (D) of ball joint remover vertical against the wheel bolt (see page 18-12).

   NOTE:
   - If the angle of the remover against the wheel bolt is not square, readjust the ball joint remover by turning the head (E) of the adjusting bolt (F).
   - Before installing the new wheel bolt, clean the mating surfaces on the bolt and the hub.



4. Insert the new wheel bolt (A) into the hub (B) while aligning the splined surfaces (C) on the hub hole with the wheel bolt. Adjust the measurement (D) with washers (P/N 94101-12800 or equivalent) (E), then install a nut (P/N 90304-SC2-000 or equivalent) (F) hand-tight.

   NOTE:
   - Degrease all around the wheel bolt and the threaded section of the nut.
   - Make sure the wheel bolt is installed vertically in relation to the hub disc surface.
   - Do not install the nut and washers that have been used as tools on a vehicle.



5. Tighten the nut until the wheel bolt is drawn fully into the hub. Do not exceed the maximum torque limit. Make sure there is no gap (G) between the bolt and the hub.

   Limited torque:
   108 N·m (11.0 kgf·m, 79.6 lbf·ft) max.

6. Install the rear brake disc (see page 19-34).

   NOTE:
   - If you cannot tighten the wheel nut to the specified torque value when installing the wheel, replace the rear hub bearing unit as an assembly.
   - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

Ball Joint Removal

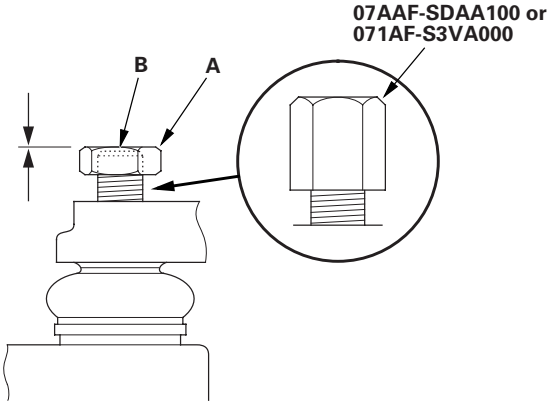
Special Tools Required
- Ball joint thread protector, 12 mm 07AAF-SDAA100
- Ball joint thread protector, 14 mm 071AF-S3VA000
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint remover, 28 mm 07MAC-SL0A202

NOTICE

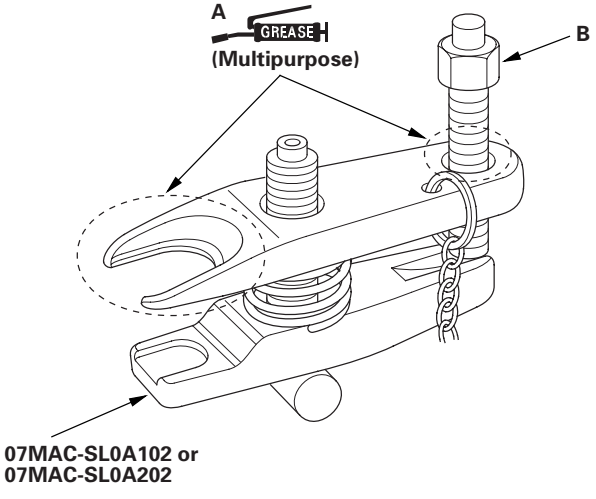
Always use a ball joint remover to disconnect a ball joint. Do not strike the housing or any other part of the ball joint connection to disconnect it.

1. Install a hex nut (A) or the ball joint thread protector onto the threads of the ball joint (B).

   NOTE: Using a hex nut, make sure the nut is flush with the ball joint pin end to prevent damage to the threaded end of the ball joint pin.

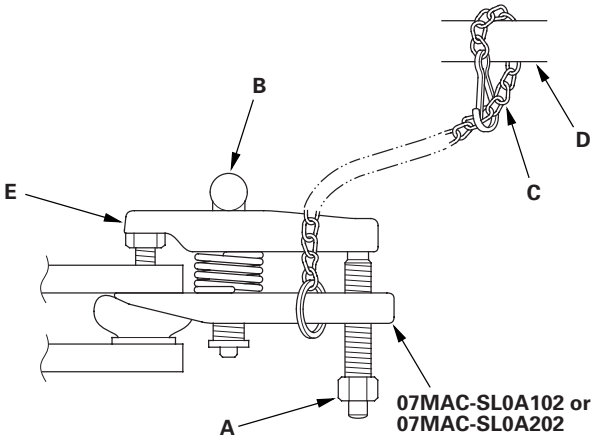


2. Apply grease to the ball joint remover on the areas shown (A). This will ease the installation of the tool, and prevent damage to the pressure bolt (B) threads.



3. Loosen the pressure bolt (A), and install the ball joint remover as shown. Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the adjusting bolt (B).

   NOTE: Fasten the safety chain (C) securely to a suspension arm or the subframe (D). Do not fasten it to a brake line or wire harness.



4. After adjusting the adjusting bolt, make sure the head of the adjusting bolt is in the position shown to allow the jaw (E) to pivot.

5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the ball joint connecting hole. If necessary, apply penetrating type lubricant to loosen the ball joint pin.

   NOTE: Do not use pneumatic or electric tools on the pressure bolt.

6. Remove the ball joint remover, then remove the nut from the end of the ball joint pin, and pull the ball joint out of the ball joint connecting hole. Inspect the ball joint boot, and replace it if damaged.

Ball Joint Boot Inspection/Replacement

Special Tools Required
Attachment, 40 mm 07GAF-SE00200

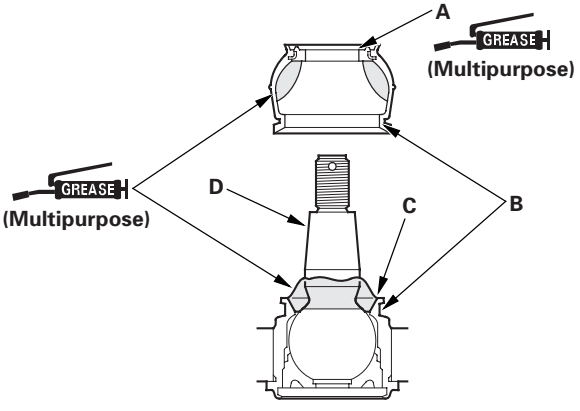
1. Check the ball joint boot for weakness, damage, cracks, and grease leaks.

   NOTE:
   - If the ball joint boot is damaged with grease leaks, replace the appropriate part as an assembly.
   - If the ball joint boot is soft and cracked without grease leaks, go to step 2. Replace the appropriate ball joint boot.

2. Disconnect the appropriate ball joint connection, and remove the component including the ball joint. The lower ball joint (see page 18-20).

3. Remove the boot.

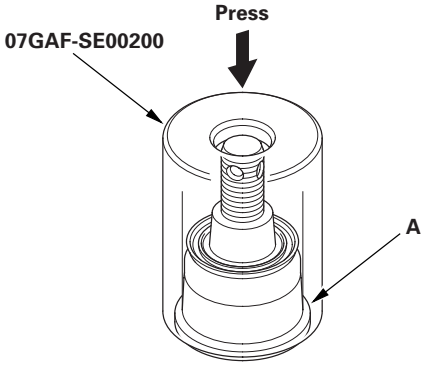
4. Pack the interior and lip (A) of a new boot with grease. Keep the grease off of the boot-to-lower ball joint housing mating surfaces (B).



5. Pack fresh grease into the base (C). Do not let dirt or other foreign materials get into the boot.

6. Install the boot on the ball joint, then squeeze it gently to force out any air, then wipe the grease off the tapered portion of the ball joint pin (D).

7. Press the boot with the attachment until the bottom seats on the lower ball joint housing (A) all the way around.

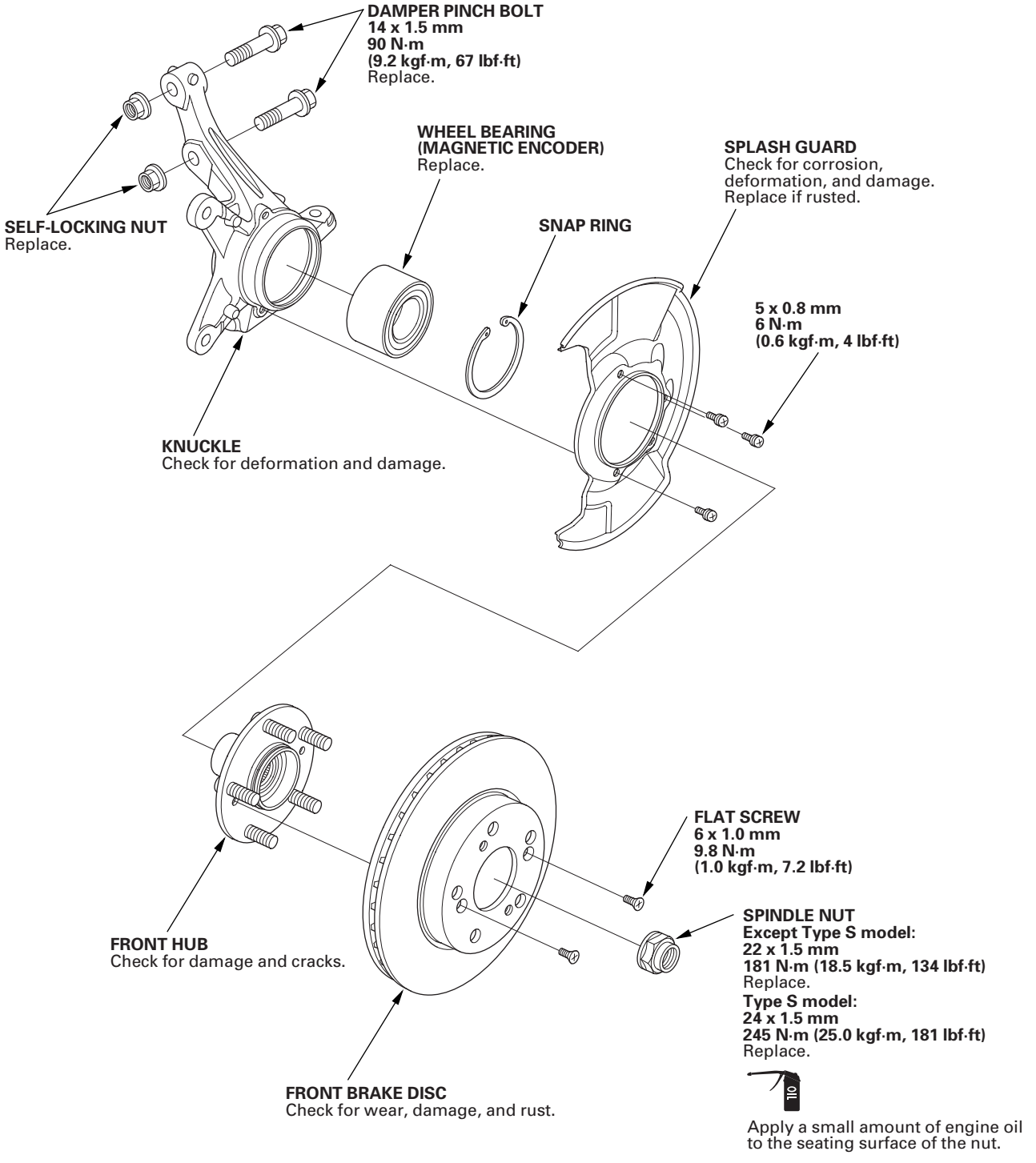


8. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.

9. Install all of the removed parts.

Knuckle/Hub/Wheel Bearing Replacement

Exploded View

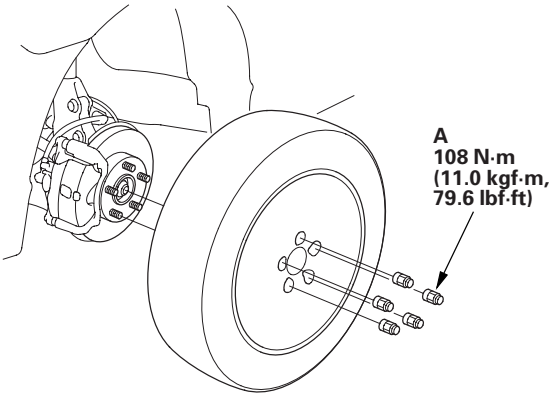


Special Tools Required
- Ball joint thread protector, 12 mm 07AAF-SDAA100
- Ball joint remover, 28 mm 07MAC-SL0A202
- Ball joint thread protector, 14 mm 071AF-S3VA000
- Ball joint remover, 32 mm 07MAC-SL0A102
- Hub dis/assembly tool, 40 mm 07GAF-SE00100
- Hub dis/assembly tool, 42 mm 07GAF-SD40100
- Driver handle 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 70 x 90 mm 07GAD-SD40101
- Support base 07965-SD90100

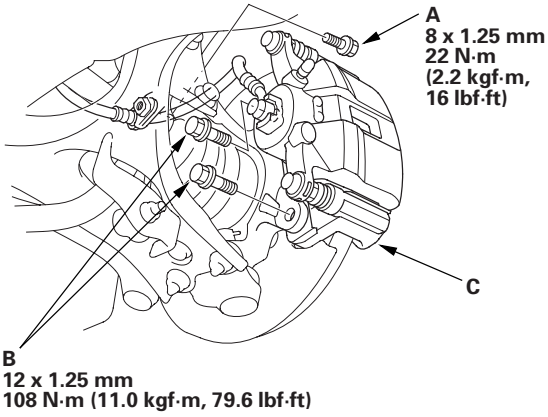
Knuckle/Hub Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the wheel nuts (A) and front wheel.

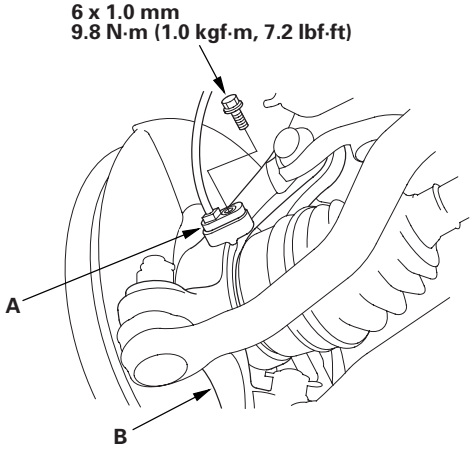


3. Remove the brake hose mounting bolt (A) from the damper.



4. Remove the brake caliper bracket mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or the brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.

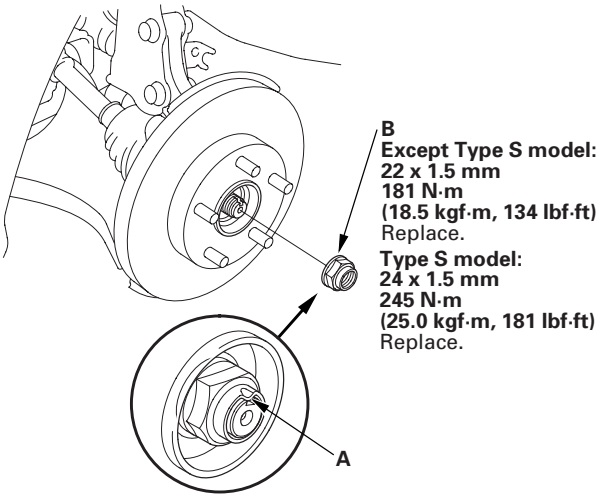
5. Remove the wheel speed sensor (A) from the knuckle (B). Do not disconnect the wheel speed sensor connector.



(cont'd)

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

6. Raise the stake (A), then remove the spindle nut (B).

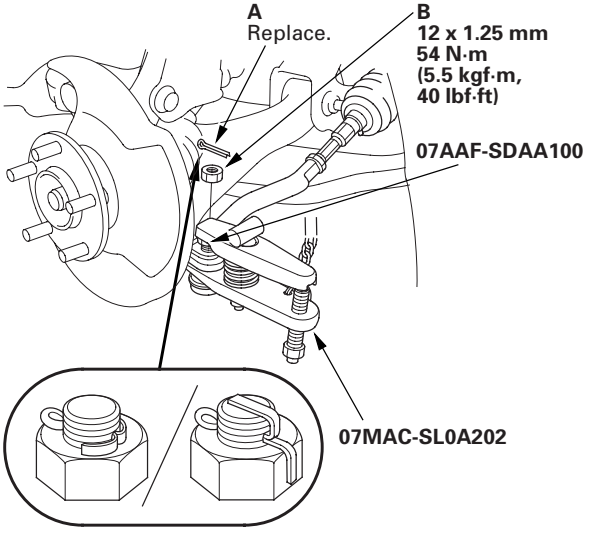


7. Remove the front brake disc (see page 19-21).

8. Check the front hub for damage and cracks.

9. Remove the cotter pin (A) from the tie-rod end ball joint, then remove the nut (B).

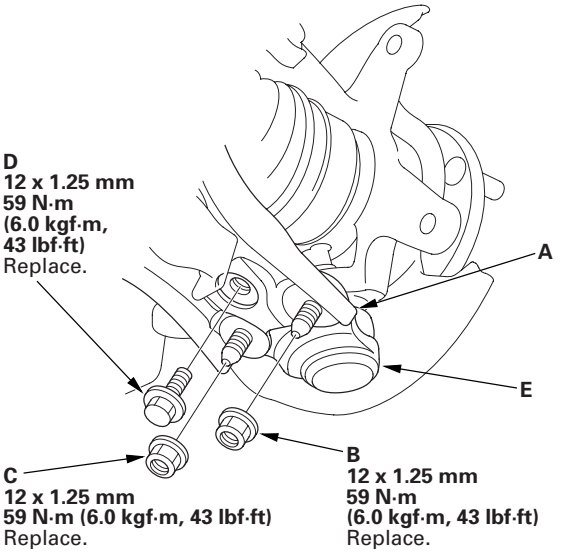
   NOTE: During installation, install a new cotter pin after tightening the nut, and bend its end as shown.



10. Disconnect the tie-rod end ball joint from the knuckle using the ball joint thread protector and the ball joint remover (see page 18-12).

11. Remove the flange bolt and the self-locking nuts from the lower arm (A).

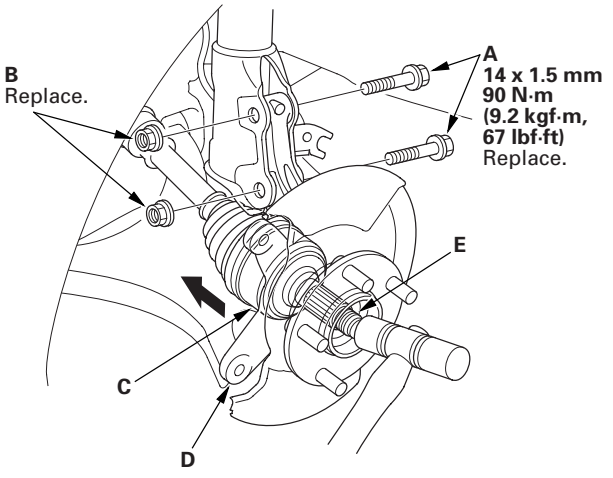
    NOTE: During installation, install the new flange bolt and the new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).



12. Disconnect the lower ball joint (E) from the lower arm.

13. Remove the damper pinch bolts (A) and the self-locking nuts (B) from the damper.

    NOTE: Use new damper pinch bolts and new self-locking nuts during reassembly.

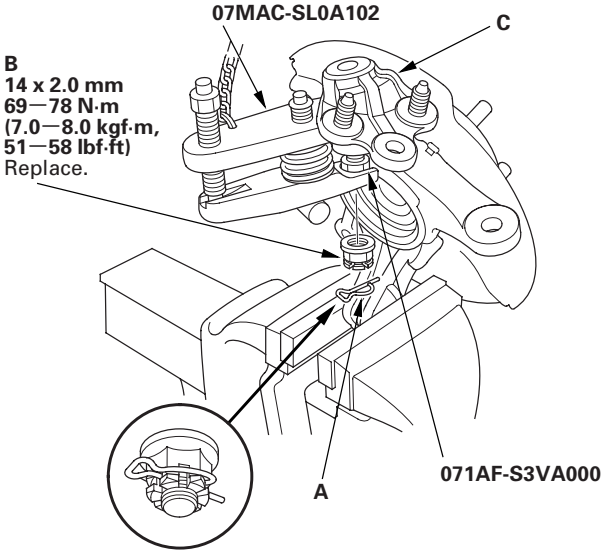


14. Remove the driveshaft outboard joint (C) from the knuckle (D) by tapping the driveshaft end (E) with a soft face hammer while drawing the hub outward, then remove the knuckle.

    NOTE:
    - Do not pull the driveshaft end outward. The driveshaft inboard joint may come apart.
    - During installation, apply grease to the mating surfaces of the wheel bearing and the driveshaft outboard joint (see step 1 on page 16-20).

15. Remove the lock pin (A) from the lower ball joint, then remove the castle nut (B).

    NOTE: During installation, install a lock pin as shown after tightening the new castle nut.



16. Disconnect the lower ball joint (C) from the knuckle using the ball joint thread protector and the ball joint remover (see page 18-12).

(cont'd)

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

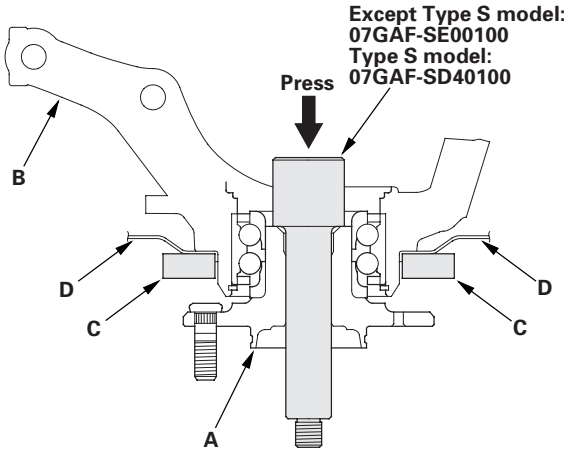
17. Install the knuckle/hub in the reverse order of removal, and note these items:

    - First install all of the components, and lightly tighten the bolts and the nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Be careful not to damage the ball joint boot when connecting the knuckle.
    - Before connecting the lower ball joint to the knuckle, degrease the threaded section and the tapered portion of the ball joint pin, the ball joint connecting hole, the threaded section, and the mating surfaces of the castle nut.
    - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
    - Use a new spindle nut during reassembly.
    - Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
    - Before installing the brake disc, clean the mating surfaces of the front hub and the inside of the brake disc.
    - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

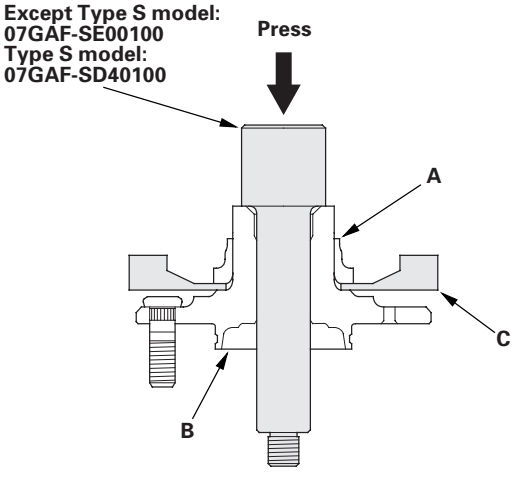
18. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Wheel Bearing Replacement

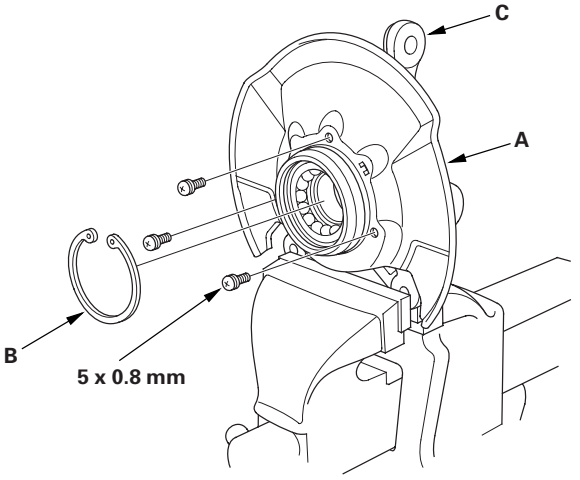
1. Separate the hub (A) from the knuckle (B) using the hub dis/assembly tool and a hydraulic press. Hold the knuckle with the attachment (C) of the hydraulic press or equivalent tool. Be careful not to damage or deform the splash guard (D). Hold onto the hub to keep it from falling when pressed clear.



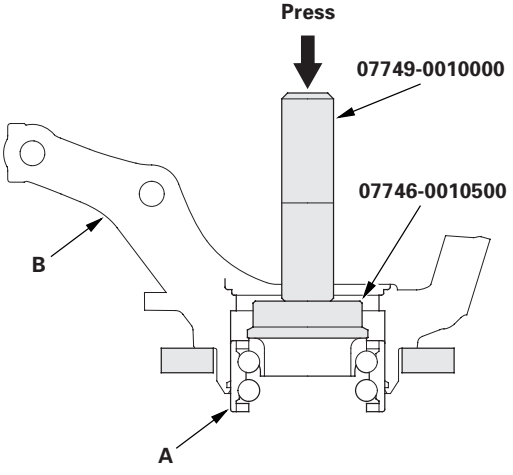
2. Press the wheel bearing inner race (A) off of the hub (B) using the hub dis/assembly tool, a commercially available bearing separator (C), and a press.



3. Remove the splash guard (A) and the snap ring (B) from the knuckle (C).



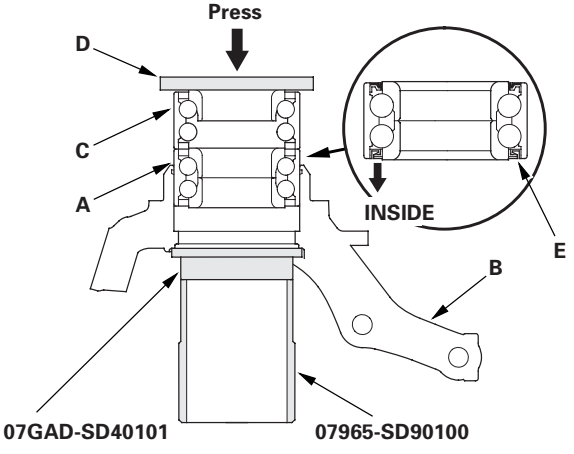
4. Press the wheel bearing (A) out of the knuckle (B) using the attachment, the driver handle, and a press.



5. Wash the knuckle and the hub thoroughly in high flash point solvent before reassembly.

6. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the attachment, the support base, and a press.

NOTE:
- Install the wheel bearing with the wheel speed sensor magnetic encoder (E) (brown color) toward the inside of the knuckle.
- Remove any oil, grease, dust, metal debris, and other foreign material from the encoder surface.
- Keep all magnetic tools away from the encoder surface.
- Be careful not to damage the encoder surface when you insert the wheel bearing.



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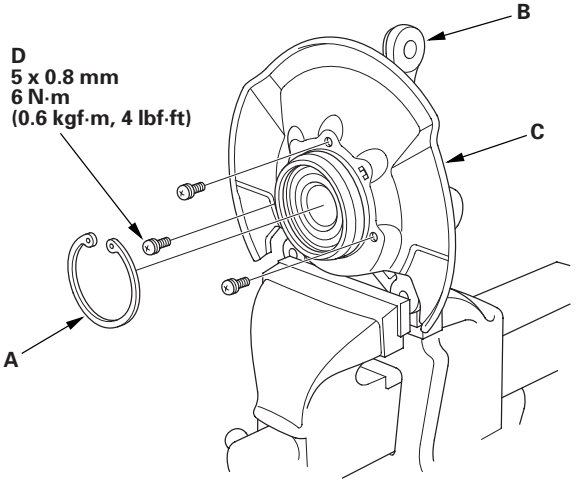
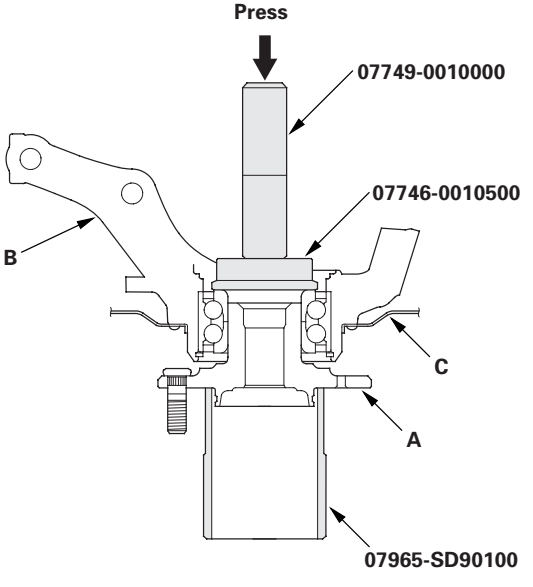
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

7. Install the snap ring (A) securely in the knuckle (B).



8. Install the splash guard (C), and tighten the screws (D) to the specified torque value.

9. Install the hub (A) onto the knuckle (B) using the attachment, the driver handle, the support base, and a hydraulic press. Be careful not to damage the splash guard (C).



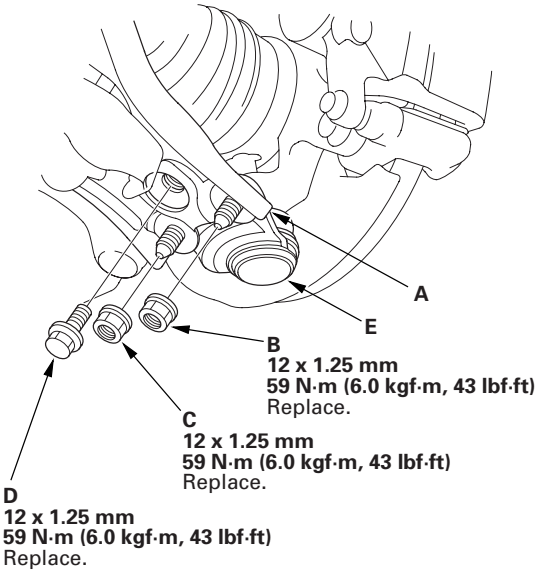
Lower Ball Joint Replacement

Special Tools Required
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint thread protector, 14 mm 071AF-S3VA000

1. Remove the front wheel.

2. Remove the flange bolt and the self-locking nuts from the lower arm (A).

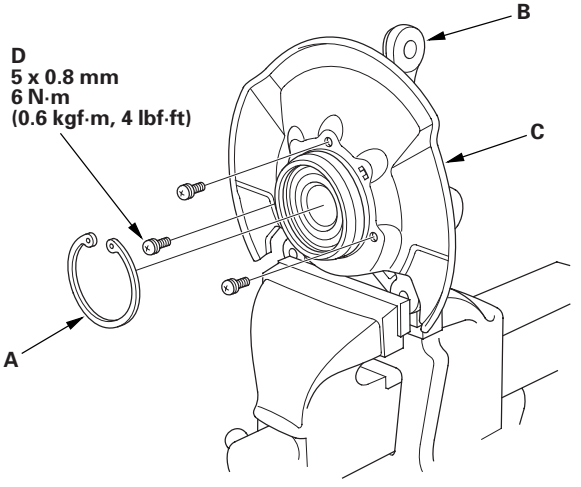
   NOTE: During installation, install the new flange bolt and the new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).



3. Disconnect the lower ball joint (E) from the lower arm.

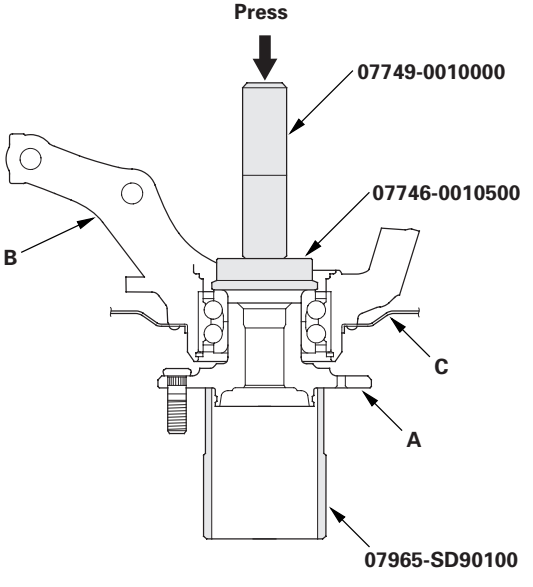
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

7. Install the snap ring (A) securely in the knuckle (B).



8. Install the splash guard (C), and tighten the screws (D) to the specified torque value.

9. Install the hub (A) onto the knuckle (B) using the attachment, the driver handle, the support base, and a hydraulic press. Be careful not to damage the splash guard (C).



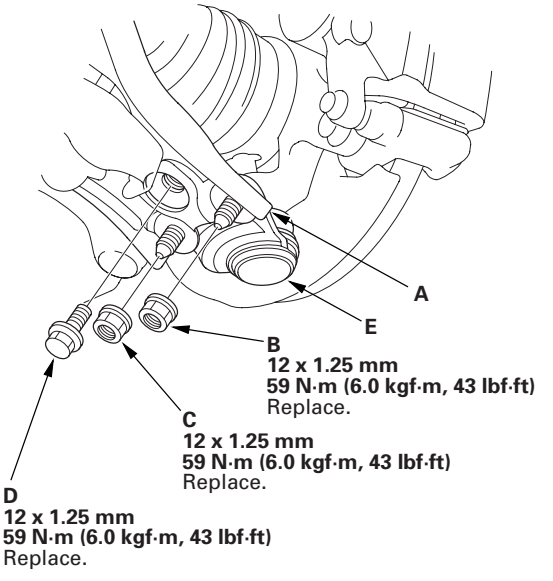
Lower Ball Joint Replacement

Special Tools Required
- Ball joint remover, 32 mm 07MAC-SL0A102
- Ball joint thread protector, 14 mm 071AF-S3VA000

1. Remove the front wheel.

2. Remove the flange bolt and the self-locking nuts from the lower arm (A).

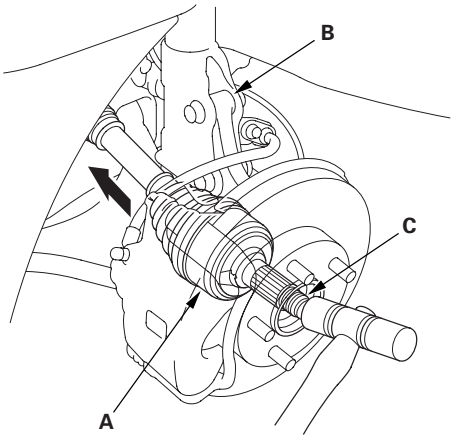
   NOTE: During installation, install the new flange bolt and the new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order; the nut on the front (B), the nut on the rear (C), then the bolt (D).



3. Disconnect the lower ball joint (E) from the lower arm.

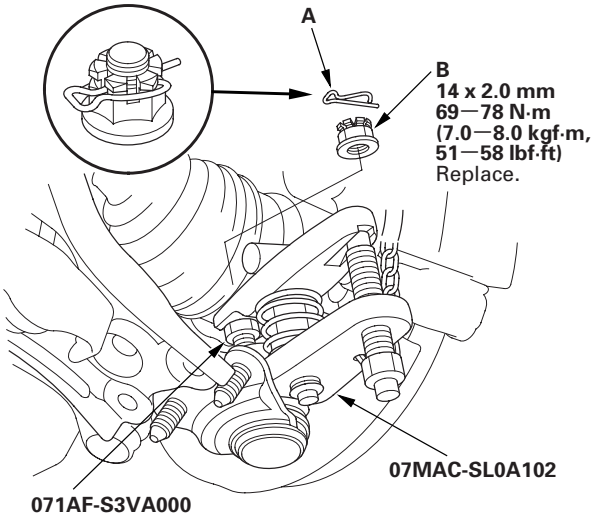
4. Remove the spindle nut (see step 6 on page 18-16), and remove the outboard joint (A) from the knuckle (B) by tapping the driveshaft end (C) with a soft face hammer while pulling the hub outward.

   NOTE:
   - Do not pull the driveshaft end outward. The driveshaft inboard joint may come apart.
   - During installation, apply grease to the mating surfaces of the wheel bearing and the driveshaft outboard joint (see step 1 on page 16-20).



5. Remove the lock pin (A) from the lower ball joint, then remove the castle nut (B).

   NOTE: During installation, install a lock pin as shown after tightening new castle nut.



6. Disconnect the lower ball joint from the knuckle using the ball joint thread protector and the ball joint remover (see page 18-12), then remove the lower ball joint.

(cont'd)

Lower Ball Joint Replacement (cont'd)

7. Install the lower ball joint in the reverse order of removal, and note these items:

   - First install all of the components, and lightly tighten the bolts and the nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Be careful not to damage the ball joint boot when connecting the knuckle.
   - Before connecting the lower ball joint to the knuckle, degrease the threaded section and the tapered portion of the ball joint pin, the ball joint connecting hole, the threaded section, and the mating surfaces of the castle nut.
   - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
   - Use a new spindle nut during reassembly.
   - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

8. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Lower Arm Removal/Installation

Special Tools Required
- Bushing driver 07AAF-SVAA100
- Receiver set 07AAF-SVAA200

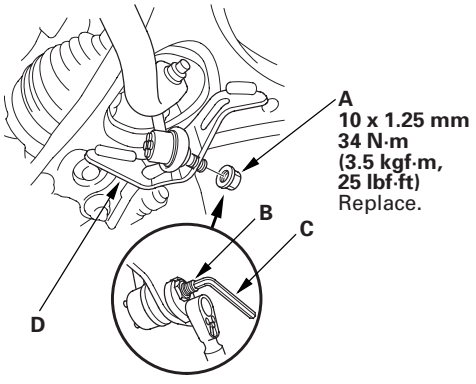
Removal/Installation

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheels.

3. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), then disconnect both sides of the stabilizer link from the lower arm (D).

   NOTE: Use the new flange nut during reassembly.



4. Turn the stabilizer bar backward to gain easier access to the front side of the lower arm mounting bolt.

Lower Ball Joint Replacement (cont'd)

7. Install the lower ball joint in the reverse order of removal, and note these items:

   - First install all of the components, and lightly tighten the bolts and the nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Be careful not to damage the ball joint boot when connecting the knuckle.
   - Before connecting the lower ball joint to the knuckle, degrease the threaded section and the tapered portion of the ball joint pin, the ball joint connecting hole, the threaded section, and the mating surfaces of the castle nut.
   - Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
   - Use a new spindle nut during reassembly.
   - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

8. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Lower Arm Removal/Installation

Special Tools Required
- Bushing driver 07AAF-SVAA100
- Receiver set 07AAF-SVAA200

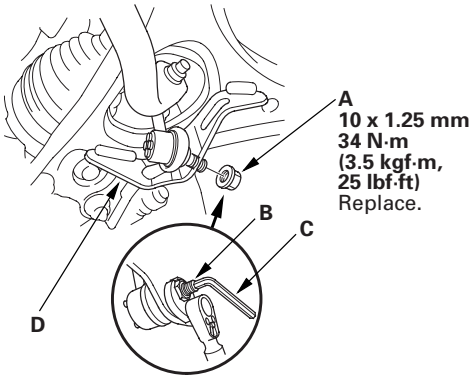
Removal/Installation

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheels.

3. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), then disconnect both sides of the stabilizer link from the lower arm (D).

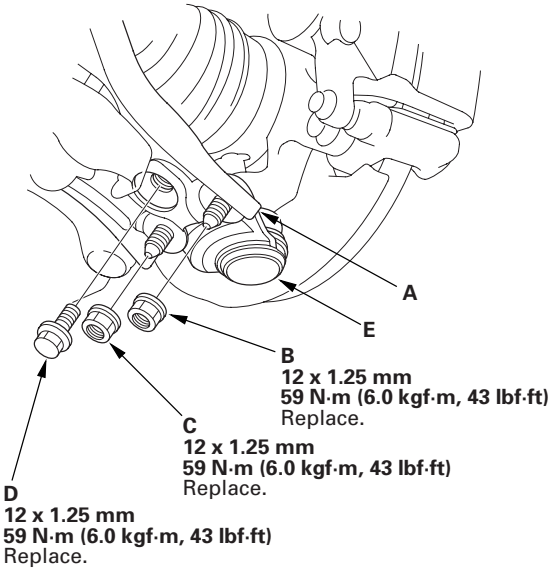
   NOTE: Use the new flange nut during reassembly.



4. Turn the stabilizer bar backward to gain easier access to the front side of the lower arm mounting bolt.

5. Remove the flange bolt and the self-locking nuts from the lower arm (A).

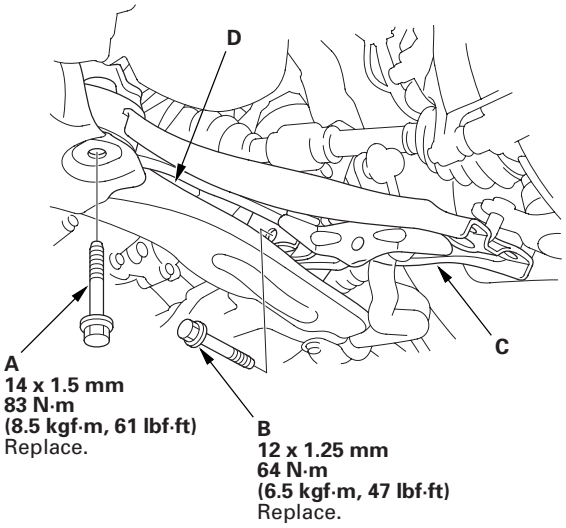
   NOTE: During installation, install the new flange bolt and the new self-locking nuts. After lightly tightening all three fasteners, tighten them to the specified torque in the following order, the nut on the front (B), the nut on the rear (C), then the bolt (D).



6. Disconnect the lower ball joint (E) from the lower arm.

7. Remove the front side of the lower arm mounting bolt (A).

   NOTE: Use the new mounting bolt during reassembly.



8. Remove the rear side of the lower arm mounting bolt (B), then remove the lower arm (C) from the front suspension subframe (D).

   NOTE: Use the new mounting bolt during reassembly.

9. Install the lower arm in the reverse order of removal, and note these items:

   - First install all of the components, and lightly tighten the bolts and the nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

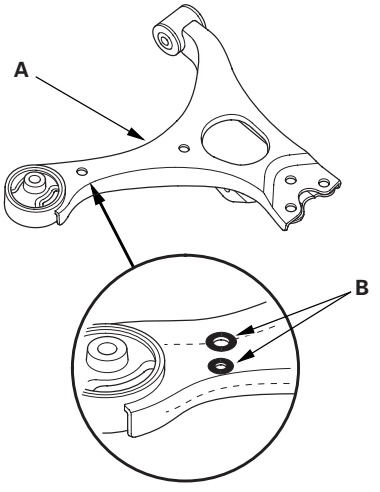
10. Check the wheel alignment, and adjust it if necessary (see page 18-5).

(cont'd)

Lower Arm Removal/Installation (cont'd)

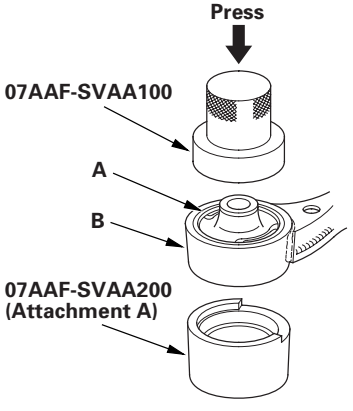
Bushing Replacement

NOTE: Replace the lower arm (A) as an assembly if the lower arm has the paint mark (B) around the hole near the front bushing. The paint mark can also be seen around a hole on the bottom side of the lower arm in the same area. Paint marks indicate a oversize bushing has been installed.



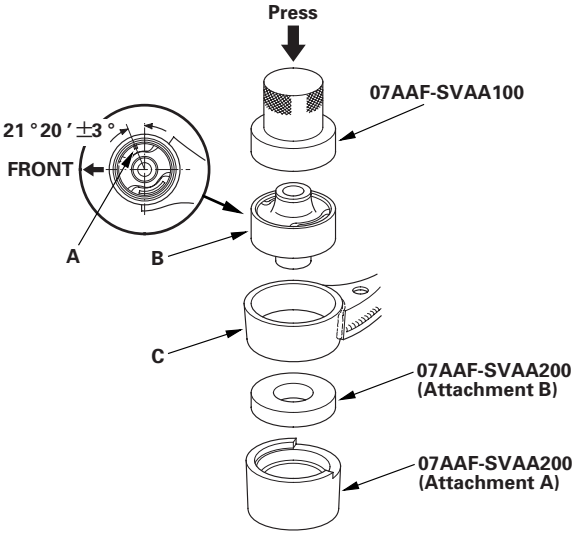
1. Press out the bushing (A) with the bushing driver, receiver set (attachment A), and a hydraulic press, and remove the bushing from the lower arm (B).

   NOTE: Be careful not to damage the inside of the bushing hole when pressing on the bushing.



2. Clean the mating surfaces of the new bushing and the lower arm.

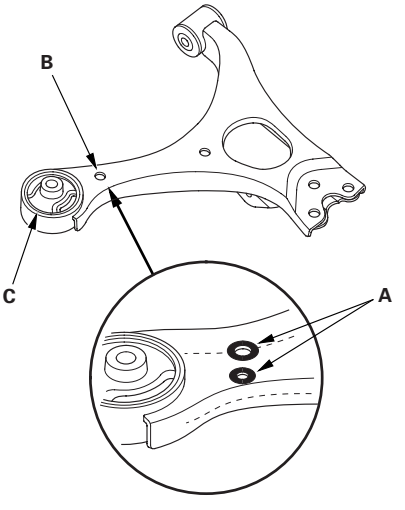
3. Position the tab (A) of the bushing (B) with the lower arm (C) as shown.



4. Using a hydraulic press, bushing driver, and receiver set (attachments A and B), press in the bushing into the lower arm.

5. Using a yellow oil-based paint marker, paint a mark (A) around the hole (B) near the front bushing (C). Also paint a mark around the hole on the bottom side of the lower arm in the same area.

   NOTE: These marks are used to identify a lower arm that has had the bushing replaced. Do not replace the bushing in a lower arm with there paint marks; you must replace the lower arm.

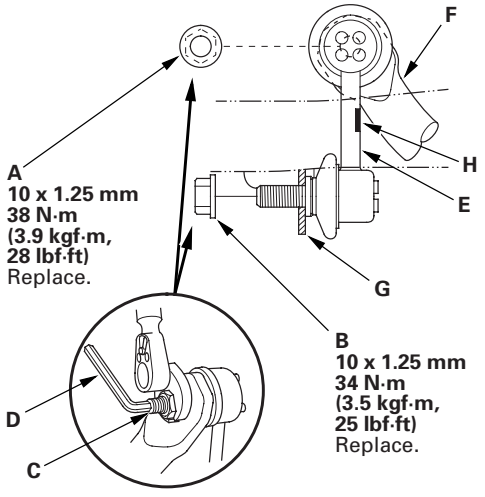


Stabilizer Link Removal/Installation

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheel.

3. Remove the self-locking nut (A) and the flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), then remove the stabilizer link (E).



4. Install the stabilizer link on the stabilizer bar (F) and the lower arm (G) with the joint pins set at the center of their range of the movement.

   NOTE: The stabilizer link has a paint mark (H). Align the paint mark on the stabilizer link facing rearward.

5. Install the new self-locking nut and the new flange nut, and tighten them to the specified torque values while holding the respective joint pin with a hex wrench.

6. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheel.

7. Test-drive the vehicle.

8. After 5 minutes of driving, torque the self-locking nut again to the specified torque value.

Stabilizer Bar Replacement

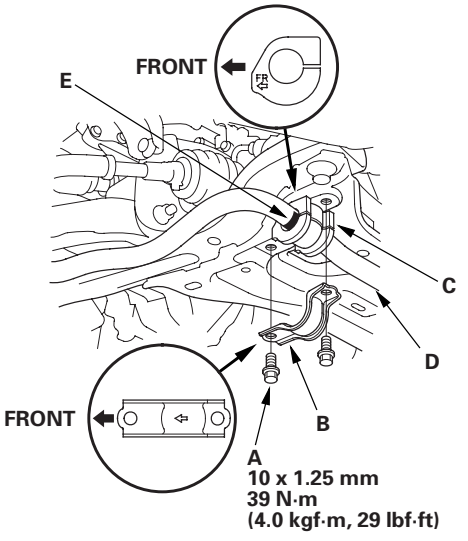
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheels.

3. Disconnect both stabilizer links from the stabilizer bar (see page 18-25).

4. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).

   NOTE: During installation, align the paint marks (E) on the stabilizer bar with the sides of the bushings.



5. Install the stabilizer bar in the reverse order of removal, and note these items:

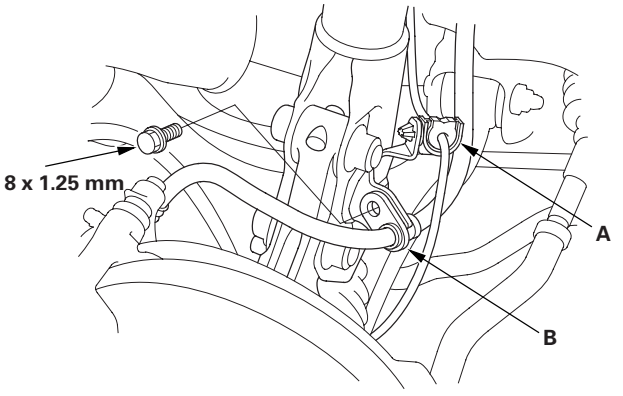
   - Note the right and left direction of the stabilizer bar.
   - Note the direction of installation for the bushings and the bushing holders.
   - Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-25).
   - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

6. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Damper/Spring Removal and Installation

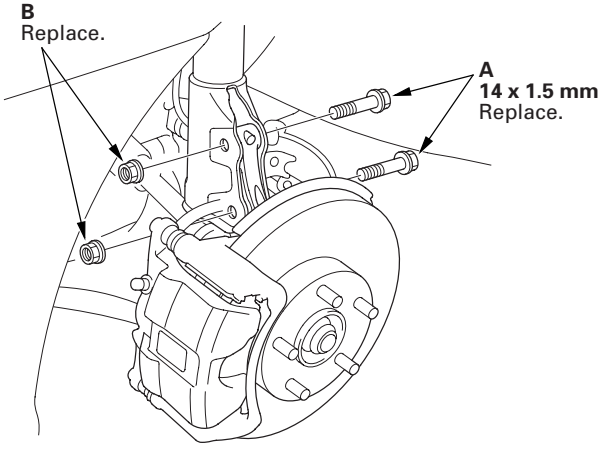
Removal

1. Turn the ignition switch to ON (II), then turn on the windshield wipers. Turn the ignition switch to LOCK (0) when the wipers are near the A-pillars.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
3. Remove the front wheel.
4. Remove the wheel speed sensor harness clip (A) and the brake hose bracket (B) from the damper. Do not disconnect the wheel speed sensor connector.

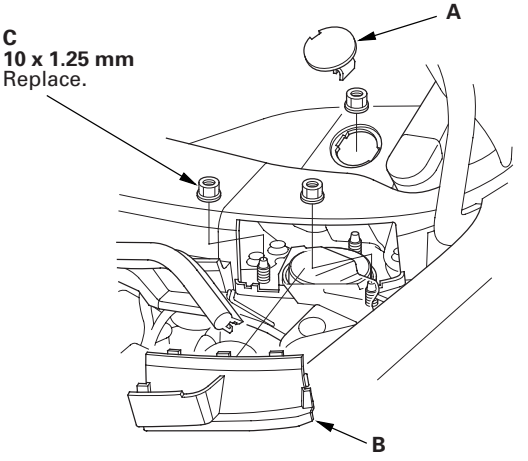


5. Remove the damper pinch bolts (A) and the self-locking nuts (B) from the damper.

   NOTE: Do not allow the knuckle to rotate too far outward. This may allow the driveshaft inboard joint come apart.

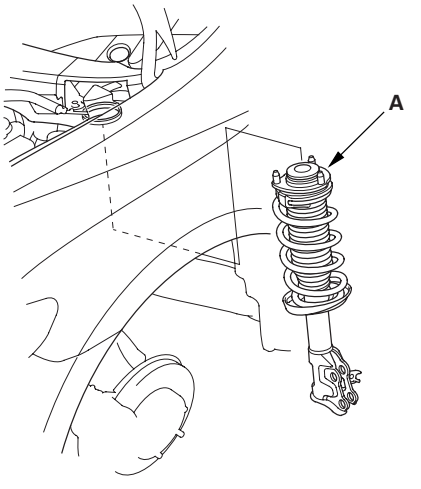


6. Remove the service cap (A) and the lid (B).



7. Remove the three flange nuts (C) from top of the damper.
8. Remove the damper/spring (A).

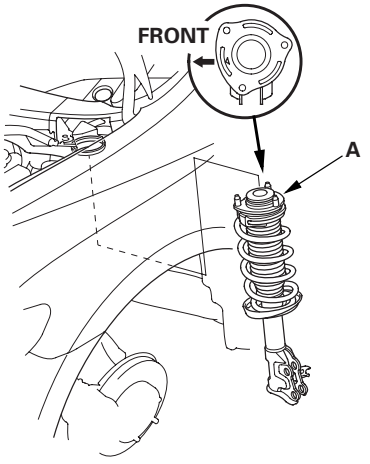
   NOTE:
   - The left and right damper springs are different. Mark the springs L and R before you continue.
   - Be careful not to damage the body.



Installation

1. Install the damper/spring (A) onto the frame. Note the direction of the damper mounting base as shown.

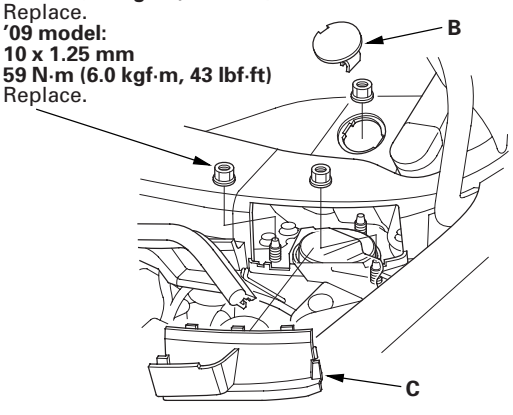
   NOTE: Be careful not to damage the body.



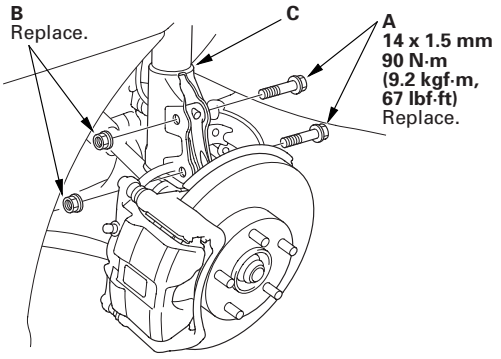
2. Loosely install the new flange nuts (A).

   NOTE: Install the service cap (B) and the lid (C) after tightening the flange nuts to the specified torque value.

A
'06-08 models except Type S model:
10 x 1.25 mm
44 N·m (4.5 kgf·m, 33 lbf·ft)
Replace.
'06-08 models type S model:
10 x 1.25 mm
59 N·m (6.0 kgf·m, 43 lbf·ft)
Replace.
'09 model:
10 x 1.25 mm
59 N·m (6.0 kgf·m, 43 lbf·ft)
Replace.



3. Loosely install the new damper pinch bolts (A) and the new self-locking nuts (B) to the damper (C).

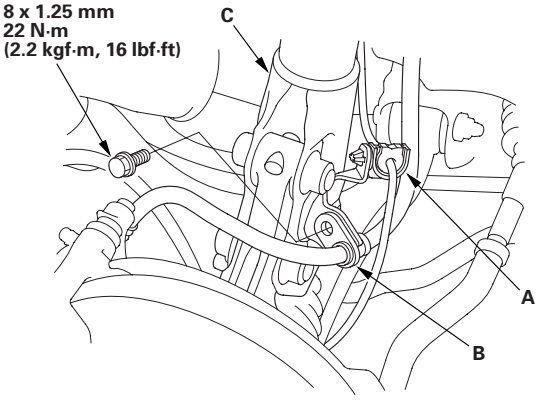


4. Raise the front suspension with a floor jack to load the suspension with the vehicle's weight.

5. Tighten the flange nuts on top of the damper to the specified torque value.

6. Tighten the damper pinch bolts to the specified torque value.

7. Install the wheel speed sensor harness clip (A) and the brake hose bracket (B) to the damper (C).



8. Install the service cap and the lid.

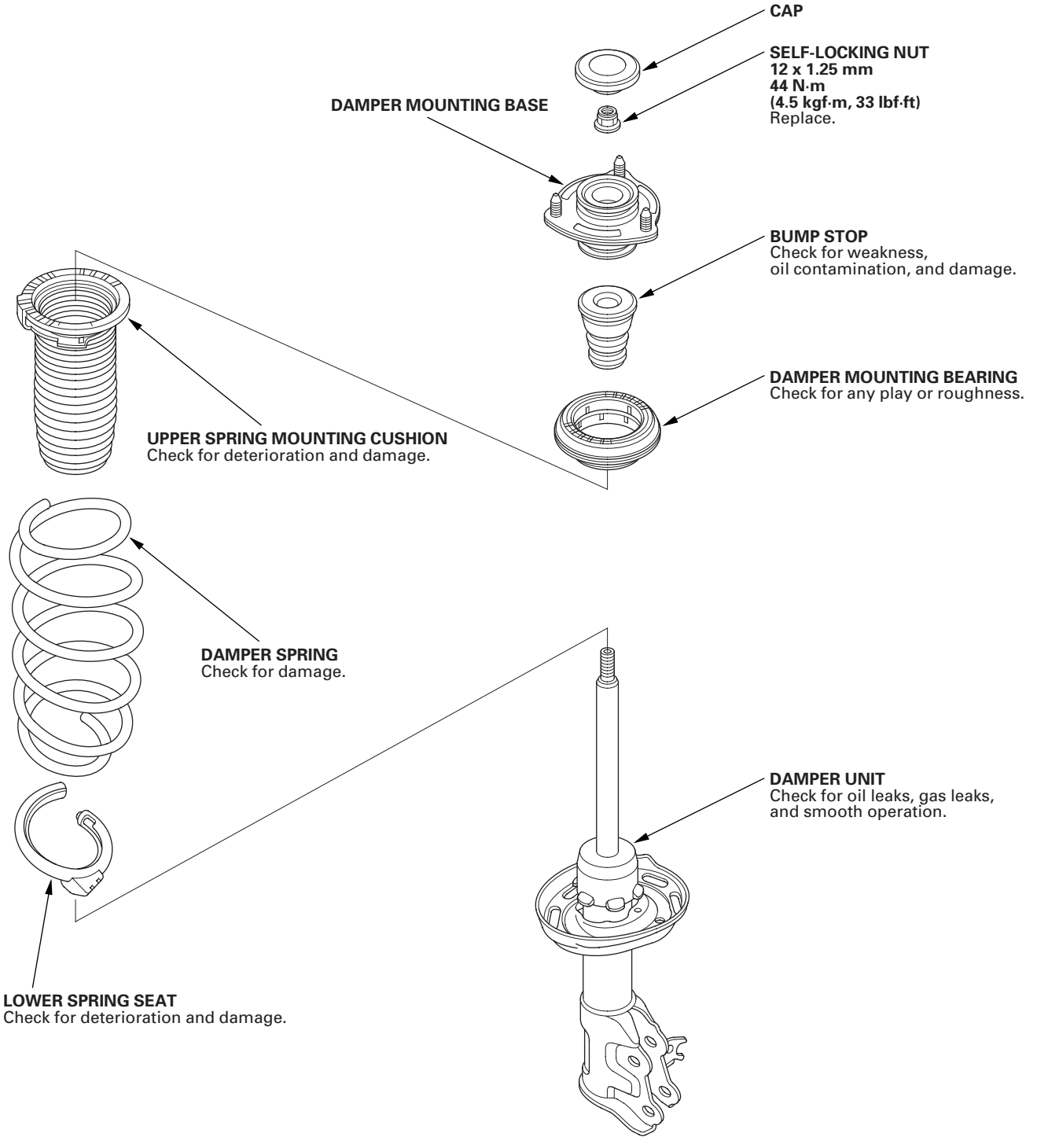
9. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the front wheel.

10. Check the wheel alignment, and adjust it if necessary (see page 18-5).

11. Turn the ignition switch to ON (II), then turn the windshield wipers to the default positions, and turn the ignition switch to LOCK (0).

Damper/Spring Disassembly, Inspection, and Reassembly

Exploded View

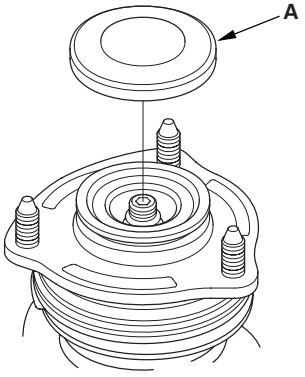


Special Tools Required
Strut nut adapter 07AAA-SVAA100

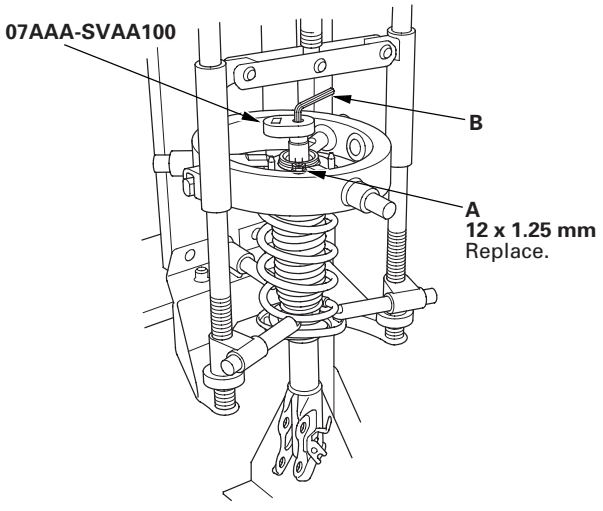
NOTE: When compressing the damper spring, use a commercially available strut spring compressor (Branick MST-580A or Model 7200, or equivalent) according to the manufacturer's instructions.

Disassembly

1. Remove the cap (A) from the top of the damper.



2. Compress the damper spring, then remove the self-locking nut (A) using the strut nut adapter, a ratchet or breaker bar while holding the damper shaft with a hex wrench (B). Do not compress the spring more than necessary to remove the nut.

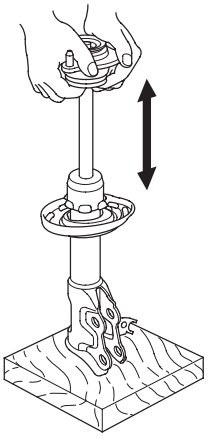


3. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.

Inspection

1. Reassemble the damper mounting base and the self-locking nut.

2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking, and the damper should be replaced.



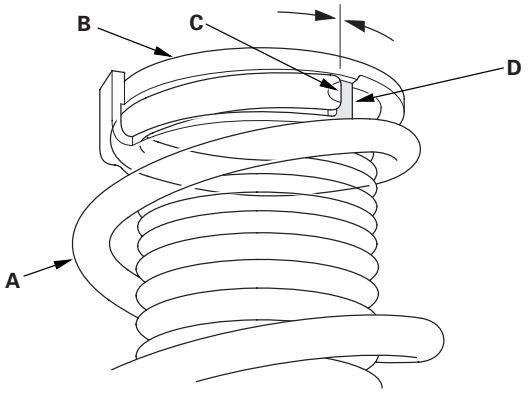
3. Check for oil leaks, abnormal noises, or binding during these tests.

(cont'd)

Damper/Spring Disassembly, Inspection, and Reassembly (cont'd)

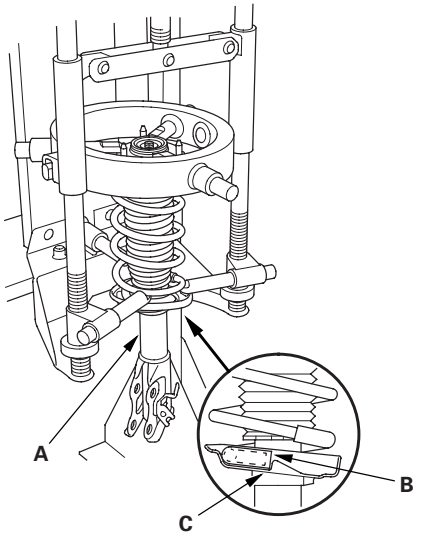
Reassembly

1. Install the damper spring (A) on the upper spring mounting cushion (B) by aligning the upper end (C) of the damper spring with the ledge portion (D) of the upper spring mounting cushion.



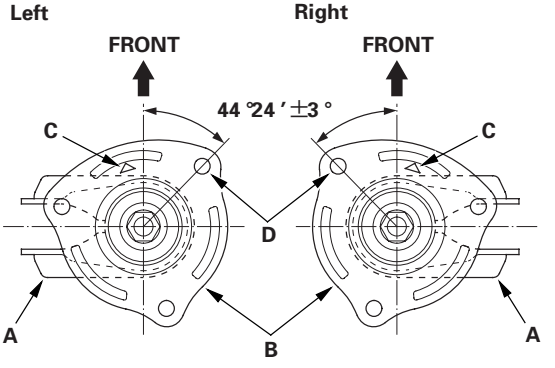
2. Compress the damper spring.

3. Install all the parts except the self-locking nut and the cap onto the damper unit (A) by referring to the Exploded View.



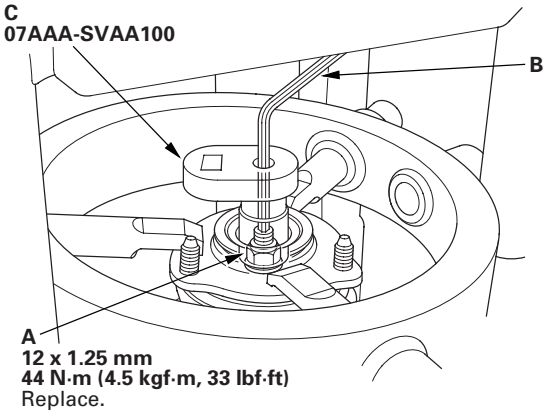
4. Align the bottom of the spring (B) and the stepped part of the lower spring seat (C) on the damper unit.

5. Align the damper bracket (A) and the damper mounting base (B) so that the "△" stamp (C) points toward the front.



6. Align the angle of the stud bolt (D) on the damper bracket as shown.

7. Install the new self-locking nut (A).



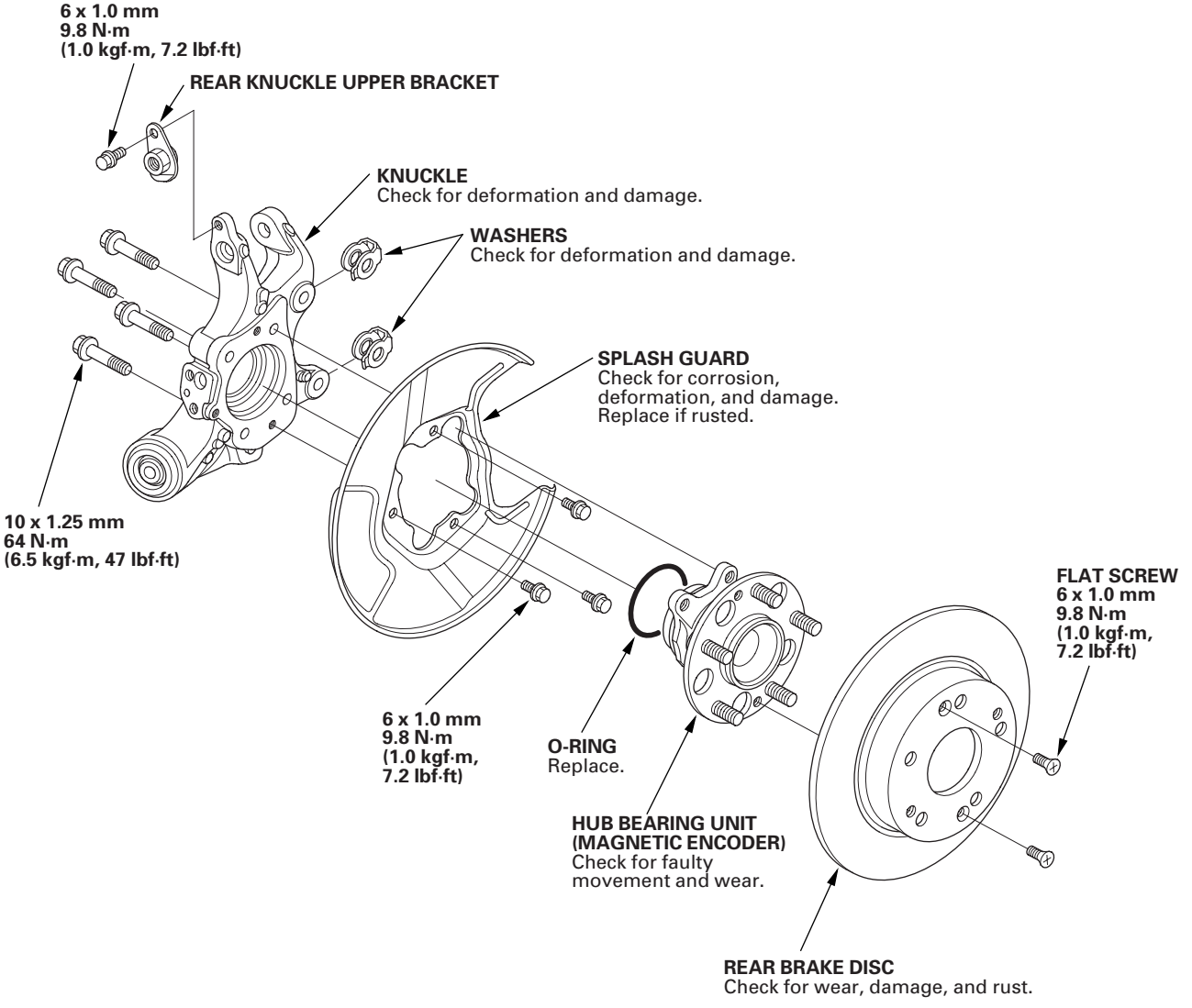
8. Hold the damper shaft using a hex wrench (B), and tighten the self-locking nut using the strut nut adapter (C) and a torque wrench to the specified torque value.

9. Remove the damper/spring from the strut spring compressor.

10. Install the cap.

Knuckle/Hub Bearing Unit Replacement

Exploded View



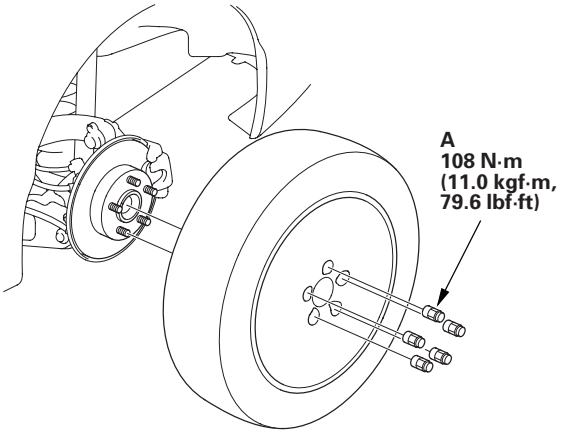
(cont'd)

Knuckle/Hub Bearing Unit Replacement (cont'd)

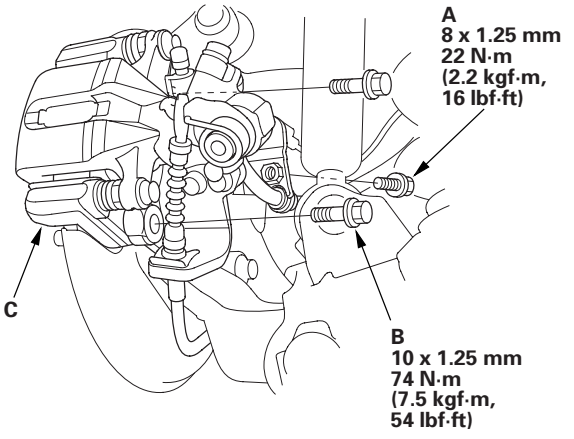
Hub Bearing Unit Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the wheel nuts (A) and the rear wheel.



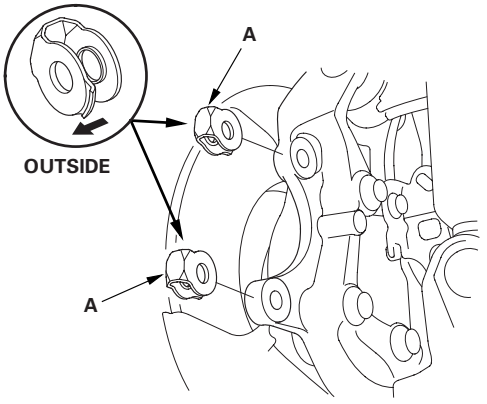
3. Remove the brake hose mounting bolt (A) from the bracket.



4. Remove the brake caliper bracket mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or the brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.

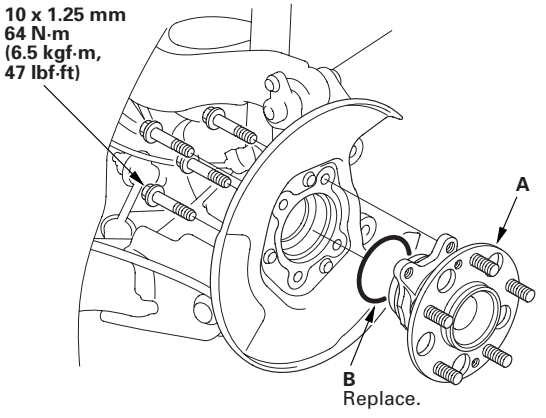
5. Remove the two washers (A).

   NOTE: During installation, make sure the washers are installed between the brake caliper bracket and the knuckle.



6. Remove the rear brake disc (see page 19-34).

7. Remove the hub bearing unit (A) and the O-ring (B).



8. Check the hub bearing unit for damage and cracks.

9. Install the hub bearing unit in the reverse order of removal, and note these items:

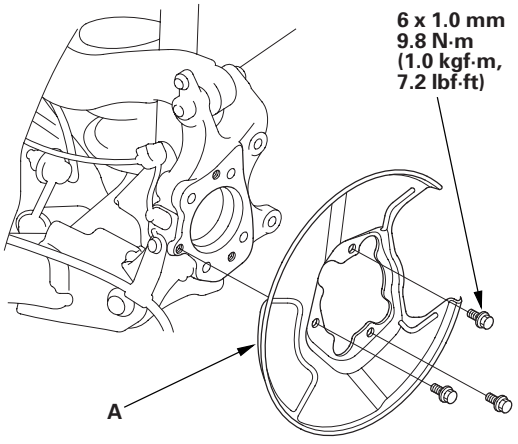
   - Use a new O-ring during reassembly.
   - Before installing the brake disc, Clean the mating surfaces of the hub bearing unit and the inside of the brake disc.
   - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

10. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Knuckle Replacement

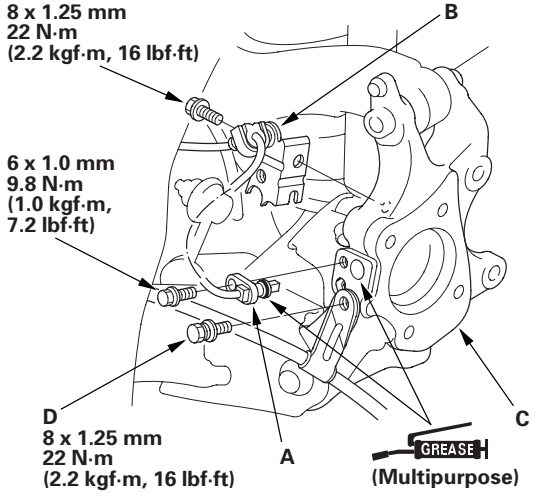
1. Remove the hub bearing unit.

2. Remove the splash guard (A).



3. Remove the wheel speed sensor (A), and the brake hose mounting bracket (B) from the knuckle (C). Do not disconnect the wheel speed sensor connector.

   NOTE:
   - Apply multipurpose grease to the mating surfaces on the knuckle and the O-ring during reassembly.
   - To prevent O-ring damage, the wheel speed sensor must be installed with the guide pin tool during reassembly (see step 5 on page 19-175).



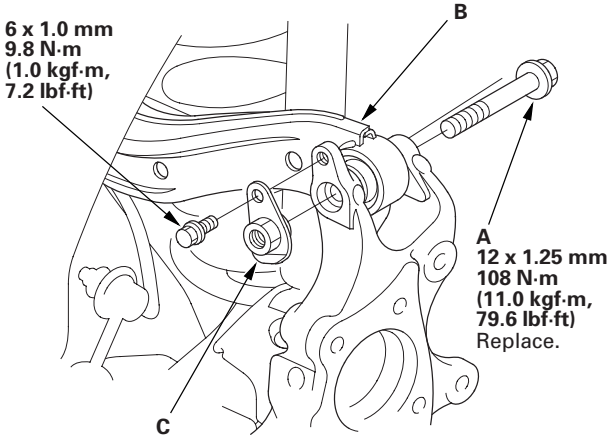
4. Remove the parking brake cable mounting bolt (D) from the Knuckle.

5. Place a floor jack under the trailing arm to support it.

   NOTE: Do not place the jack against the plate section of the lower arm. Be careful not to damage any suspension components.

6. Remove the upper arm mounting bolt (A), and disconnect the upper arm (B) from the knuckle.

   NOTE: Use the new upper arm mounting bolt during reassembly.



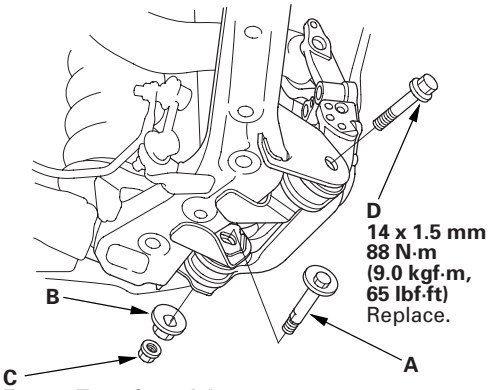
7. Remove the rear knuckle upper bracket (C).

(cont'd)

Knuckle/Hub Bearing Unit Replacement (cont'd)

8. Mark the cam positions of the adjusting bolt (A) and the adjusting cam plate (B) with the frame, then remove the self-locking nut (C), the adjusting cam plate, and the adjusting bolt. Discard the self-locking nut.

   NOTE: Use a new adjusting bolt and a new self-locking nut during reassembly.



9. Remove the flange bolt (D), and remove the knuckle.

   NOTE: Use the new flange bolt during reassembly.

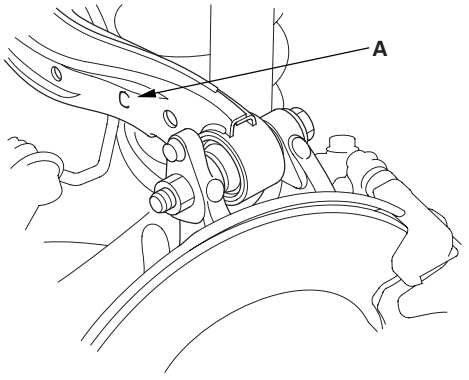
10. Install the knuckle in the reverse order of removal, and note these items:

    - First install all of the components, and lightly tighten the bolts and the nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Align the cam positions of the adjusting bolt and the adjusting cam plate with the marked positions when tightening the self-locking nut.
    - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

11. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Upper Arm Removal/Installation

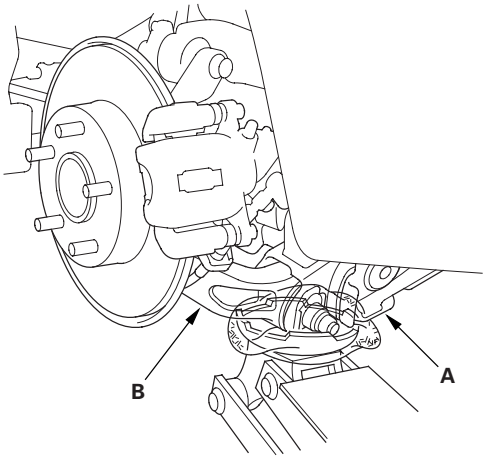
NOTE: There are two types of rear upper arms. Those that are marked with ''C'' (A), and those with no marks. Be sure to use the correct alignment specifications.



1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

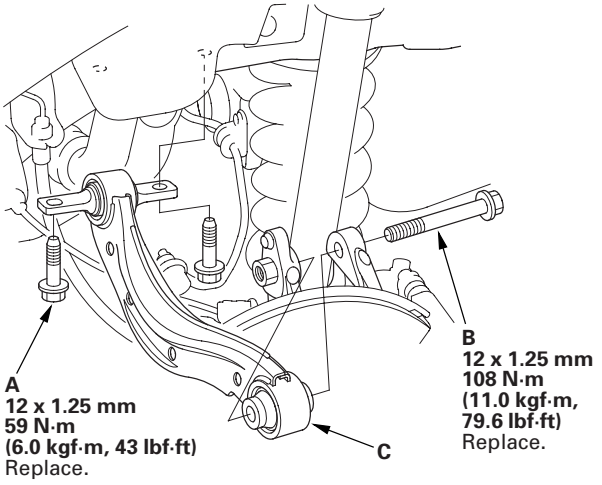
2. Remove the rear wheel.

3. Position a floor jack at the connecting point of the trailing arm (A) and the knuckle (B). Raise the floor jack until the suspension begins to compress.



4. Remove the flange bolts (A) from the vehicle.

   NOTE: Use new flange bolts during reassembly.



5. Remove the flange bolt (B) from the knuckle, and remove the upper arm (C).

   NOTE: Use the new flange bolt during reassembly.

6. Install the upper arm in the reverse order of removal, and note these items:

   - First install all of the components, and lightly tighten the bolts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
   - Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

7. Check the wheel alignment, and adjust it if necessary (see page 18-5).

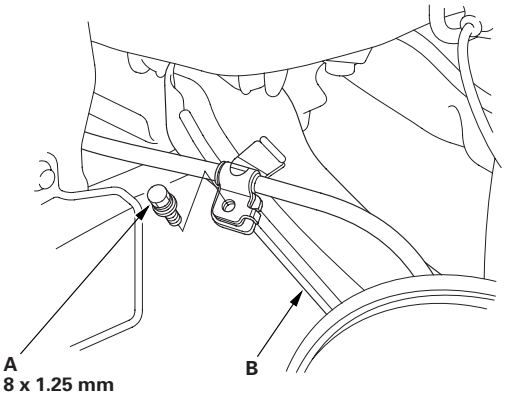
Trailing Arm Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

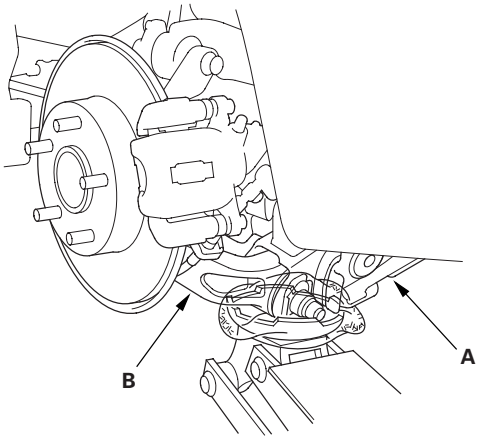
2. Remove the rear wheel.

3. Remove the rear floor under cover (see page 20-174).

4. Remove the parking brake cable mounting bolt (A) from the trailing arm (B).



5. Position a floor jack at the connecting point of the trailing arm (A) and the knuckle (B). Raise the floor jack until the suspension begins to compress.



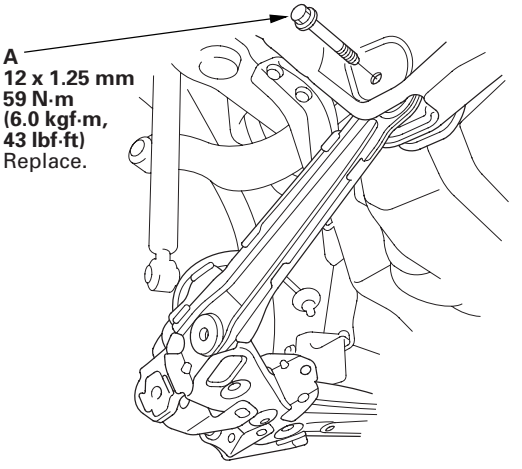
6. Remove the knuckle with the hub bearing unit (see page 18-33).

7. Disconnect the stabilizer link from the trailing arm (see page 18-37).

8. Remove the rear spring (see page 18-43).

9. Remove the trailing arm rear mounting bolt (A).

   NOTE: Use the new mounting bolt during reassembly.



10. Lower the jack, and remove the trailing arm.

Stabilizer Link Removal/Installation

11. Install the trailing arm in the reverse order of removal, and note these items:

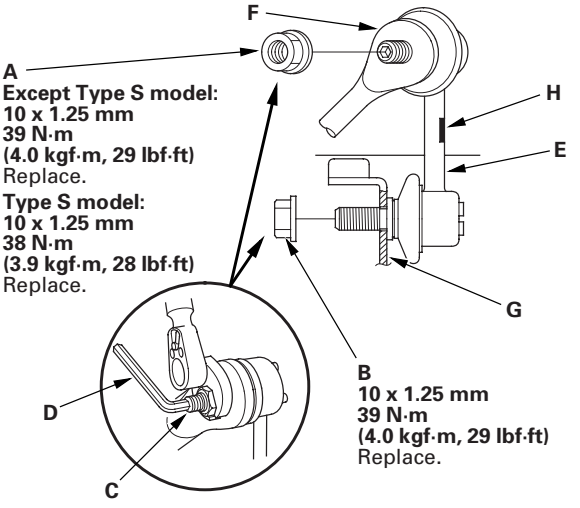
    - First install all of the components, and lightly tighten the bolts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Check the brake hose for interference and twisting.
    - Before installing the wheel, clean the mating surfaces on the brake disc and the inside of the wheel.

12. Check the wheel alignment, and adjust it if necessary (see page 18-5).

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the rear wheel.

3. Remove the self-locking nut (A) and the flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), then remove the stabilizer link (E).



4. Install the stabilizer link on the stabilizer bar (F) and trailing arm (G) with the joint pins set at the center of their range of the movement.

   NOTE: The stabilizer link has a paint mark (H). Align the paint mark on the stabilizer link facing rearward.

5. Install the new self-locking nut and the new flange nut, and tighten them to the specified torque values while holding the respective joint pin with a hex wrench.

6. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the rear wheel.

7. Test-drive the vehicle.

8. After 5 minutes of driving, torque the self-locking nut again to the specified torque values.

Stabilizer Link Removal/Installation

11. Install the trailing arm in the reverse order of removal, and note these items:

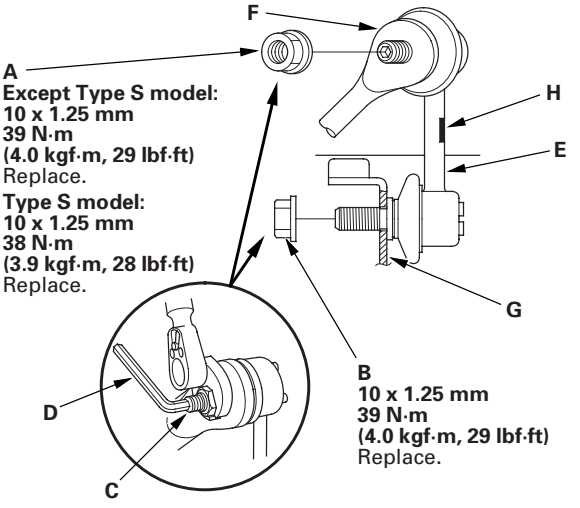
    - First install all of the components, and lightly tighten the bolts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values.
    - Check the brake hose for interference and twisting.
    - Before installing the wheel, clean the mating surfaces on the brake disc and the inside of the wheel.

12. Check the wheel alignment, and adjust it if necessary (see page 18-5).

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the rear wheel.

3. Remove the self-locking nut (A) and the flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), then remove the stabilizer link (E).



4. Install the stabilizer link on the stabilizer bar (F) and trailing arm (G) with the joint pins set at the center of their range of the movement.

   NOTE: The stabilizer link has a paint mark (H). Align the paint mark on the stabilizer link facing rearward.

5. Install the new self-locking nut and the new flange nut, and tighten them to the specified torque values while holding the respective joint pin with a hex wrench.

6. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the rear wheel.

7. Test-drive the vehicle.

8. After 5 minutes of driving, torque the self-locking nut again to the specified torque values.

Stabilizer Bar Replacement

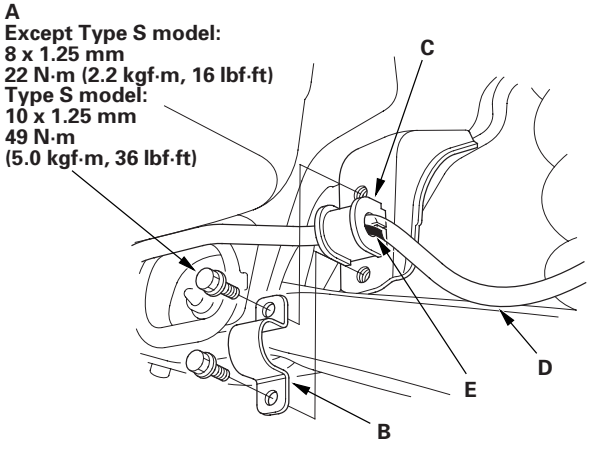
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the rear wheels.

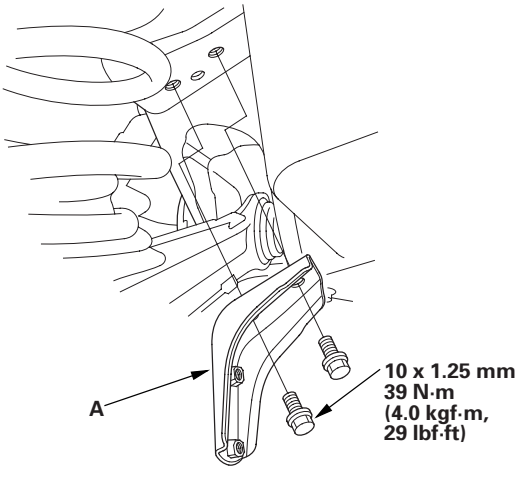
3. Disconnect both stabilizer links from the stabilizer bar (see page 18-37).

4. Remove the flange bolts (A) and the bushing holders (B), then remove the bushings (C) and the stabilizer bar (D).

   NOTE: During installation, align the paint marks (E) on the stabilizer bar with the sides of the bushings.



5. Replace the stabilizer bar bracket (A) if necessary.



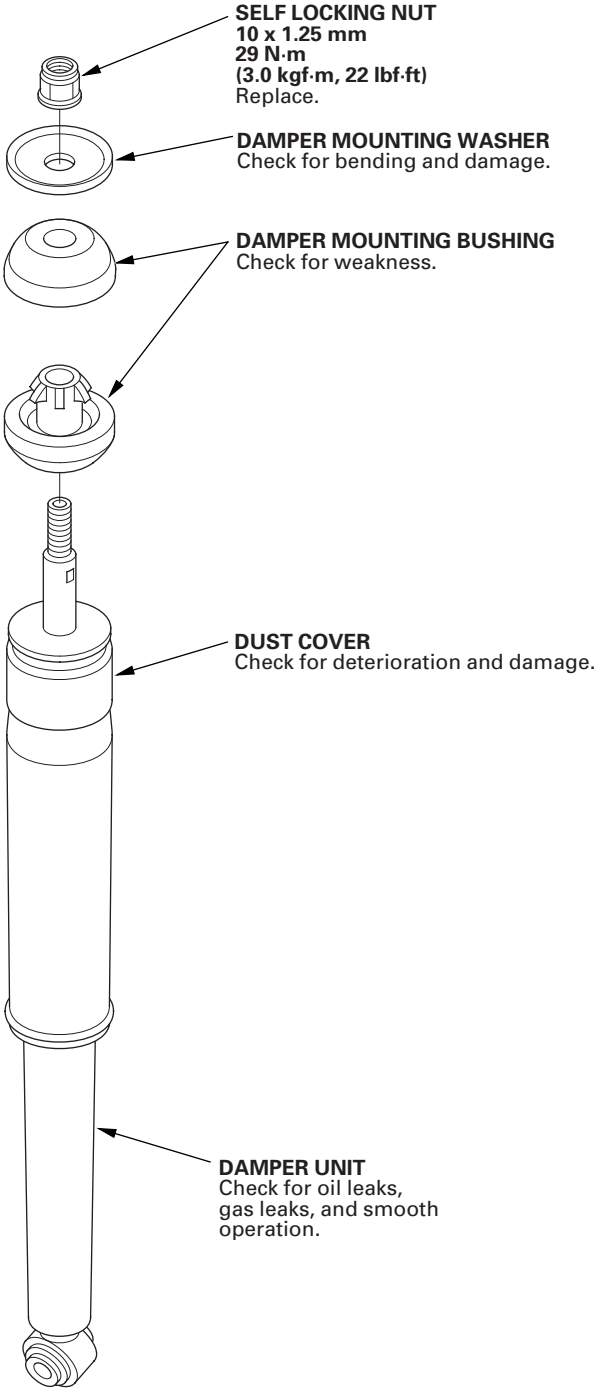
6. Install the stabilizer bar in the reverse order of removal, and note these items:

   - Note the right and left direction of the stabilizer bar.
   - Refer to stabilizer link removal/installation to connect the stabilizer bar to the links (see page 18-37).
   - Before installing the wheel, clean the mating surfaces of the brake disc and inside of the wheel.

7. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Damper Replacement

Exploded View



(cont'd)

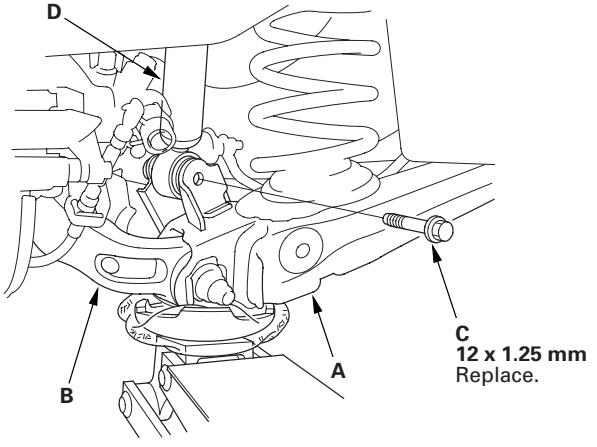
Damper Replacement (cont'd)

Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the rear wheel.

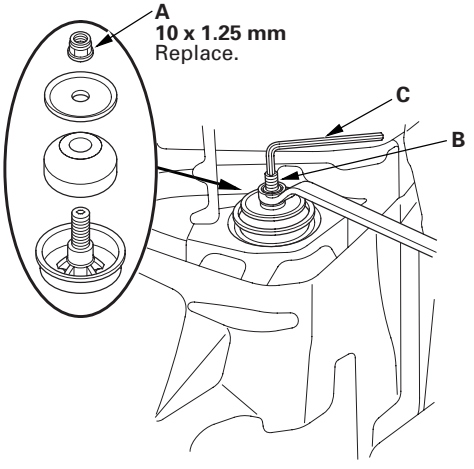
3. Position a floor jack at the connecting point of the trailing arm (A) and the knuckle (B). Raise the floor jack until the suspension begins to compress.



4. Remove the flange bolt (C) that connects the trailing arm and the damper (D).

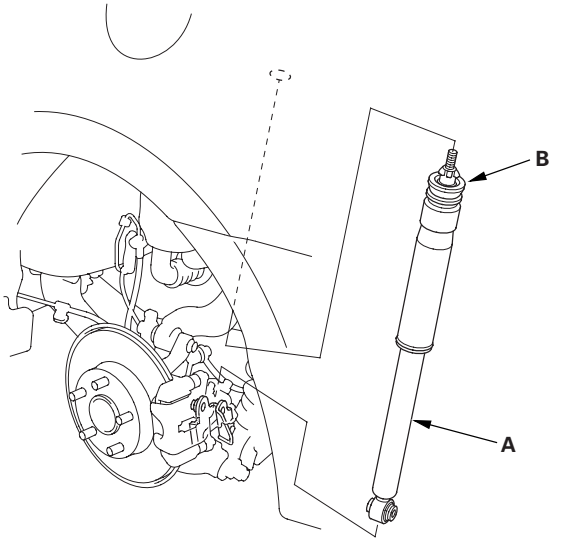
5. Remove the trunk side trim panel (see page 20-80).

6. Remove the self-locking nut (A) while holding the damper shaft (B) with a hex wrench (C).



7. Compress the damper unit (A) by hand, and remove it from the vehicle.

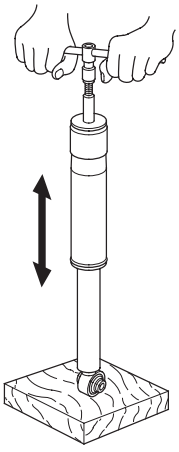
   NOTE: Be careful not to damage the body.



8. Remove the damper mounting bushing (B).

Inspection

1. Push on the damper as shown.



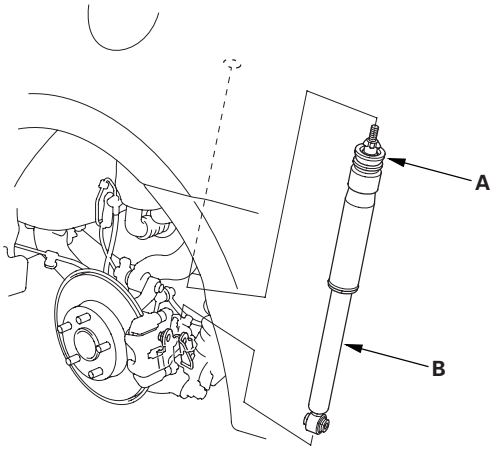
2. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.

3. Check for oil leaks, abnormal noises, or binding during these tests.

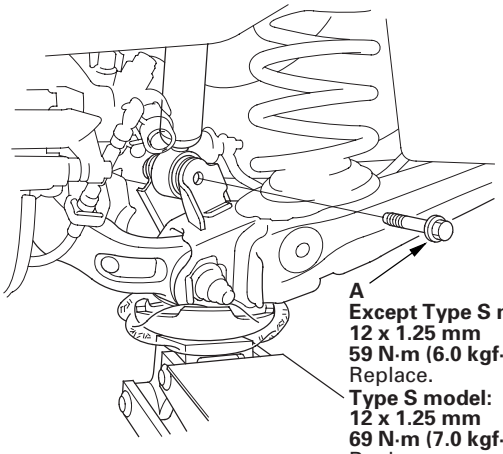
Installation

1. Install the damper mounting bushing (A) onto the damper unit. Position the damper assembly (B) between the body and trailing arm.

   NOTE: Be careful not to damage the body.



2. Position a floor jack under the trailing arm to support the suspension, then install the new damper mounting bolt (A).



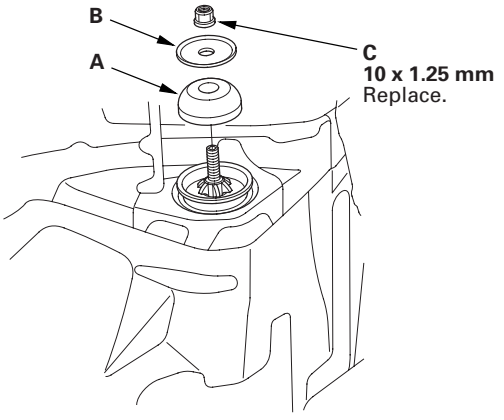
3. Loosely tighten the damper mounting bolt.

4. Raise the rear suspension with the jack until the vehicle just lifts off the safety stands, then tighten the damper mounting bolt to the specified torque value.

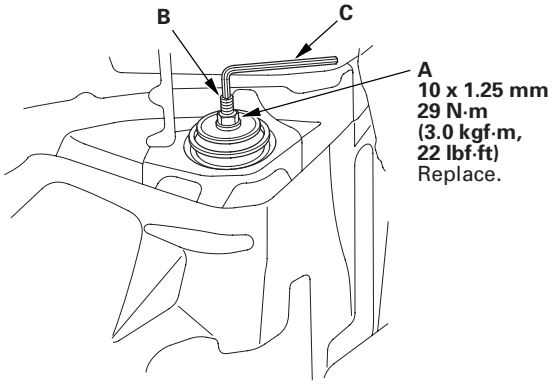
(cont'd)

Damper Replacement (cont'd)

5. Install the damper mounting bushing (A), the damper mounting washer (B), and the new self-locking nut (C) on the damper shaft.



6. Tighten the self-locking nut (A) to the specified torque value while holding the damper shaft (B) with a hex wrench (C).



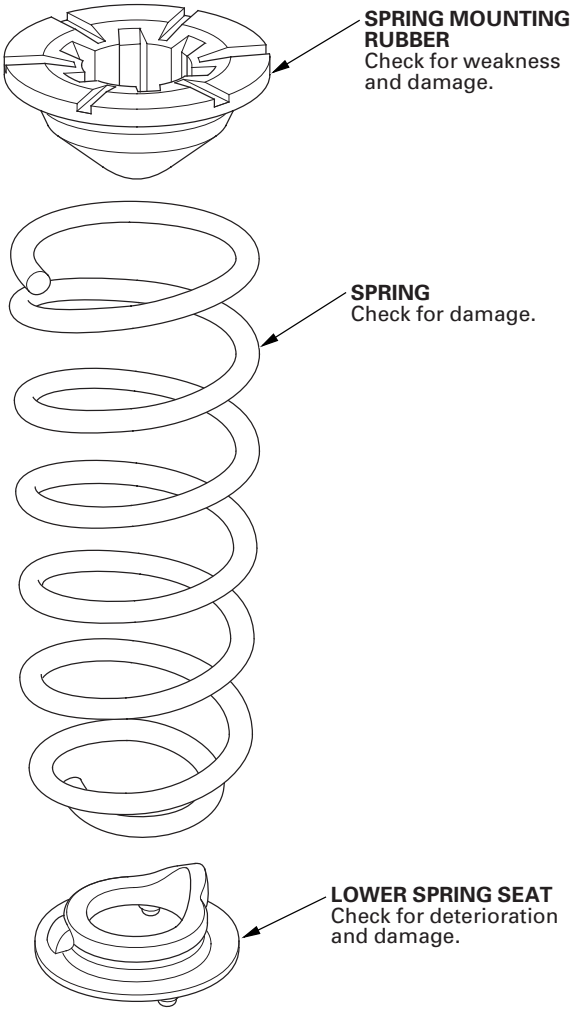
7. Install the trunk side trim panel (see page 20-80).

8. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the rear wheel.

9. Check the wheel alignment, and adjust it if necessary (see page 18-5).

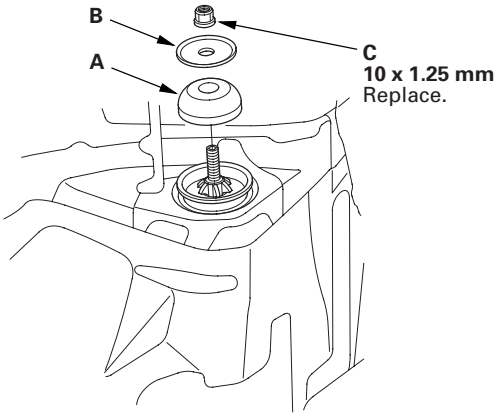
Spring Replacement

Exploded View

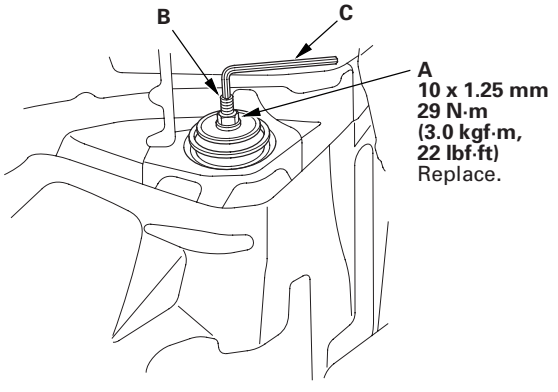


Damper Replacement (cont'd)

5. Install the damper mounting bushing (A), the damper mounting washer (B), and the new self-locking nut (C) on the damper shaft.



6. Tighten the self-locking nut (A) to the specified torque value while holding the damper shaft (B) with a hex wrench (C).



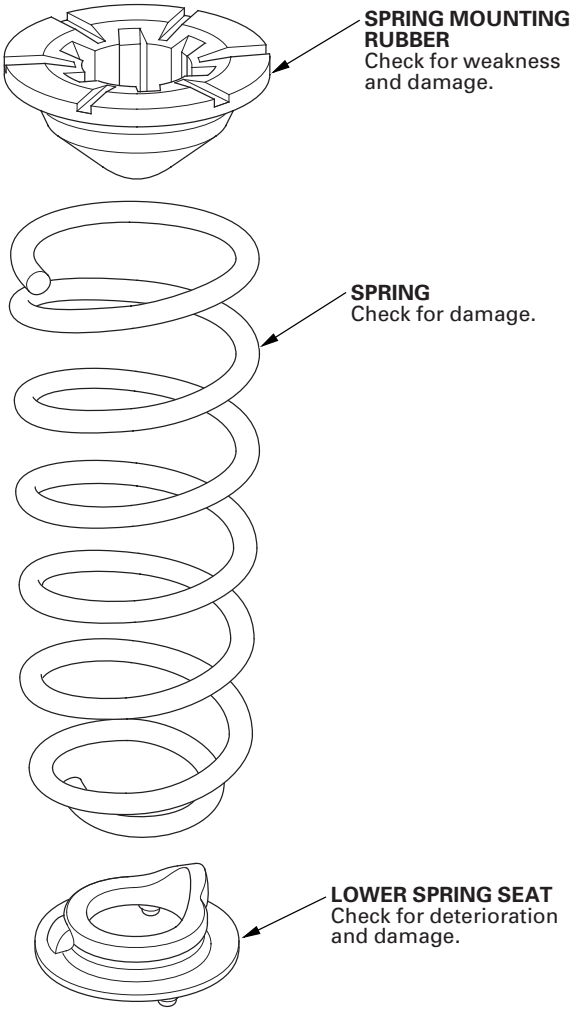
7. Install the trunk side trim panel (see page 20-80).

8. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the rear wheel.

9. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Spring Replacement

Exploded View

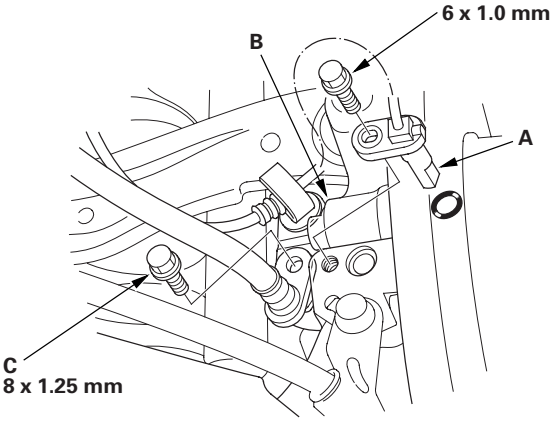


Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

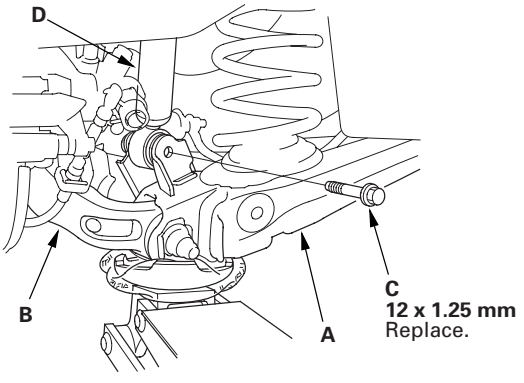
2. Remove the rear wheel.

3. Remove the wheel speed sensor (A) from the knuckle (B). Do not disconnect the wheel speed sensor connector.



4. Remove the brake hose mounting bolt (C) from the bracket.

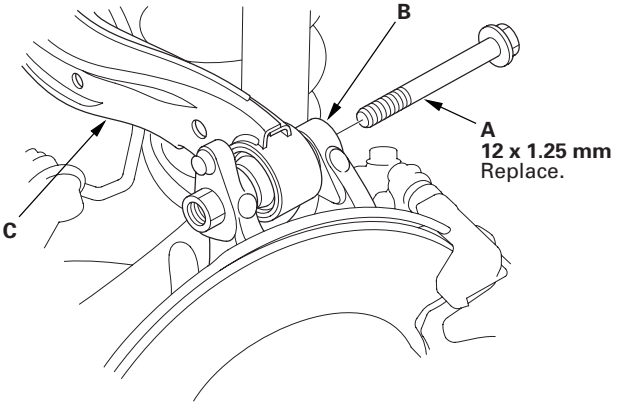
5. Position a floor jack at the connecting point of the trailing arm (A) and the knuckle (B). Raise the floor jack until the suspension begins to compress.



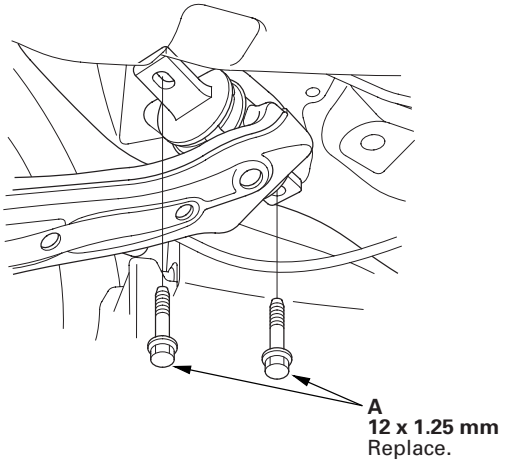
6. Remove the flange bolt (C) that connects the trailing arm and the damper (D).

7. Disconnect the stabilizer link from the trailing arm (see page 18-37).

8. Remove the flange bolt (A) that connects the knuckle (B) and the upper arm (C).



9. Remove the trailing arm front mounting bolts (A).

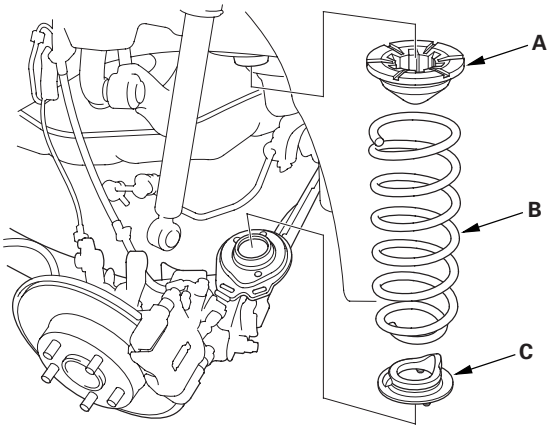


(cont'd)

Spring Replacement (cont'd)

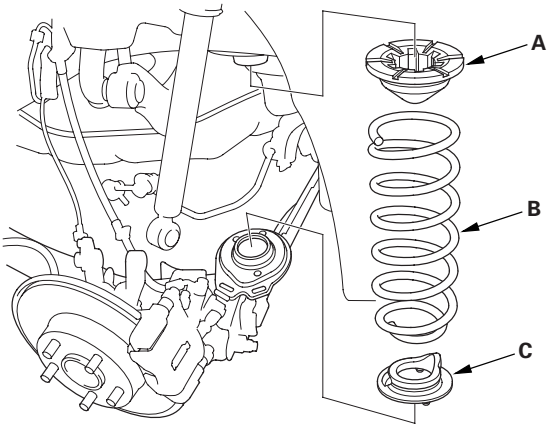
10. Lower the floor jack gradually.
11. Remove the spring mounting rubber (A), the spring (B) and the lower spring seat (C).

    NOTE: If the clip is installed inside the spring mounting rubber, discard it.

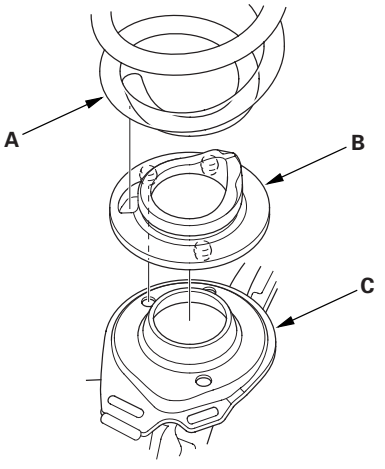


Installation

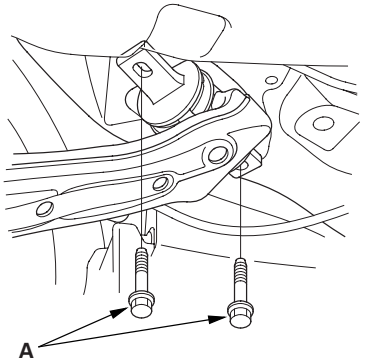
1. Install the spring mounting rubber (A), the spring (B) and the lower spring seat (C).



2. Align the bottom of the spring (A) and the lower spring seat (B) with the trailing arm (C) as shown.

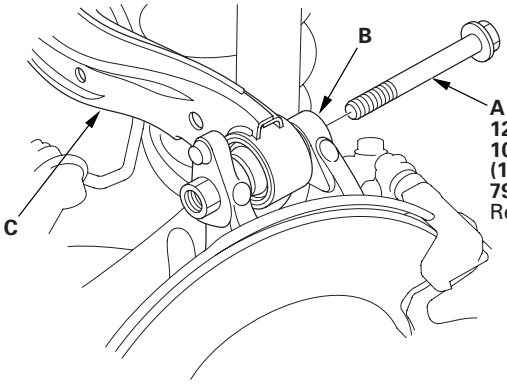


3. Loosely install new trailing arm front mounting bolts (A).



A
'06 model:
12 x 1.25 mm
108 N·m (11.0 kgf·m, 79.6 lbf·ft)
Replace.
'07-08 except Type S models:
12 x 1.25 mm
110 N·m (11.2 kgf·m, 81.0 lbf·ft)
Replace.
'07-08 Type S models:
12 x 1.25 mm
115 N·m (11.7 kgf·m, 84.6 lbf·ft)
Replace.
'09 model:
12 x 1.25 mm
115 N·m (11.7 kgf·m, 84.6 lbf·ft)
Replace.

4. Loosely install the new flange bolt (A) that connects the knuckle (B) and the upper arm (C).

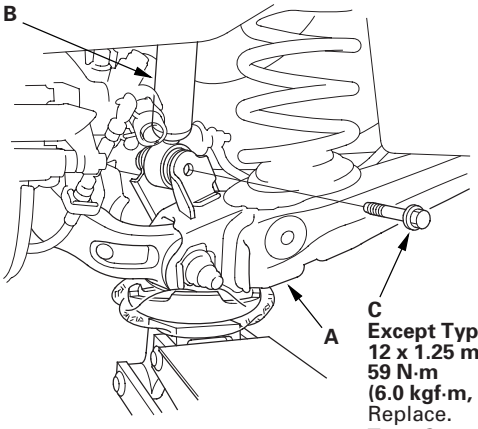


B

A
12 x 1.25 mm
108 N·m
(11.0 kgf·m, 79.6 lbf·ft)
Replace.

C

5. Slowly raise the jack until you can align the bolt hole with the holes in the trailing arm (A) and the damper (B), and install the new flange bolt (C).



B

A

C
Except Type S model:
12 x 1.25 mm
59 N·m
(6.0 kgf·m, 43 lbf·ft)
Replace.
Type S model:
12 x 1.25 mm
69 N·m
(7.0 kgf·m, 51 lbf·ft)
Replace.

6. Install the stabilizer link on the trailing arm (see page 18-37).

7. Raise the rear suspension with a floor jack to load the vehicle weight.

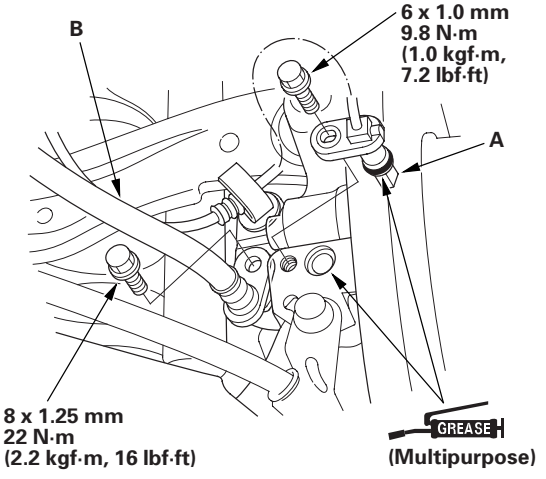
8. Tighten all mounting hardware to the specified torque values.

(cont'd)

Spring Replacement (cont'd)

9. Install the wheel speed sensor (A), and the brake hose (B).

   NOTE:
   - Apply multipurpose grease to the mating surfaces on the knuckle and the O-ring during reassembly.
   - To prevent O-ring damage, the wheel speed sensor must be installed with the guide pin tool (see step 5 on page 19-175).

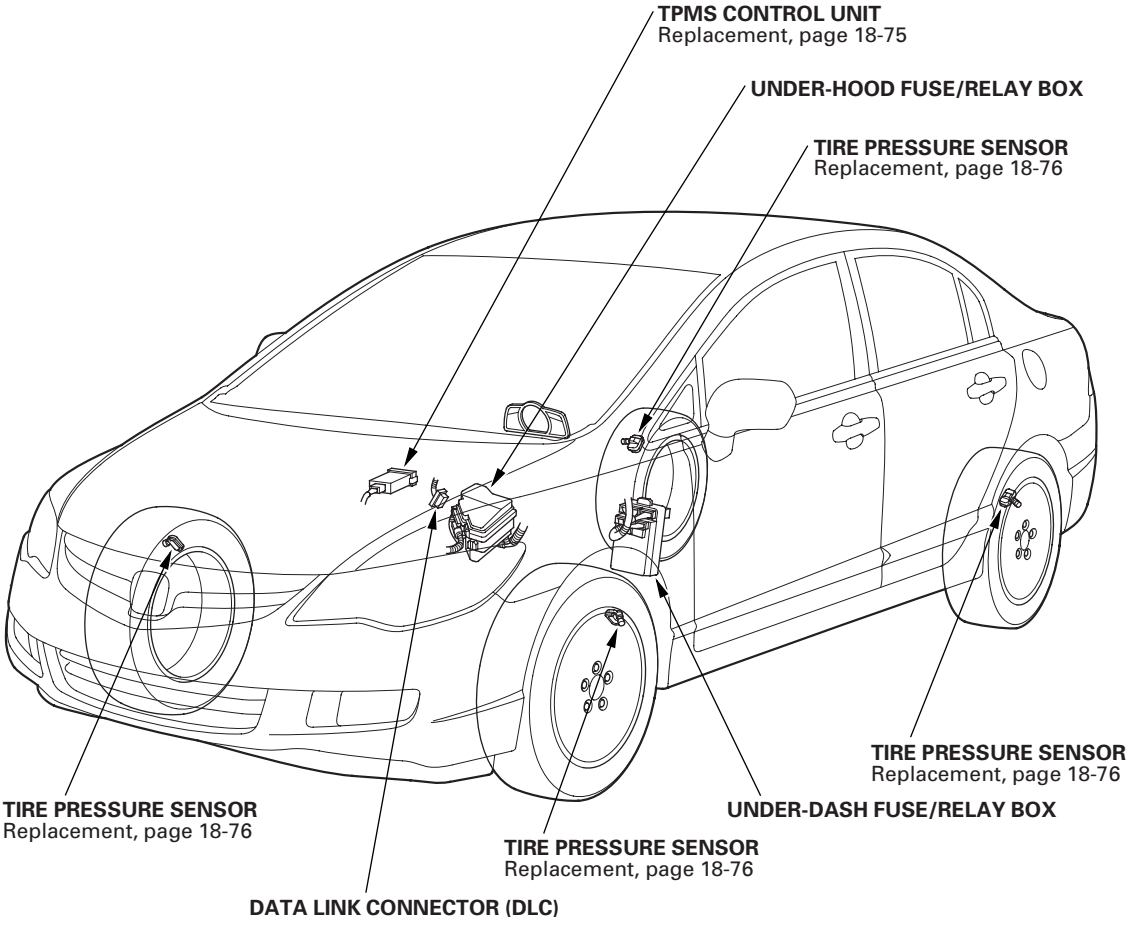


10. Clean the mating surfaces of the brake disc and the inside of the wheel, then install the rear wheel.

11. Check the wheel alignment, and adjust it if necessary (see page 18-5).

Suspension

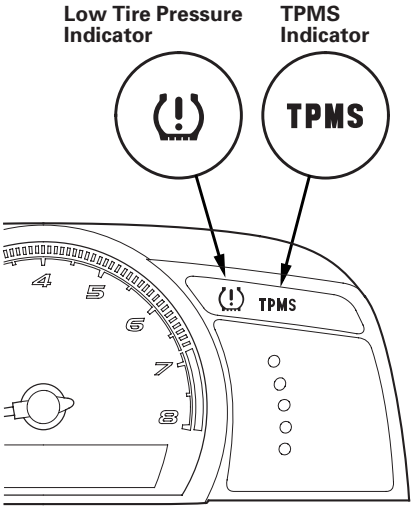
Component Location Index



General Troubleshooting Information

System Indicator

The TPMS (tire pressure monitoring system) has the low tire pressure indicator and the TPMS indicator.



The Low Tire Pressure Indicator

- If the system detects low pressure in any of the four tires, the low tire pressure indicator comes on.
- When this happens, inflate the air and test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute, and the low tire pressure indicator will go off.
- If the control unit detects a problem in the system during an indication of low tire pressure, it turns off the low tire pressure indicator, stores the DTC(s), and turns on the TPMS indicator.

The TPMS Indicator

- If a problem is detected in the system, the TPMS indicator comes on.
- If low tire pressure and a problem in the system are detected, only the TPMS indicator comes on.

  If the system is OK, the TPMS indicator and the low tire pressure indicator should come on when you turn the ignition switch to ON (II), and then go off 2 seconds later. If they don't, there is a problem with the system.

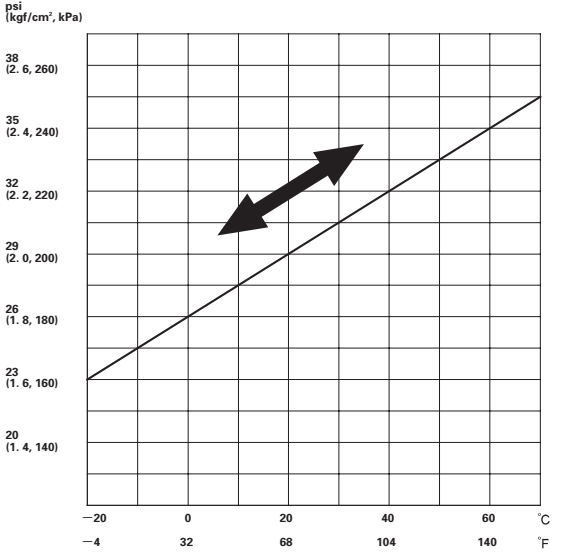
DTC 11, 13, 15, 17

If the system detects low pressure in any of the four tires, the low tire pressure indicator comes on, and the control unit sets one or more of these codes: DTC 11, 13, 15, 17. When the tire pressure returns to normal, and the TPMS control unit receives the normal pressure signal from the tire pressure sensor, the control unit turns off the indicator. However TPMS control unit still retains the DTC(s).

NOTE: It is necessary to test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute so that tire pressure sensor transmits the signal.

Tire Pressure Changing by Temperature

The pressures increase slightly as the temperature in the tires rises during driving.
Pressures can also increase or decrease slightly with changes in outside air temperature.
A temperature change of about 10 ℃ (18 ℉) changes tire pressure by about 10 kPa (0.1 kgf/cm^2, 1.5 psi). If the temperature drops, tire pressure could decrease just enough to turn on the low tire pressure indicator, but later, the tire temperature could increase enough to turn the indicator off. To resolve a complaint of such intermittent indications, confirm and clear the stored DTC(s) and check the tire pressures. Then explain to the client how temperature changes can affect the system.



(cont'd)

General Troubleshooting Information (cont'd)

Problems That Are Not System Faults

- Tire Sealant
  Fluid sealant used to repair a punctured tire can damage the tire pressure sensor mounted on each wheel. It can prevent the system from detecting the correct tire pressure, which sets a DTC 11, 13, 15, or 17 even though the system is normal.
- Cold Weather
  When the weather is extremely cold, about −40 ℃ (−40 ℉) or colder, the output of the lithium battery in each tire pressure sensor may drop far enough that the control unit sets a DTC for low battery voltage (31, 33, 35, or 37) even though the system is normal.
- Non-TPMS Wheels (Including Spare Tire)
  Vehicles equipped with TPMS must use wheels made for the system. Every TPMS wheel has an exclusive mark; do not use any other type of wheel.
  When a flat tire is replaced with the spare tire, the TPMS indicator comes on (DTC 32, 34, 36, or 38) because the system is no longer receiving the signal from the flat tire's transmitter.
  This is not a problem with the spare tire.

How a Diagnostic Trouble Code (DTC) is Set

- When the system detects a problem, the TPMS control unit sets a code, but shifts to fail-safe mode, and does not alert the driver to low tire pressures.
- If the TPMS control unit loses power, or fails, the TPMS indicator comes on, but no DTCs are set.
- The memory can hold all the DTCs that could possibly be set. However, when the same DTC is detected more than once, the most recent one overwrites the previous one, so only the latest DTC of each type is stored.
- DTCs are indicated in ascending order, not in the order they occurred.
- Set DTCs are stored in the EEPROM (nonvolatile memory), and cannot be cleared by disconnecting the battery. To clear a DTC, connect the HDS (Honda Diagnostic System) to the data link connector (DLC), and follow the screen prompts.

How to Troubleshoot DTCs

DTC troubleshooting procedures assume the cause of the problem is still present and the TPMS indicator is still on. Do not use a troubleshooting procedure unless the system has set the DTC listed for it.

NOTE: For DTCs 11, 13, 15, and 17 (tire low pressure), the TPMS indicator comes on only if the DTCs are caused by a system problem rather than low tire pressure.

1. Ask the client to describe the conditions when the indicator came on, and try to reproduce the same conditions for troubleshooting. Find out if the client checked and/or adjusted tire pressures since the indicator came on.

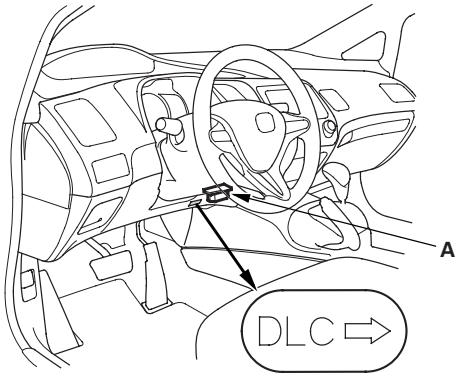
2. If an indicator does not come on during the test-drive, check for loose terminals, poor contact due to damaged terminals, etc. Before you start troubleshooting.

3. After troubleshooting, repair and clear the DTCs, and test-drive the vehicle. Make sure no indicators come on.

4. Check for DTCs from other control units that are connected via the F-CAN. If there are DTCs that are related to the F-CAN, the most likely cause was that the ignition switch was turned to ON (II) with the TPMS control unit connector disconnected. Clear the DTCs. Check for PGM-FI and TPMS codes, and troubleshoot those first.

How to Retrieve DTCs

1. With the ignition switch in LOCK (0), connect the HDS (Honda Diagnostic System) to the data link connector (DLC) (A) located under the driver's side of the dashboard.

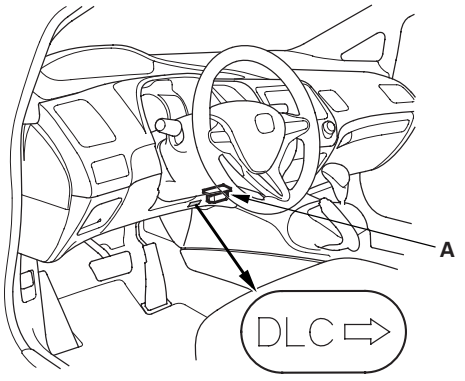


2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC troubleshooting.

   NOTE: See the HDS Help menu for specific instructions.
5. Turn the ignition switch to LOCK (0).

How to Clear DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
4. Clear the DTC(s) by following the screen prompts on the HDS.

   NOTE: See the HDS Help menu for specific instructions.
5. Turn the ignition switch to LOCK (0).

Memorizing the Tire Pressure Sensor ID

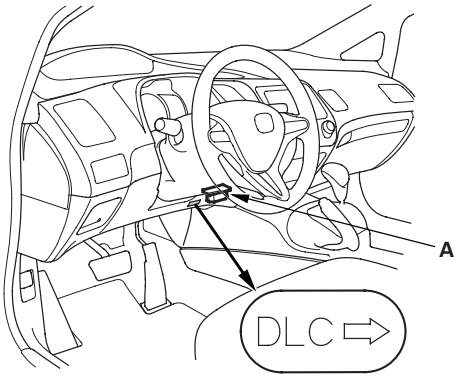
Special Tools Required
Bartech Wheelrite Tech300 TPMS tool J-48714
Available through Honda Canada Inc. Technical Tools Department; Fax #866-398-8665/
e-mail: ch_technicaltools@ch.honda.com

All four tire pressure sensor IDs must be memorized to the TPMS control unit whenever you do any of these actions:

- Replace the TPMS control unit.
- Replace the tire pressure sensor.
- Substitute a known-good wheel with tire pressure sensor.

NOTE:
- To ensure the control unit memorizes the correct ID, the vehicle with the new sensor must be at least 3 m (10 ft) away from other vehicles that have tire pressure sensors.
- When doing a tire rotation, memorizing the sensors in not needed.

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

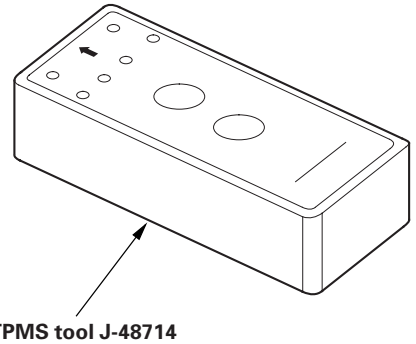


2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).

4. Select Sensor ID Learning from the mode menu on the HDS.

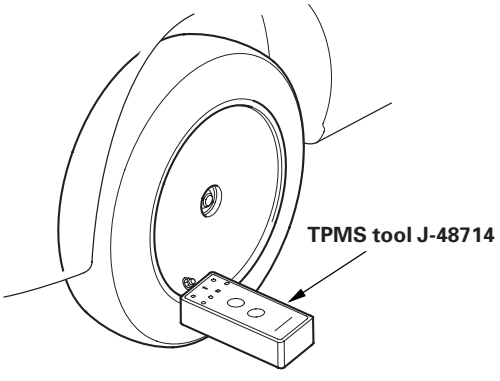
5. Turn on the TPMS tool by pressing the green select button. Press the green select button until the proper light sequence is illuminated as per the tool user's manual.



TPMS tool J-48714

6. Hold the TPMS tool near one wheel, memorize the tire pressure sensor ID by following the screen prompts on the HDS.

   NOTE:
   - If you turn the ignition switch to LOCK (0) before memorizing all four sensor IDs, the memorizing ID is canceled.
   - See the HDS Help menu for specific instructions.



7. Repeat step 6 for each wheel until all four sensor IDs are memorized. When all four IDs are memorized, the low tire pressure indicator blinks.

8. Turn the ignition switch to LOCK (0).

9. Disconnect the HDS from the DLC.

10. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.

11. Make sure the low tire pressure indicator does not blink.

12. Make sure the tires are inflated to the specified tire pressure listed on the doorjamb sticker.

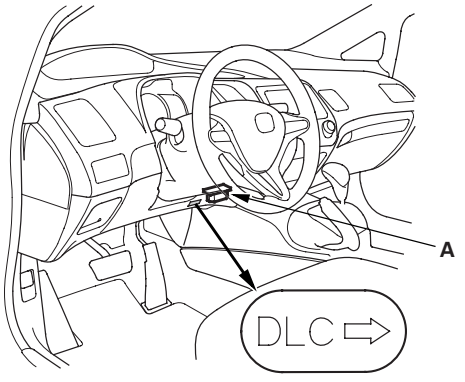
13. Turn the ignition switch to LOCK (0).

Tire Pressure Sensor Location

Special Tools Required
Bartech Wheelrite Tech300 TPMS tool J-48714
Available through Honda Canada Inc. Technical Tools Department; Fax # 866-398-8665/
e-mail: ch_technicaltools@ch.honda.com

NOTE:
- This procedure locates where the tire pressure sensors 1, 2, 3, 4 are mounted, when activated by the TPMS sensor initializer tool.
- Position the vehicle at least 3 m (10 ft) away from other vehicles that have tire pressure sensors.

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).

4. Select Function Test from the mode menu, then select Sensor Position Check on the HDS.

(cont'd)

8. Turn the ignition switch to LOCK (0).

9. Disconnect the HDS from the DLC.

10. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.

11. Make sure the low tire pressure indicator does not blink.

12. Make sure the tires are inflated to the specified tire pressure listed on the doorjamb sticker.

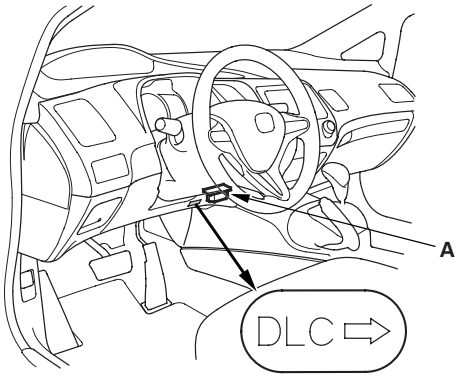
13. Turn the ignition switch to LOCK (0).

Tire Pressure Sensor Location

Special Tools Required
Bartech Wheelrite Tech300 TPMS tool J-48714
Available through Honda Canada Inc. Technical Tools Department; Fax # 866-398-8665/
e-mail: ch_technicaltools@ch.honda.com

NOTE:
- This procedure locates where the tire pressure sensors 1, 2, 3, 4 are mounted, when activated by the TPMS sensor initializer tool.
- Position the vehicle at least 3 m (10 ft) away from other vehicles that have tire pressure sensors.

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).

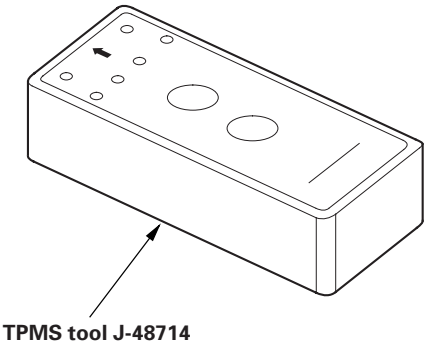
3. Make sure the HDS communicates with the vehicle and the TPMS control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).

4. Select Function Test from the mode menu, then select Sensor Position Check on the HDS.

(cont'd)

Tire Pressure Sensor Location (cont'd)

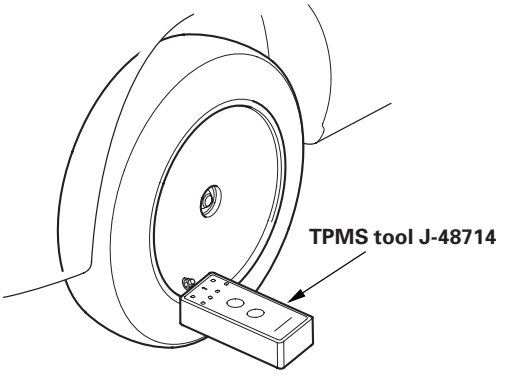
5. Turn on the TPMS tool by pressing the green select button. Press the green select button until the proper light sequence is illuminated as per the tool user's manual.



TPMS tool J-48714

6. Follow the prompts on the HDS to activate the tire pressure sensors using the TPMS tool.

   NOTE: See the HDS Help menu for specific instructions.



7. Check the HDS screen, and note the active sensor reception order of tire pressure sensor 1, 2, 3, 4.

   NOTE:
   - If the sensor does not respond to the TPMS tool, make sure the tool was turned on properly. Refer to the HDS.
   - If the tool start mode is OK, then rotate the tire 1/4 turn and retry.
   - If the sensor still does not respond after one full rotation of the tire, then check for DTC 32, 34, 36, and 38 with the HDS.

8. Turn the ignition switch to LOCK (0).

DTC Troubleshooting Index

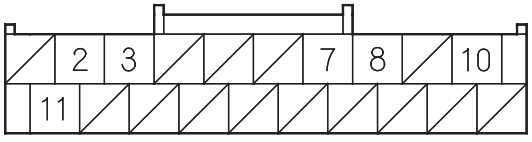
DTC	Detection Item	Troubleshooting
11	Tire 1 Low Air Pressure	(see page 18-63)
13	Tire 2 Low Air Pressure	(see page 18-63)
15	Tire 3 Low Air Pressure	(see page 18-63)
17	Tire 4 Low Air Pressure	(see page 18-63)
21	Tire 1 Pressure Sensor Abnormally High Temperature	(see page 18-64)
22	Tire 2 Pressure Sensor Abnormally High Temperature	(see page 18-64)
23	Tire 3 Pressure Sensor Abnormally High Temperature	(see page 18-64)
24	Tire 4 Pressure Sensor Abnormally High Temperature	(see page 18-64)
31	Tire 1 Pressure Sensor Low Battery Voltage	(see page 18-65)
32	Tire 1 Pressure Sensor Transmission Failure	(see page 18-66)
33	Tire 2 Pressure Sensor Low Battery Voltage	(see page 18-65)
34	Tire 2 Pressure Sensor Transmission Failure	(see page 18-66)
35	Tire 3 Pressure Sensor Low Battery Voltage	(see page 18-65)
36	Tire 3 Pressure Sensor Transmission Failure	(see page 18-66)
37	Tire 4 Pressure Sensor Low Battery Voltage	(see page 18-65)
38	Tire 4 Pressure Sensor Transmission Failure	(see page 18-66)
41	Abnormal Signal Reception Error	(see page 18-67)
51	Tire 1 Pressure Sensor Registration Error	(see page 18-67)
53	Tire 2 Pressure Sensor Registration Error	(see page 18-67)
55	Tire 3 Pressure Sensor Registration Error	(see page 18-67)
57	Tire 4 Pressure Sensor Registration Error	(see page 18-67)
81	TPMS Control Unit Failure	(see page 18-68)
83	No VSP Signal	(see page 18-69)
85	F-CAN Communication Failure	(see page 18-69)
91	Tire 1 Pressure Sensor Internal Error	(see page 18-70)
93	Tire 2 Pressure Sensor Internal Error	(see page 18-70)
95	Tire 3 Pressure Sensor Internal Error	(see page 18-70)
97	Tire 4 Pressure Sensor Internal Error	(see page 18-70)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
HDS does not communicate with the TPMS control unit or the vehicle	Troubleshooting the DLC circuit (see page 11-204)	
Low tire pressure indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-71)	
Low tire pressure indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-72)	
TPMS indicator does not come on, and no DTCs are stored	Symptom Troubleshooting (see page 18-73)	
TPMS indicator does not go off, and no DTCs are stored	Symptom Troubleshooting (see page 18-73)	

System Description

TPMS Control Unit Inputs and Outputs for 20P Connector



Wire side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal sign	Description	Signal
2	WHT	CAN H (F-CAN communication signal high)	F-CAN communication circuit	Ignition switch ON (II): pulses
3	BLK	GND (Ground)	Ground for the TPMS control unit	Less than 0.1 V at all times
7	LT BLU	K-LINE (Data link connector)	Communications with the HDS	———
8	BRN	IG1 (Ignition switch 1)	Power source for activating the system	Ignition switch ON (II): battery voltage Ignition switch in LOCK (0): less than 0.1 V
10	BLU	+B (Battery positive)	Power source for the TPMS control unit	Battery voltage at all times
11	RED	CAN L (F-CAN communication signal low)	F-CAN communication circuit	Ignition switch ON (II): pulses

(cont'd)

System Description (cont'd)

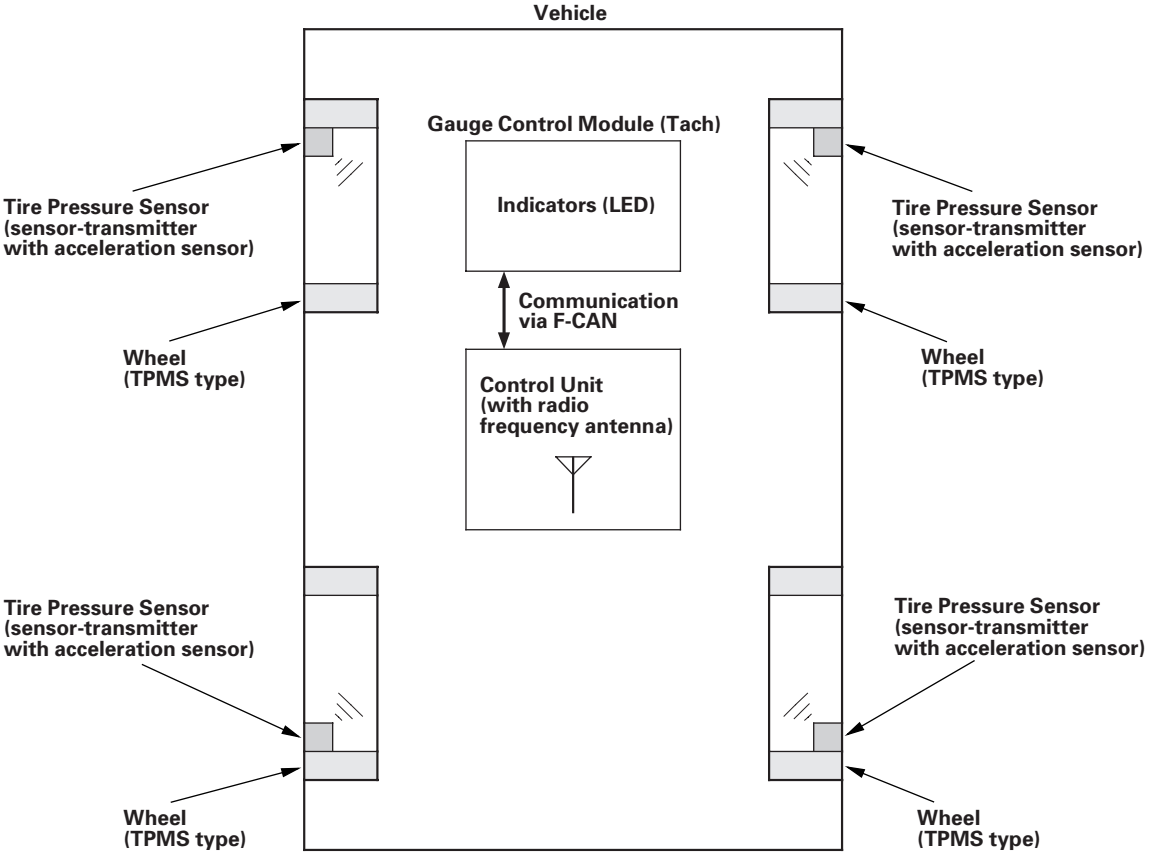
System Structure

Once the vehicle speed exceeds 45 km/h (28 mph), the TPMS control unit monitors all four tire pressure sensors and the system function. If it detects low pressure in a tire, it alerts the driver by turning on the low tire pressure indicator. If it detects a problem in the system, it turns on the TPMS indicator.

Control unit
Mounted inside of the dash, the TPMS control unit receives wireless pressure sensor ID signals every time the vehicle speeds exceeds 45 km/h (28 mph). It also receives wireless signals from the transmitters for tire pressure and the sensor condition, and it continuously monitors and controls the system. The TPMS control unit cannot directly determine the position (location) of a tire pressure sensor(s) on the vehicle since it is a wireless system. TPMS sensor locations will change during scheduled vehicle maintenance (tire rotation).

NOTE: To determine the actual location of each TPMS wheel sensor on the vehicle, do the tire pressure sensor location procedure (see page 18-53). Once the tire pressure sensor locations are identified, write the sensor ID on the side wall of the tire with a tire crayon to eliminate confusion.

Indicators
Two indicators are in the gauge control module (tach): The low tire pressure indicator comes on when any tire pressure is low, and the TPMS indicator that comes on only if there's a problem with the system.
The low tire pressure indicator alerts the driver that a tire(s) pressure is low, but does not specify the tire(s) location.



Tire pressure sensor

Each sensor is an integrated unit made up of the tire valve stem, a tire pressure sensor, and a transmitter. The unit is attached to the inside of the wheel, around the valve stem. The sensor transmits the internal tire information to the control unit once every 60 seconds when the vehicle speed exceeds 45 km/h (28 mph). When the TPMS control unit receives a tire pressure signal that is less than 175 kPa (1.8 kgf/cm^2, 25 psi) with 16 inch wheels, or 183 kPa (1.9 kgf/cm^2, 27 psi) with 17 inch wheels, the TPMS control unit then turns on the low tire pressure indicator. When that tire's pressure is increased to more than 200 kPa (2.0 kgf/cm^2, 29 psi) with 16 inch wheels, or 210 kPa (2.1 kgf/cm^2, 30 psi) with 17 inch wheels, and the vehicle is driven above 45 km/h (28 mph) the transmitter sends the tire pressure signal to the control unit, and then the control unit turns the indicator off.

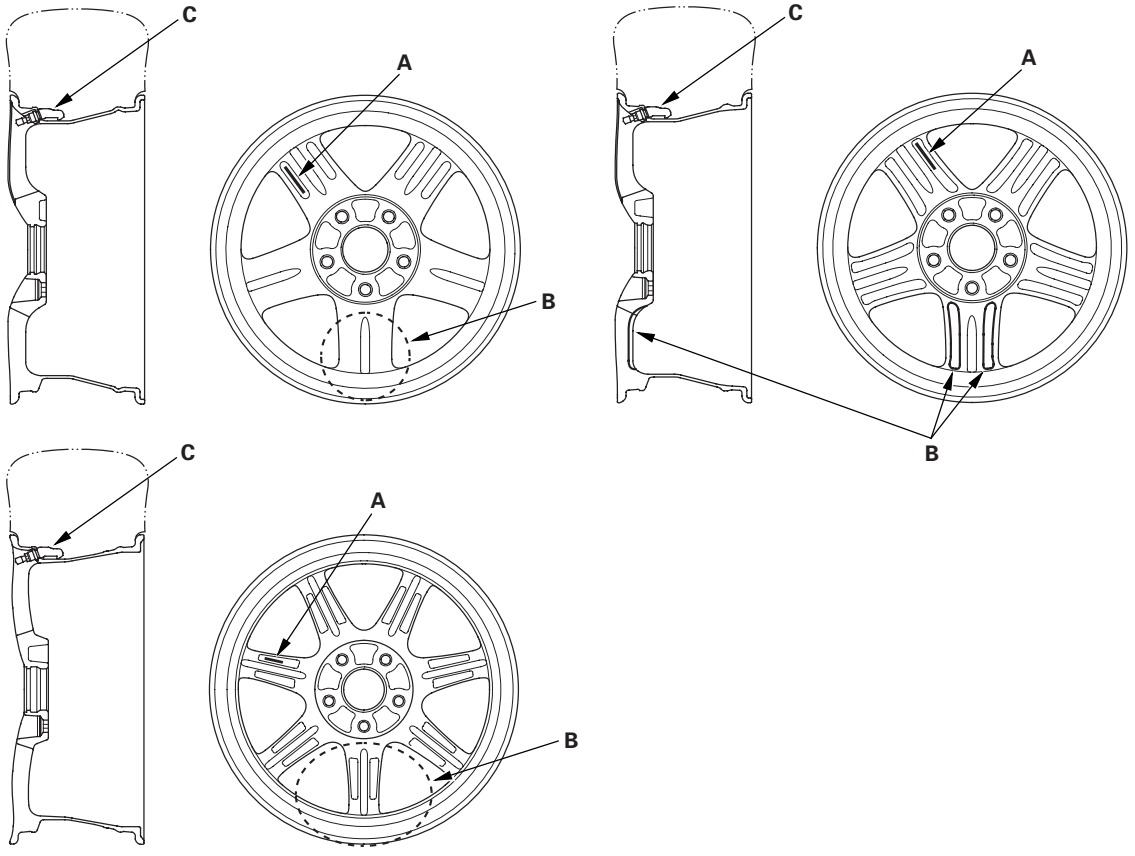
NOTE: Do not mix the TPMS tire pressure sensors or wheels with other TPMS types. Be sure to use the correct type sensors and wheels for this system.

Sensor are active:

- When the wheel rotates over 45 km/h (28 mph), the sensor detects the momentum, switches the sensor to the normal function mode.
- The LF (low frequency) signal of the TPMS tool makes the sensor active even though the vehicle is stopped. The tire pressure sensor goes into sleep mode when the acceleration sensor detects the wheel is stationary for 5 minutes or more continuously.

Wheels

The TPMS will not work unless TPMS type wheels are installed on the vehicle. There are three different types of wheels used. The original equipment wheels have a ''TPMS'' mark (A) on them and are counterweighted (B) the opposite of the tire pressure sensor (C), and counterbalance the weight of the sensor.



(cont'd)

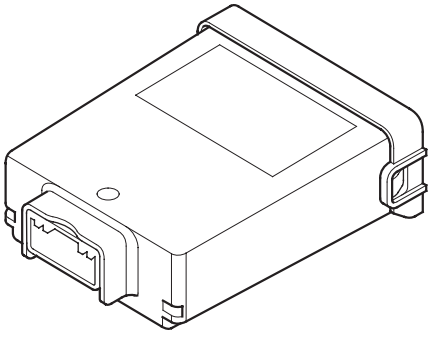
System Description (cont'd)

System Communication

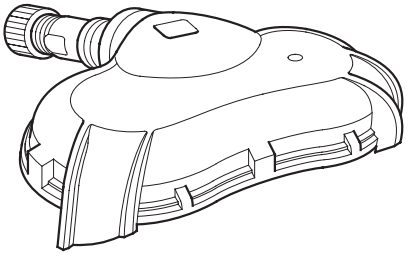
- When the vehicle is traveling more than 45 km/h (28 mph), an RF (radio frequency) band wave signal is transmitted from each tire pressure sensor to the control unit.
- When the wheels rotate, and the tire pressure sensors momentum is detected, switching them from sleep mode to normal function (awake) mode. After the vehicle is stationary for 5 minutes, the sensors switch from normal function mode back to sleep mode to extend their battery life.
- Each tire pressure sensor has its own ID to prevent jamming by similar systems on other vehicles. After memorizing all the sensor IDs, the control unit recognizes only those specific signals.
- An ID cannot be memorized automatically. The control unit knows which ID belongs to each tire pressure sensor. This recurring ID confirmation prevents any confusion in the system as a result of normal tire rotation.

NOTE: Be careful not to bend the brackets on the TPMS control unit: Misalignment of the control unit could interfere with sending and receiving signals.

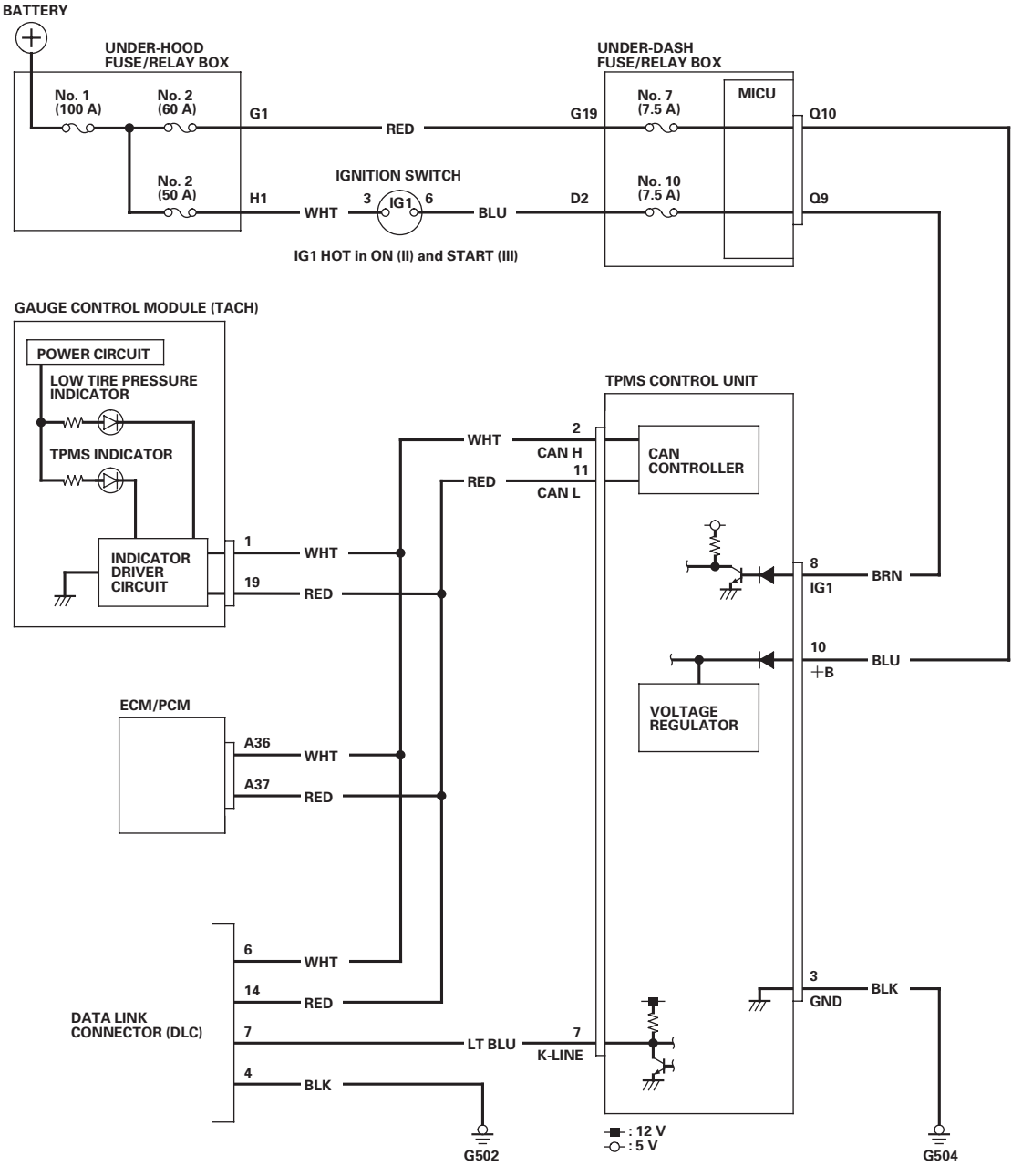
Control Unit
(With Radio Frequecy Antenna)



Tire Pressure Sensor
(Sensor-transmitter with acceleration sensor)



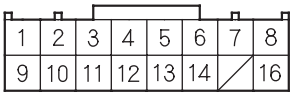
Circuit Diagram



(cont'd)

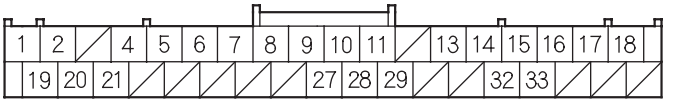
Circuit Diagram (cont'd)

UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (16P)



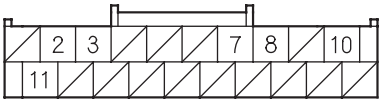
Wire side of female terminals

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



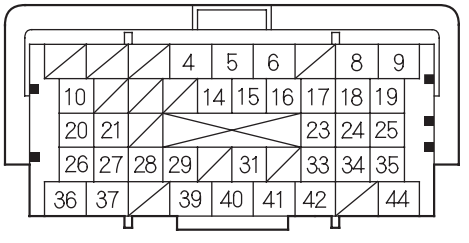
Wire side of female terminals

TPMS CONTROL UNIT 20P CONNECTOR



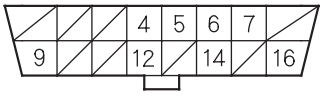
Wire side of female terminals

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

DTC Troubleshooting

DTC 11, 13, 15, 17: Tire Low Air Pressure

NOTE: If low tire pressure is detected, the control unit sets one or more of these DTCs, and turns on the low tire pressure indicator. If the low tire pressure indicator comes on because of a low tire pressure, and the client corrects it before bringing the vehicle in, the DTCs will be stored, but the indicator turns off.

1. Turn the ignition switch to LOCK (0).
2. Make sure the tires are inflated to the specified tire pressure listed on the doorjamb sticker.
3. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.

   Does the low tire pressure indicator go off?

   YES—The system is OK at this time. Check for and repair the cause of air loss. ■

   NO—Go to step 4.
4. Check for DTCs with the HDS.
5. Note the tire pressure sensor(s) number by the indicated DTC.

DTC	Tire Pressure Sensor Number
11	No. 1
13	No. 2
15	No. 3
17	No. 4

6. Do the tire pressure sensor location procedure to determine the affected tire location and relate it to the tire pressure sensor number (see page 18-53).
7. Check the TIRE 1, TIRE 2, TIRE 3, or TIRE 4 AIR PRESSURE in the TPMS DATA LIST with the HDS, and compare it with the actual measured tire pressure.

   Is the indicated tire pressure on the HDS within 40 kPa (0.4 kgf/cm², 6 psi) of the actual tire pressure?

   YES—Go to step 8.

   NO—Replace the appropriate tire pressure sensor (see page 18-76). ■
8. Clear the DTC with the HDS.
9. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.
10. Check for DTCs with the HDS.

    Is DTC 11, 13, 15, or 17 indicated?

    YES—Replace the TPMS control unit (see page 18-75). ■

    NO—If any other DTCs are indicated, troubleshoot the appropriate DTC. If no DTCs are indicated, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 21, 22, 23, 24: Tire Pressure Sensor Abnormally High Temperature

1. Turn the ignition switch to LOCK (0).
2. Make sure the tires have cooled down.

   NOTE: An abnormal rise in the internal temperature of the tires can be caused by
   - Excessive braking
   - Failure to release the parking brake (rear tires only)
   - Leaving the vehicle running while parked (front tires only)
   - Improper assembly of a wheel and tire
3. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.

   Does the TPMS indicator go off?

   YES—The system is OK at this time. Clear the DTC with the HDS. ■

   NO—Go to step 4.
4. Check for DTCs with the HDS.
5. Note the tire pressure sensor(s) number by the indicated DTC.

DTC	Tire Pressure Sensor Number
21	No. 1
22	No. 2
23	No. 3
24	No. 4

6. Do the tire pressure sensor location procedure to determine the affected tire location and relate it to the tire pressure sensor number (see page 18-53).
7. Check the TIRE 1, TIRE 2, TIRE 3, or TIRE 4 AIR TEMPERATURE in the TPMS DATA LIST with the HDS.

   Is 80 °C (176 °F) or more indicated?

   YES—Replace the appropriate tire pressure sensor (see page 18-76). ■

   NO—Go to step 8.
8. Clear the DTC with the HDS.
9. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.
10. Check for DTCs with the HDS.

    Is DTC 21, 22, 23, or 24 indicated?

    YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

    NO—If any other DTCs are indicated, troubleshoot the appropriate DTC. If no DTC are indicated, the system is OK at this time. ■

DTC 31, 33, 35, 37: Tire Pressure Sensor Low Battery Voltage

NOTE: This problem occurs when the temperature around the sensor is —40 ℃ (—40 ℉) or less. Note that the diagnosis must be made in a place where ambient temperature is —40 ℃ (—40 ℉) or more.

1. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.

   Does the TPMS indicator go off?

   YES—The system is OK at this time. Clear the DTC with the HDS. ■

   NO—Go to step 2.

2. Check for DTCs with the HDS.

3. Note the tire pressure sensor(s) number by the indicated DTC.

DTC	Tire Pressure Sensor Number
31	No. 1
33	No. 2
35	No. 3
37	No. 4

4. Do the tire pressure sensor location procedure to determine the affected tire location and relate it to the tire pressure sensor number (see page 18-53).

   Did each tire pressure sensor respond to the TPMS tool?

   YES—Go to step 5.

   NO—Check that the tire pressure sensor is properly mounted. If necessary, replace the appropriate tire pressure sensor (see page 18-76). ■

5. Check the TIRE 1, TIRE 2, TIRE 3, or TIRE 4 PRESSURE SENSOR TRANSMITTER BATTERY in the TPMS DATA LIST with the HDS.

   Is LOW indicated?

   YES—Replace the appropriate tire pressure sensor (see page 18-76). ■

   NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

DTC Troubleshooting (cont'd)

DTC 32, 34, 36, 38: Tire Pressure Sensor Transmission Failure

NOTE: Inspect for an aftermarket electrical device(s) (such as an inverter, battery charger, etc) interfering with the RF signal from the sensors when driving the vehicle.

1. Turn the ignition switch to ON (II).
2. Make sure all four wheels are TPMS wheels with the mounted tire pressure sensors.

   Are TPMS type wheels with a tire pressure sensor mounted on the vehicle?

   YES—Go to step 3.

   NO—Install the TPMS wheel, and then memorize the pressure sensor ID with the HDS (see page 18-52). ■
3. Turn the ignition switch to ON (II).
4. Check for DTCs with the HDS.
5. Note the tire pressure sensor(s) number by the indicated DTC.

DTC	Tire Pressure Sensor Number
32	No. 1
34	No. 2
36	No. 3
38	No. 4

6. Do the tire pressure sensor location procedure to determine the affected tire location and relate it to the tire pressure sensor number (see page 18-53).

   Did each tire pressure sensor respond to the TPMS tool?

   YES—Go to step 7.

   NO—Check for an aftermarket electrical device(s) interfering with the RF signals from the sensors. If there are no electrical devices causing interference, replace the appropriate tire pressure sensor (see page 18-76). ■
7. Turn the ignition switch to LOCK (0), and wait 5 minutes or more.
8. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.
9. Check the TIRE 1, TIRE 2, TIRE 3, or TIRE 4 PRESSURE SENSOR TRANSMITTER STATUS in the TPMS DATA LIST with the HDS.

   Is NORMAL indicated for all four tires within one full turn of each tire?

   YES—The system is OK at this time. Clear the DTC with the HDS.

   NO—Replace the appropriate tire pressure sensor (see page 18-76). ■

DTC 41: Abnormal Signal Reception Error

NOTE:
- Inspect for an aftermarket electrical device(s) (such as an inverter, battery charger, etc) interfering with the RF signal from the sensors when driving the vehicle.
- If DTC 32, 34, 36, or 38 is also set, troubleshoot those DTCs first.

1. Turn the ignition switch to LOCK (0).
2. Make sure all four wheels are TPMS wheels with the mounted tire pressure sensors.

   Are TPMS type wheels with tire pressure sensors mounted on the vehicle?

   YES—Go to step 3.

   NO—Install the TPMS wheel, and then memorize the pressure sensor ID with the HDS (see page 18-52). ■
3. Memorize the tire pressure sensor ID with the HDS (see page 18-52).

   Did each tire pressure sensor respond to the TPMS tool?

   YES—The system is OK at this time, clear the DTC with the HDS. ■

   NO—Replace the TPMS control unit (see page 18-75). ■

DTC 51, 53, 55, 57: Tire Pressure Sensor Registration Error

NOTE:
- These DTCs will only set during initialization with the HDS.
- Inspect for an aftermarket electrical device(s) (such as an inverter, battery charger, etc) interfering with the RF signal from the sensors when driving the vehicle.

1. Turn the ignition switch to LOCK (0).
2. Make sure all four wheels are TPMS wheels with the mounted tire pressure sensors.

   Are TPMS type wheels with a tire pressure sensor mounted on the vehicle?

   YES—Go to step 3.

   NO—Install the TPMS wheel, and then memorize the pressure sensor ID with the HDS (see page 18-52). ■
3. Turn the ignition switch to ON (II).
4. Check for DTCs with the HDS.
5. Note the tire pressure sensor(s) number by the indicated DTC.

DTC	Tire Pressure Sensor Number
51	No. 1
53	No. 2
55	No. 3
57	No. 4

(cont'd)

DTC Troubleshooting (cont'd)

6. Do the tire pressure sensor location procedure to determine the affected tire location and relate it to the tire pressure sensor number (see page 18-53).

   Did each tire pressure sensor respond to the TPMS tool?

   YES—Go to step 7.

   NO—Check for an aftermarket electrical device interfering with the RF signals from the sensors. If there are no electrical devices causing interference, replace the appropriate tire pressure sensor (see page 18-76). ■

7. Turn the ignition switch to LOCK (0), and wait 5 minutes or more.

8. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.

9. Check for DTCs with the HDS.

   Is DTC 51, 53, 55, or 57 indicated?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

   NO—The system is OK at this time. Clear the DTC with the HDS. ■

DTC 81: TPMS Control Unit Failure

NOTE: Low battery voltage can cause this DTC. Make sure the battery is fully charged and in good condition (see page 22-67).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0), then turn the ignition switch to ON (II) again.

4. Check for DTCs with the HDS.

   Is DTC 81 indicated?

   YES—Replace the TPMS control unit (see page 18-75). ■

   NO—The system is OK at this time. ■

DTC 83: No VSP Signal

NOTE: If DTC 85 stored at the same time as DTC 83, troubleshoot DTC 85 first, then recheck for DTC 83.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 10 km/h (7 mph) or more.
4. Check the speedometer.

   Does the speedometer register speed?

   YES—Go to step 5.

   NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then go to step 1 and recheck. If the ECM/PCM was updated and DTCs are not indicated, troubleshooting is complete. If the ECM/PCM was substituted and DTCs are not indicated, replace the original ECM/PCM (see page 11-228). ■
5. Check the VEHICLE SPEED in the TPMS DATA LIST with the HDS.

   Is the vehicle speed indicated?

   YES—The system is OK at this time. ■

   NO—Substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

DTC 85: F-CAN Communication Failure

NOTE: Check for fuel and emission systems DTCs with the HDS, and troubleshoot the ECM/PCM and F-CAN communication errors first (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn the ignition switch to ON (II) again.
4. Wait about 5 seconds.
5. Check for DTCs with the HDS.

   Is DTC 85 indicated?

   YES—Go to step 6.

   NO—The system is OK at this time. ■
6. Test-drive the vehicle.

   Does the speedometer work?

   YES—Go to step 10.

   NO—Go to step 7.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the TPMS control unit 20P connector.
9. Test-drive the vehicle.

   Does the speedometer work?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

   NO—Turn the ignition switch to LOCK (0) and reconnect all connectors, then check and troubleshoot the fuel and emissions system (see page 11-3). ■

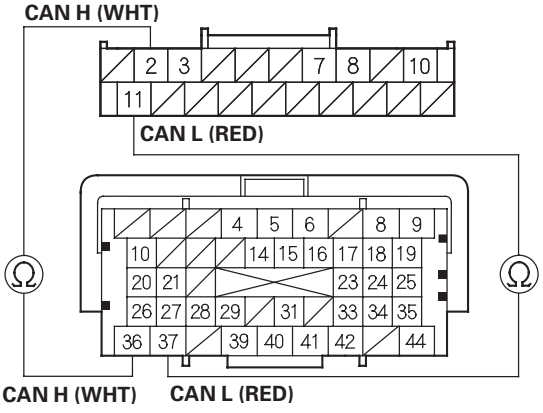
(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Short the SCS line with the HDS.
12. Disconnect ECM/PCM connector A (44P).
13. Disconnect the TPMS control unit 20P connector.
14. Check for continuity between the TPMS control unit 20P connector terminals and the ECM/PCM connector A (44P) terminals according to the table.

Terminal Name	TPMS Control Unit 20P Connector Terminal	ECM/PCM Connector A (44P) Terminal
CAN L	No. 11	No. 37
CAN H	No. 2	No. 36

TPMS CONTROL UNIT 20P CONNECTOR
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of male terminals

Is there continuity?

YES—Check for loose terminals and poor connections at the TPMS control unit and G504. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

NO—Repair open in the wire between the TPMS control unit and the ECM/PCM. ■

DTC 91, 93, 95, 97: Tire Pressure Sensor Internal Error

1. Turn the ignition switch to ON (II).
2. Check for DTCs with the HDS.
3. Note the tire pressure sensor(s) number by the indicated DTC.

DTC	Tire pressure Sensor Number
91	No. 1
93	No. 2
95	No. 3
97	No. 4

4. Do the tire pressure sensor location procedure to determine the affected tire location and relate it to the tire pressure sensor number (see page 18-53).

   Did each tire pressure sensor respond to the TPMS tool?

   YES—Go to step 5.

   NO—Check that the tire pressure sensor is properly mounted. If necessary, replace the appropriate tire pressure sensor (see page 18-76). ■
5. Clear the DTC with the HDS.
6. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.
7. Check for DTCs with the HDS.

   Is DTC 91, 93, 95, or 97 indicated?

   YES—Replace the appropriate tire pressure sensor (see page 18-76) and recheck. If DTCs are still present, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

   NO—If any other DTCs are indicated, troubleshoot the appropriate DTC. If no DTCs are indicated, the system is OK at this time. ■

Symptom Troubleshooting

Low tire pressure indicator does not come on, and no DTCs are stored

NOTE: Check for gauge DTCs with the HDS (see page 22-3). If gauge DTCs are stored, troubleshoot those DTCs first.

1. Turn the ignition switch to ON (II).

2. Check the low tire pressure indicator for several seconds when the ignition switch is turned ON (II).

   Did the indicator come on, and then go off?

   YES—Go to step 3.

   NO—Do the troubleshooting for the gauge control module (see page 22-241). If necessary, substitute a known-good gauge control module (see page 22-277), and recheck. ■

3. Test-drive the vehicle at 45 km/h (28 mph) or more for at least 1 minute.

4. Stop the vehicle, and lower the pressure in each tire until the low tire pressure indicator comes on (see table).

   NOTE:
   - Reinflate the tire before continuing to the next tire.
   - After noting whether the low tire pressure indicator came on, make sure it goes off when you reinflate the tire before proceeding to the next tire.
   - If 5 minutes has passed since finishing the last test-drive, reactivate the appropriate tire pressure sensor using the TPMS sensor initializer tool (see page 18-53).

Model	Specified Tire Pressure Lower Limit
16 inch wheels	175 kPa (1.8 kgf/cm^2, 25 psi)
17 inch wheels	183 kPa (1.9 kgf/cm^2, 27 psi)

   Does the indicator come on when the pressure drops below the specified tire pressure lower limit?

   YES—The system is OK at this time. ■

   NO—Go to step 5.

5. Do the tire pressure sensor location procedure to determine the affected tire location and relate it to the tire pressure sensor number (see page 18-53).

   Did each tire pressure sensor respond to the TPMS tool?

   YES—Go to step 6.

   NO—Check that the tire pressure sensor is properly mounted. If necessary, replace the appropriate tire pressure sensor (see page 18-76). ■

6. Check the TIRE 1, TIRE 2, TIRE 3, or TIRE 4 AIR PRESSURE in the TPMS DATA LIST with the HDS, and compare with the actual measured tire pressure.

   Is the indicated tire pressure on the HDS within 40 kPa (0.4 kgf/cm^2, 6 psi) of the actual tire pressure?

   YES—Go to step 7.

   NO—Replace the appropriate tire pressure sensor (see page 18-76). ■

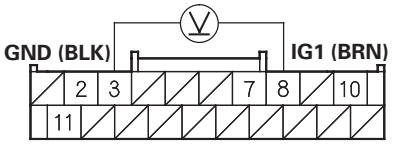
7. Turn the ignition switch to LOCK (0).

(cont'd)

Symptom Troubleshooting (cont'd)

8. Disconnect the TPMS control unit 20P connector.
9. Measure the voltage between TPMS control unit 20P connector terminals No. 3 and No. 8.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the TPMS control unit and the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. ■

NO—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

Low tire pressure indicator does not go off, and no DTCs are stored

1. Turn the ignition switch to LOCK (0).
2. Disconnect the TPMS control unit 20P connector.
3. Turn the ignition switch to ON (II).
4. Check the low tire pressure indicator for several seconds when the ignition switch is turned ON (II).

   Did the indicator come on, and then go off?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

   NO—Do the troubleshooting for the gauge control module (see page 22-241). If necessary, substitute a known-good gauge control module (tach) (see page 22-277), and recheck. ■

TPMS indicator does not come on, and no DTCs are stored

1. Turn the ignition switch to LOCK (0).
2. Disconnect the TPMS control unit 20P connector.
3. Turn the ignition switch to ON (II).
4. Check the TPMS indicator for several seconds when the ignition switch is turned ON (II).

   Did the indicator come on?

   YES—Check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

   NO—Do the troubleshooting for the gauge control module (see page 22-241). If necessary, substitute a known-good gauge control module (tach) (see page 22-277), and recheck. ■

TPMS indicator does not go off, and no DTCs are stored

NOTE: Check for gauge DTCs with the HDS (see page 22-6). If gauge DTCs are stored, troubleshoot those DTCs first.

1. Turn the ignition switch to ON (II).
2. Check the TPMS indicator for several seconds when the ignition switch is turned ON (II).

   Did the indicator come on, and then go off?

   YES—The system is OK at this time. ■

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Check the No. 7 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse blown?

   YES—Replace the No. 7 (7.5 A) fuse, and recheck. If the fuse blows again, check for a short to body ground in the wire between the TPMS control unit and the No. 7 (7.5 A) fuse in the under-dash fuse/relay box. ■

   NO—Reinstall the checked fuse, then go to step 5.
5. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse blown?

   YES—Replace the No. 10 (7.5 A) fuse, and recheck. If the fuse blows again, check for a short to body ground in the wire between the TPMS control unit and the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. ■

   NO—Reinstall the checked fuse, then go to step 6.
6. Disconnect the TPMS control unit 20P connector.

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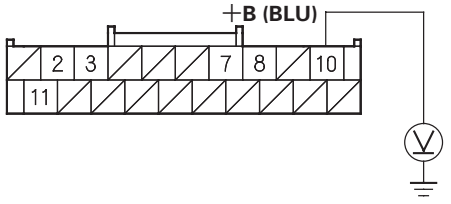
Symptom Troubleshooting (cont'd)

7. Measure the voltage between body ground and TPMS control unit 20P connector terminal No. 10.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

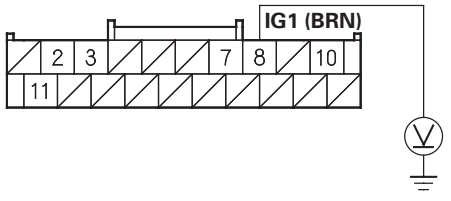
YES—Go to step 8.

NO—Repair open in the wire between the TPMS control unit and the No. 7 (7.5 A) fuse in the under-dash fuse/relay box. ■

8. Turn the ignition switch to ON (II).

9. Measure the voltage between body ground and TPMS control unit 20P connector terminal No. 8.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the TPMS control unit and the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. ■

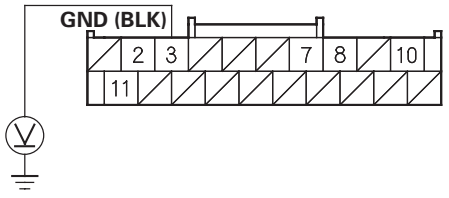
10. Turn the ignition switch to LOCK (0).

11. Reconnect the TPMS control unit 20P connector.

12. Turn the ignition switch to ON (II).

13. Measure the voltage between body ground and TPMS control unit 20P connector terminal No. 3.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair open or high resistance in the wire between the TPMS control unit and body ground (G504). ■

NO—Do the troubleshooting for the gauge control module (see page 22-241). If the gauge control module (tach) is OK, check for loose terminals and poor connections at the TPMS control unit. If necessary, substitute a known-good TPMS control unit (see page 18-75), and recheck. ■

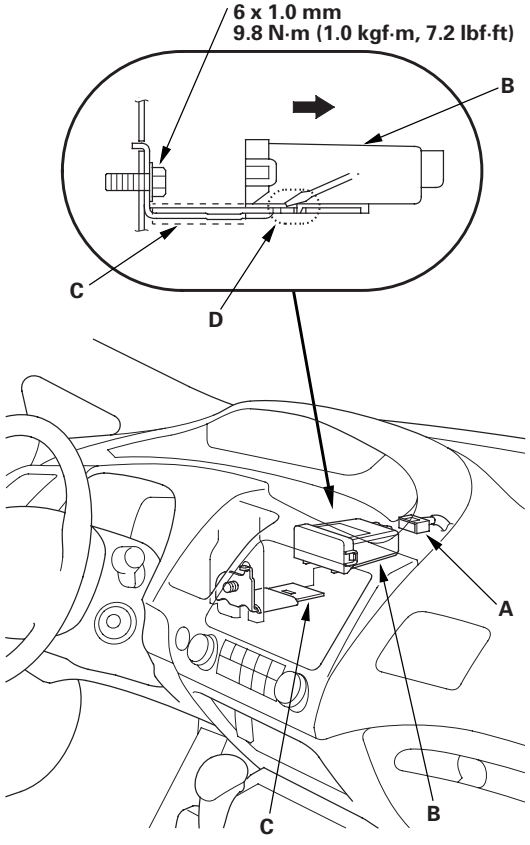
TPMS Control Unit Replacement

NOTE: Make sure the TPMS control unit mounting bracket is not bent or twisted as this may affect its communication with the tire pressure sensors.

1. Turn the ignition switch to LOCK (0).

2. Remove the driver's dashboard undercover (see page 20-103).

3. Disconnect the TPMS control unit connector (A).



4. Remove the TPMS control unit (B) from the bracket (C).

   NOTE: To disconnect the TPMS control unit from its bracket, insert a small flat-tipped screwdriver between the TPMS control unit and the bracket shown in (D) to release the hook, then slide out the TPMS unit.

5. Replace the bracket if necessary.

6. Install the new TPMS control unit in the reverse order of removal.

   NOTE: Make sure the TPMS control unit is properly installed. You will hear a click when the TPMS control unit is securely mounted on the bracket.

7. Connect the HDS, and memorize the tire pressure sensor IDs using the TPMS sensor initializer tool (see page 18-52).

Tire Pressure Sensor Replacement

Removal

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11).

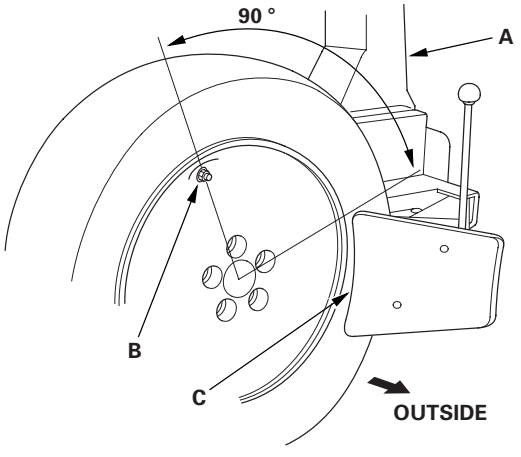
2. Remove the wheel with the faulty sensor.

3. Remove the tire valve stem cap and the valve stem core, to deflate the tire.

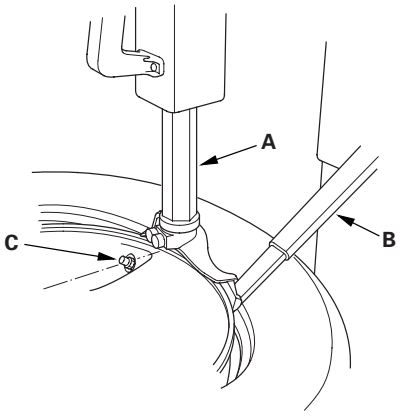
4. Remove any balance weights, and then break the bead loose from the wheel with a commercially available tire changer (A).

NOTICE

Note these items to avoid damaging the tire pressure sensor:
- Do the outside of the wheel first.
- Position the wheel as shown so the valve stem (B) is 90 degrees from the bead breaker (C) as shown.
- Do not position the bead breaker of the tire changer too close to the rim.

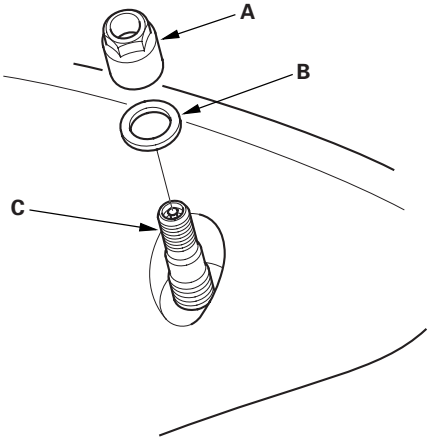


5. Position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C), and will move away from it when the machine starts. Then remove the tire from the wheel.



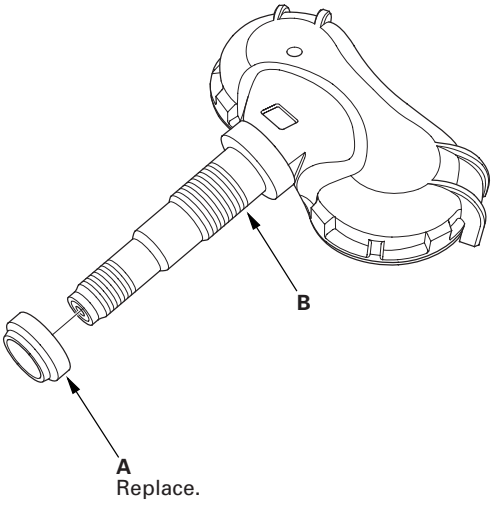
6. Remove the valve stem nut (A) and the washer (B), then remove the tire pressure sensor with the valve stem (C) from the wheel.

NOTE: Check the nut and the washer, If they have deterioration or damage, replace then with new ones during reassembly.



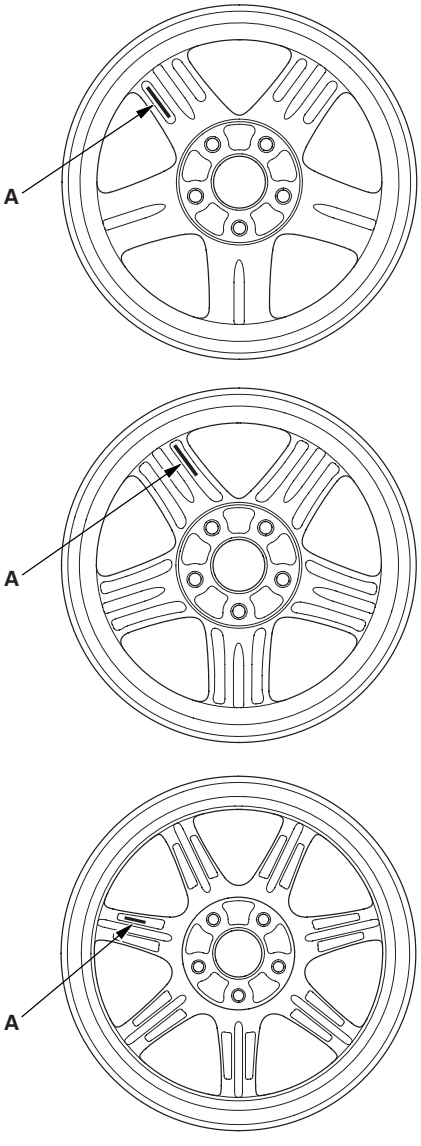
7. Remove and discard the valve stem grommet (A) from the tire pressure sensor (B).

   NOTE:
   - The valve stem grommet might stay in the wheel; make sure you remove it.
   - Always use a new valve stem grommet whenever the tire pressure sensor has been removed from the wheel or when replacing the tire.



Installation

NOTE:
- Use only wheels that have a ''TPMS'' stamp (A) on them.
- The vehicle may be equipped with one of the three types of wheels.



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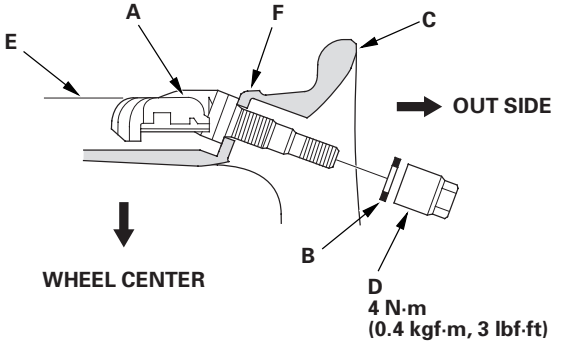
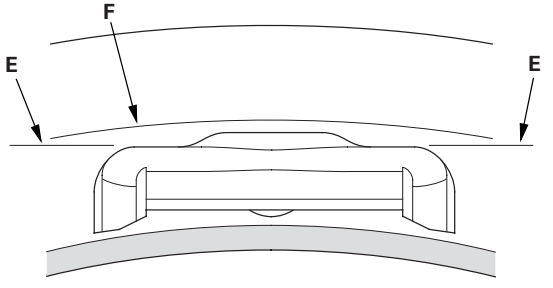
Tire Pressure Sensor Replacement (cont'd)

1. Before installing the tire pressure sensor, clean the mating surfaces on the sensor and the wheel.

2. Install the tire pressure sensor (A) and the washer (B) to the wheel (C), and tighten the valve stem nut (D) finger tight. Make sure the pressure sensor is resting on the wheel.

   NOTE: Install the tire pressure sensor so that sensor housing surface (E) should not exceed protrusion (F) of wheel to prevent the sensor housing from being caught on the bead of the tire when assembling the tire.

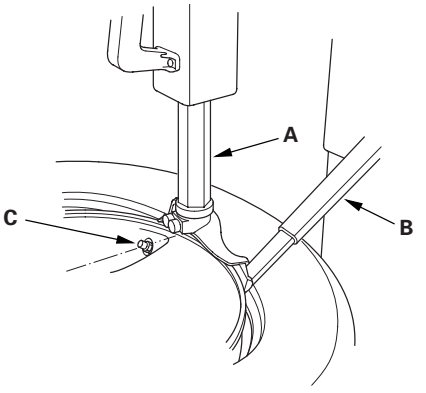




3. Tighten the valve stem nut to the specified torque while holding the tire pressure sensor.

   NOTE:
   - Do not use air or electric impact tools to tighten a valve stem nut.
   - Do not twist the tire pressure sensor to adjust its position with the wheel, as this will damage or deform the valve stem grommet.

4. Lube the tire bead sparingly with a paste-type tire mounting lubricant, and position the wheel so the tire machine (A) and tire iron (B) are next to the valve stem (C) and will move away from it when the machine starts. Then install the tire onto the wheel.



5. With a dry air source, inflate the tire to 300 kPa (3.1 kgf/cm^2, 44 psi) to seat the tire bead to the rim, then adjust the tire pressure (see page 18-5), then install the valve stem cap.

   NOTE: Make sure the tire bead is seated on both sides of the rim uniformly.

6. Check and adjust the wheel balance, then install the wheels on the vehicle.

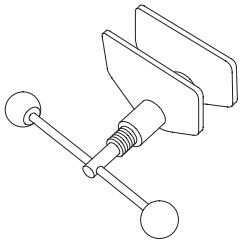
7. Remove the jack stands, and lower the vehicle. Torque the wheel nuts to specification.

8. Connect the HDS, and memorize the tire pressure sensor IDs using the TPMS sensor initializer tool (see page 18-52).

Brakes

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAE-SEPA101	Brake Caliper Piston Compressor	1
②	07AAG-SVBA100	Guide Pin Tool	1



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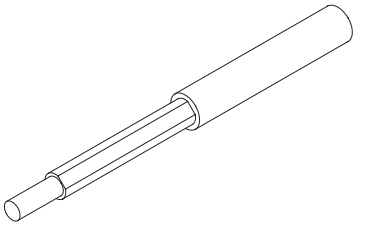
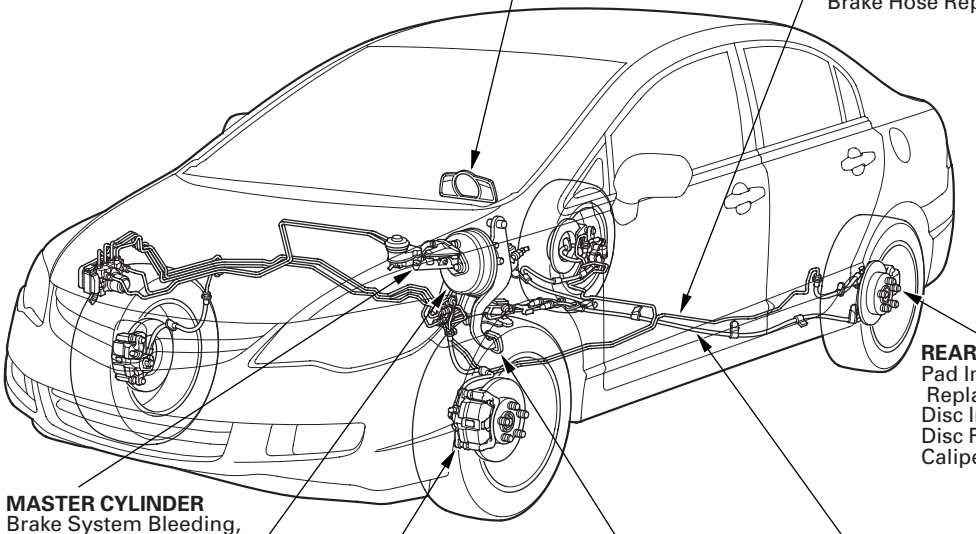


②

Component Location Index



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Brake System Inspection and Test

Inspect the brake system components listed. Repair or replace any parts that are leaking or damaged.

Component Inspections:

Component	Procedure	Also check for
Master Cylinder	Look for damage or signs of fluid leakage at: • Reservoir tank, subreservoir or master cylinder body. • Lines, reservoir tank hose and grommets, and their joints. • Between master cylinder and booster.	Bulging seal at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: • Line joints and banjo bolt connections. • Hoses and lines, also inspect for twisting or damage.	Bulging, twisted, or bent lines.
Caliper	Look for damage or signs of fluid leakage at: • Piston seal. • Banjo bolt connections. • Bleed screw.	Seized or sticking caliper pins.
ABS or VSA Modulator-control Unit	Look for damage or signs of fluid leakage at: • Line joints. • Modulator-control unit.	

Brake System Test

Brake pedal sinks/fades when braking

1. Set the parking brake, and start the engine, then turn off the A/C. Allow the engine to warm up to normal operating temperature (radiator fan comes on twice).

2. Attach a 50 mm (2 in.) piece of masking tape along the bottom of the steering wheel, and draw a horizontal reference mark across it.

3. With the transmission in neutral (M/T) or P or N (A/T), press and hold the brake pedal lightly (about the same pressure needed to keep an A/T-equipped vehicle from creeping), then release the parking brake.

4. While still holding the brake pedal, hook the end of the tape measure behind the brake pedal, then pull the tape up to the steering wheel. Note the measurement between the brake pedal and the reference mark on the steering wheel.

5. Apply steady pressure to the brake pedal for 3 minutes.

6. Watch the tape measure.

   • If the measurement increases 10 mm (0.39 in.) or less, the master cylinder is OK.
   • If the measurement increases more than 10 mm (0.39 in.), replace the master cylinder.

Symptom Troubleshooting

Rapid brake pad wear, vehicle vibration (after a long drive), or high, hard brake pedal

NOTE: Make sure that the caliper pins are installed correctly.
Upper caliper pin B and lower caliper pin A are different. If the pins are installed in the wrong location, it will cause vibration, uneven or rapid pad wear, and possibly uneven tire wear. For proper caliper pin location: Except Type S model (see page 19-22), Type S model (see page 19-23).

1. Drive the vehicle until the brakes drag or until the pedal is high and hard. This can take 20 or more brake pedal applications during an extended test-drive.

2. With the engine running, raise the vehicle on a lift, and spin all four wheels by hand.

   Is there brake drag at any of the wheels?

   YES—Go to step 3.

   NO—Look for other causes of pad wear, high pedal, or vehicle vibration. ■

3. Turn the ignition switch to LOCK (0), press the brake pedal several times to deplete the vacuum in the brake booster, and then spin the wheels again to check for brake drag.

   Is there brake drag at any of the wheels?

   YES—Go to step 4.

   NO—Replace the brake booster (see page 19-27). ■

4. Without removing the brake lines, unbolt and separate the master cylinder from the brake booster, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES—Go to step 5.

   NO—Check the brake pedal position switch adjustment, and pedal free play (see page 19-6). ■

5. Loosen the hydraulic lines at the master cylinder, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

   YES—Go to step 6.

   NO—Check the master cylinder reservoir for contamination in the brake fluid. If you find contamination, flush the entire brake system of all contaminated fluid. If the brake fluid is OK, replace the master cylinder (see page 19-24). ■

6. Loosen the bleed screws at each caliper, then spin the wheels to check for brake drag.

   Is there brake drag at any of the wheels?

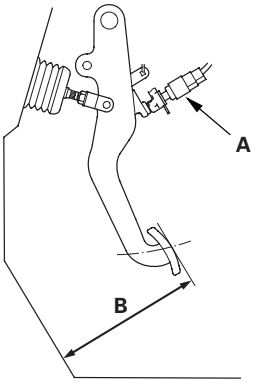
   YES—Check the master cylinder reservoir for contamination in the brake fluid. If you find contamination, flush the entire brake system of all contaminated fluid. If the brake fluid is OK, disassemble and repair the caliper, on the wheel(s) with brake drag. ■

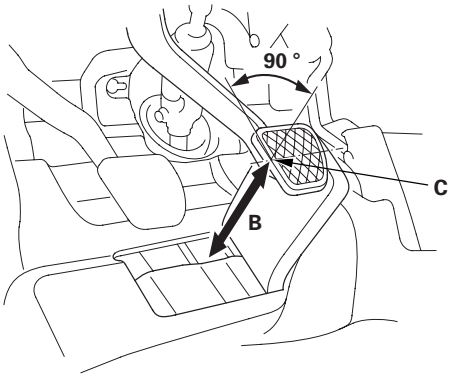
   NO—Look for and replace any damaged brake lines. If all brake lines are OK, replace the ABS or VSA modulator-control unit: ABS (see page 19-90), VSA (see page 19-171). ■

Brake Pedal and Brake Pedal Position Switch Adjustment

Pedal Height

1. Turn the brake pedal position switch (A) counterclockwise, and pull it back until it is no longer touching the brake pedal.

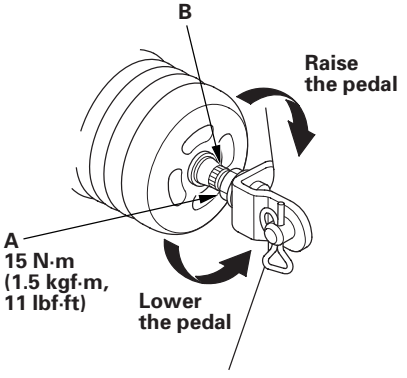




2. Pull back the carpet, and find the cutout in the insulation. Measure the pedal height (B) at the middle of the left side center of the pedal pad (C) to the floor without the insulation.

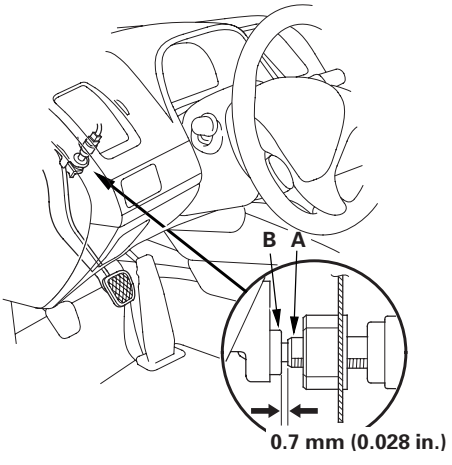
Standard pedal height (with carpet removed):
M/T: 153 mm (6.02 in.)
A/T: 158 mm (6.22 in.)

3. Loosen the pushrod locknut (A), and screw the pushrod (B) in or out with pliers until the standard pedal height from the floor is reached. After adjustment, tighten the locknut firmly. Do not adjust the pedal height with the pushrod pressed.



Brake Pedal Position Switch Clearance

4. Lift up on the brake pedal by hand. Push in the brake pedal position switch until its plunger is fully pressed (threaded end (A) touching the pad (B) on the pedal arm). Turn the switch 45 ° clockwise to lock it. The gap between the brake pedal position switch and the pad is automatically adjusted to 0.7 mm (0.028 in.) by locking the switch. Make sure the brake lights go off when the pedal is released.

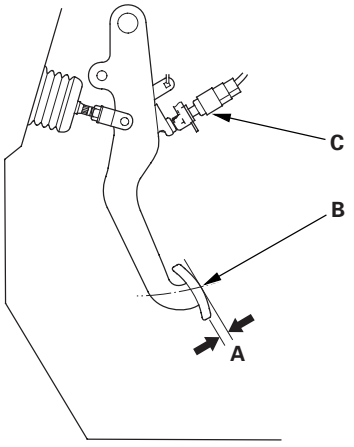


5. Check the brake pedal free play.

Pedal Free Play

1. With the ignition switch in LOCK (0), inspect the play (A) at the pedal pad (B) by pushing the pedal by hand. If the brake pedal free play is out of specification, adjust the brake pedal position switch (C). If the brake pedal free play is insufficient, it may result in brake drag.

   Free play: 1—5 mm (0.04—0.20 in.)

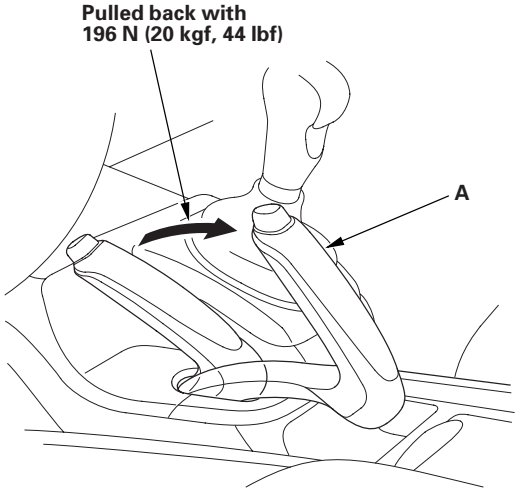


Parking Brake Inspection and Adjustment

Inspection

1. Pull the parking brake lever (A) with 196 N (20 kgf, 44 lbf) of force to fully apply the parking brake. The parking brake lever should be locked within the specified number of clicks.

   Lever locked clicks: 8 to 10



2. If the number of lever clicks is not as specified, adjust the parking brake.

(cont'd)

Pedal Free Play

1. With the ignition switch in LOCK (0), inspect the play (A) at the pedal pad (B) by pushing the pedal by hand. If the brake pedal free play is out of specification, adjust the brake pedal position switch (C). If the brake pedal free play is insufficient, it may result in brake drag.

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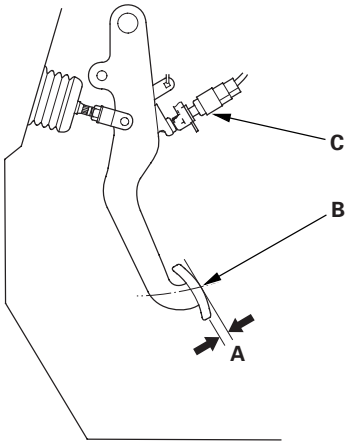

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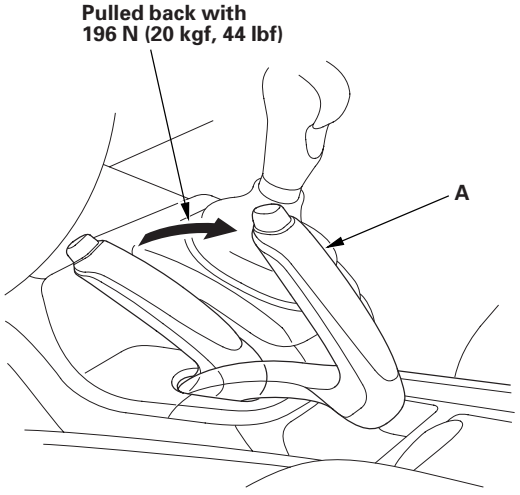


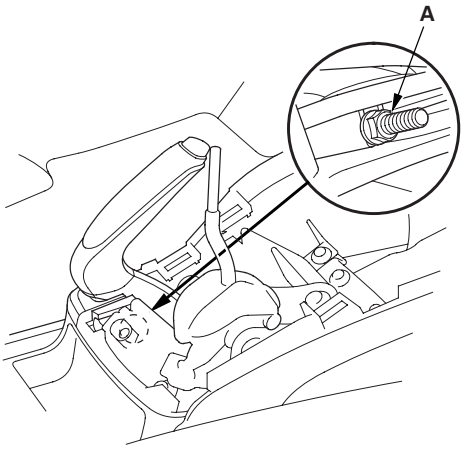
2. If the number of lever clicks is not as specified, adjust the parking brake.

(cont'd)

Parking Brake Inspection and Adjustment (cont'd)

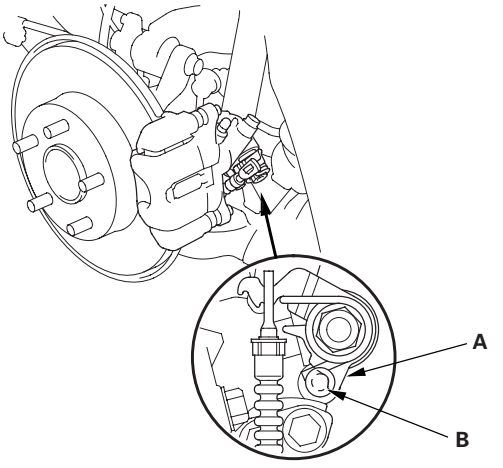
Adjustment

1. Remove the center console panel (see page 20-92).
2. Release the parking brake lever fully.
3. Loosen the parking brake adjusting nut (A).



4. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
5. Remove the rear wheels.
6. Make sure the lever (A) on the rear brake caliper contacts the stop pin (B).

   NOTE: The lever will only contact the stop pin when the parking brake adjusting nut is loosened.

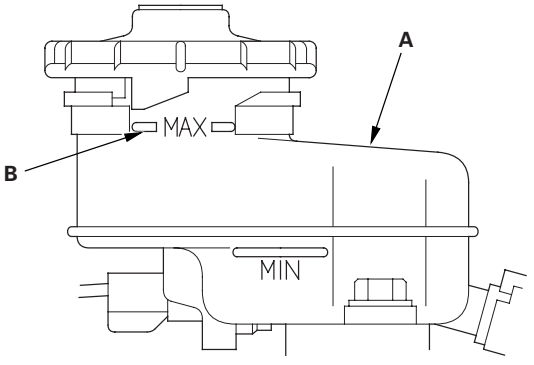


7. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.
8. Pull the parking brake lever 1 click.
9. Tighten the parking brake adjusting nut until the parking brakes drag slightly when the rear wheels are turned.
10. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
11. Make sure the parking brake lever is within the specified number of clicks (8 to 10 clicks).
12. Install the center console panel (see page 20-92).

Brake System Bleeding

NOTE:
- Do not reuse the drained fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Make sure no dirt or other foreign matter is allowed to contaminate the brake fluid.
- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- The reservoir connected the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure, and checked after bleeding each wheel location. Add fluid as required.

1. Make sure the brake fluid level in the reservoir (A) is at the MAX (upper) level line (B).

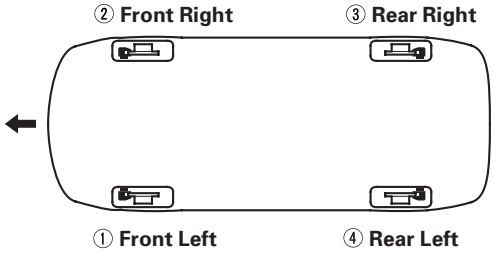


2. Have someone slowly pump the brake pedal several times, then apply steady pressure.

3. Start the bleeding at the driver's side of the front brake system.

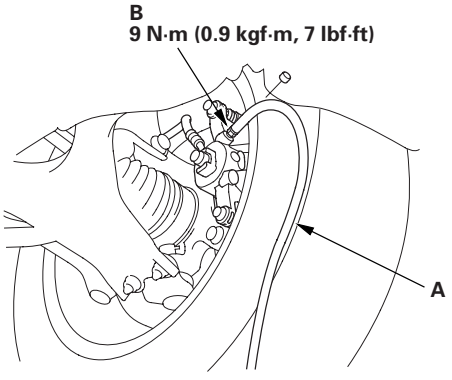
   NOTE: Bleed the calipers in the sequence shown.

BLEEDING SEQUENCE:

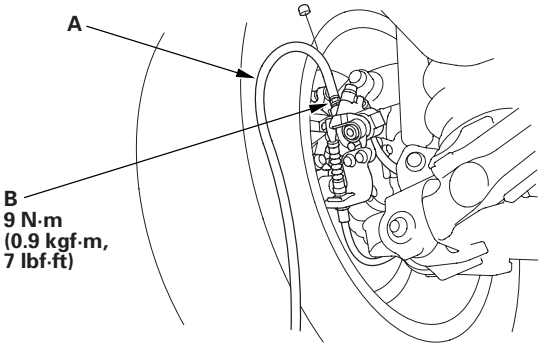


4. Attach a length of clear drain tube (A) to the bleed screw (B), then loosen the bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.

Front



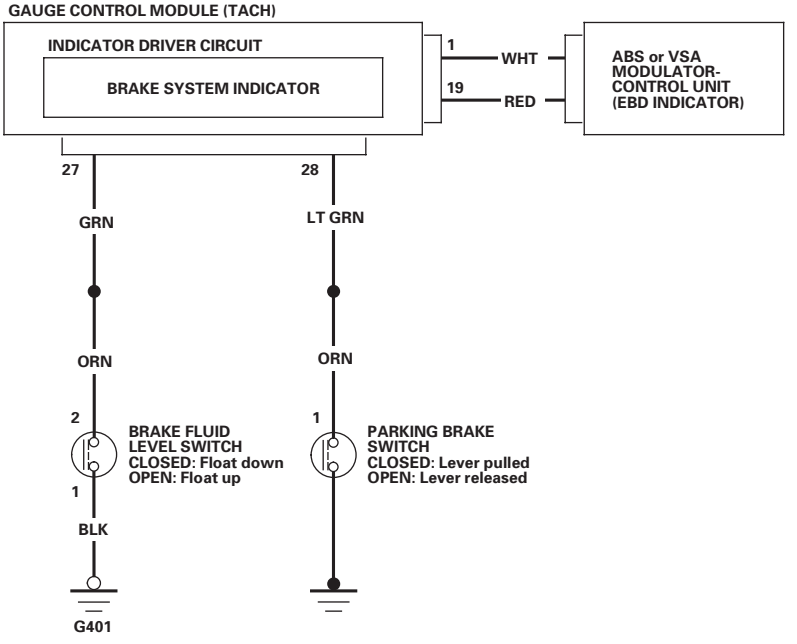
Rear



5. Refill the master cylinder reservoir to the MAX (upper) level line.

6. Repeat the procedure for each brake circuit until there are no air bubbles in the fluid.

Brake System Indicator Circuit Diagram

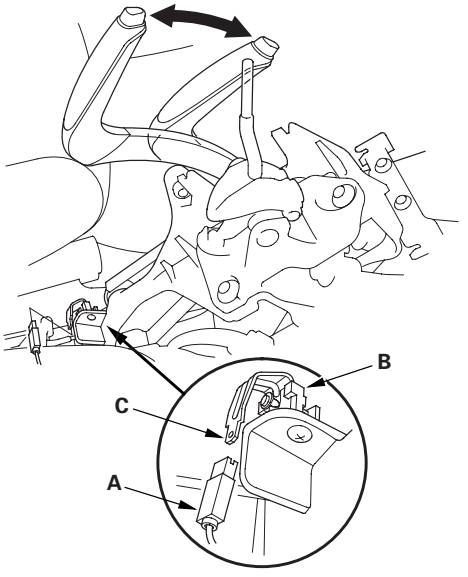


Parking Brake Switch Test

NOTE: If both the ABS indicator and the brake system indicator come on at the same time, check the ABS or VSA system for DTC's first: ABS (see page 19-49), VSA (see page 19-97).

1. Remove the center console (see page 20-92).

2. Disconnect the parking brake switch connector (A) from the parking brake switch (B).



3. Check for continuity between the switch terminal (C) and body ground.

   - With the parking brake lever pulled, there should be continuity.
   - With the parking brake lever released, there should be no continuity.

   NOTE: If the parking brake switch and fluid level switch are OK, but the brake system indicator does not function, do the gauge control module self-diagnostic function (see page 22-241).

4. Reconnect the parking brake switch connector.

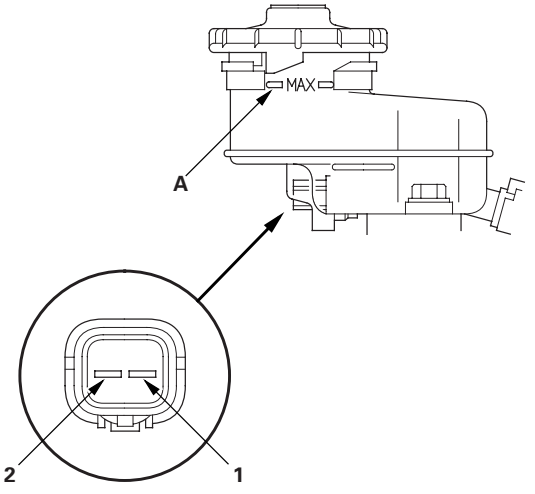
5. Reinstall the center console (see page 20-92).

Brake Fluid Level Switch Test

1. Disconnect the brake fluid level switch connector.

2. Check for continuity between the terminals (1) and (2) with the float in the down position and in the up position.

   NOTE:
   - Remove the brake fluid completely from the reservoir. With the float down, there should be continuity.
   - Fill the reservoir with brake fluid to the MAX (upper) level (A). With the float up, there should be no continuity.
   - If both the ABS indicator and the brake system indicator come on at the same time, check the ABS or VSA system for DTC's first: ABS (see page 19-49), VSA (see page 19-97).
   - If the parking brake switch and fluid level switch are OK, but brake system indicator does not function, do the gauge control module self-diagnostic function (see page 22-241).



3. Reconnect the brake fluid level switch connector.

Front Brake Pad Inspection and Replacement

Special Tools Required
Brake caliper piston compressor 07AAE-SEPA101

⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Inspection - Except Type S Model

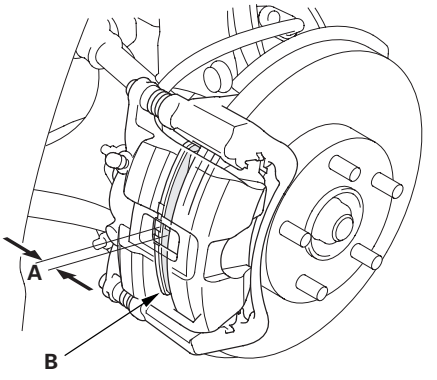
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheels.

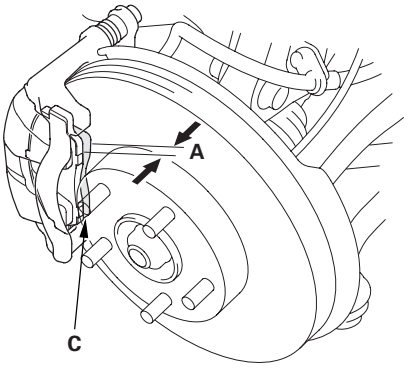
3. Check the thickness (A) of the inner pad (B) and the outer pad (C). Do not include the thickness of the backing plate.

Brake pad thickness:
Standard: 9.6—10.2 mm (0.38—0.40 in.)
Service limit: 1.6 mm (0.06 in.)

Inner pad



Outer pad

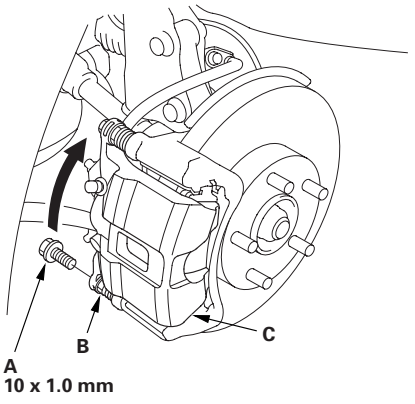


4. If any part of the brake pad thickness is less than the service limit, replace the front brake pads as a set.

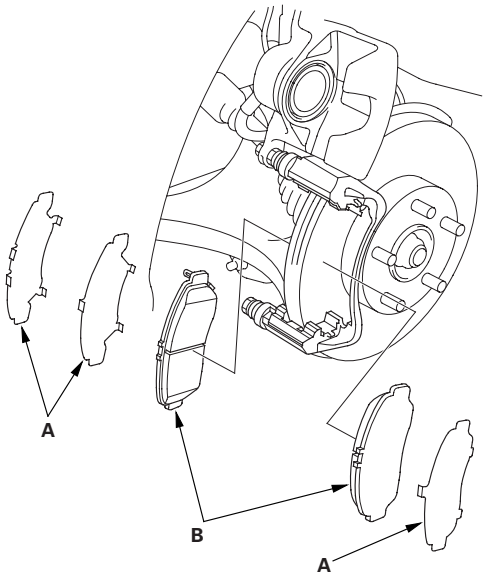
5. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

Replacement - Except Type S Model

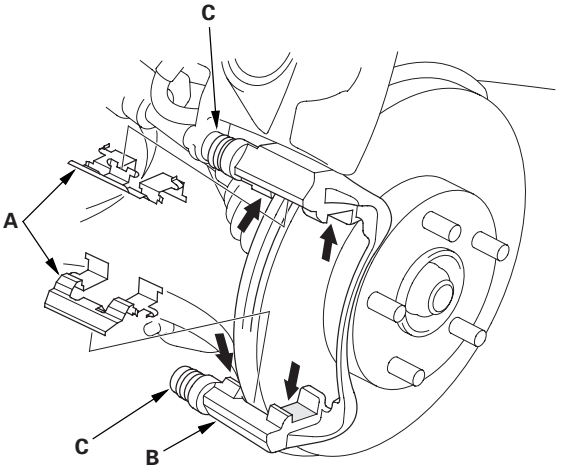
1. Remove some brake fluid from the master cylinder.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
3. Remove the front wheels.
4. Remove the flange bolt (A) while holding the caliper pin (B) with a wrench. Be careful not to damage the pin boot, and pivot the caliper (C) up out of the way. Check the hose and pin boots for damage and deterioration.



5. Remove the pad shims (A) and the brake pads (B).



6. Remove the pad retainers (A).

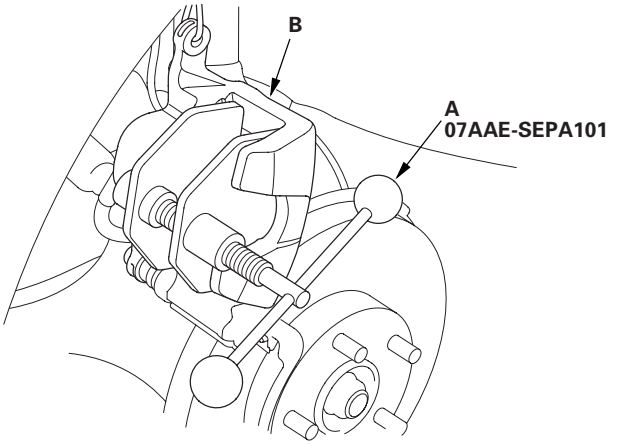


7. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks. Verify that the caliper pins (C) move in and out smoothly. Clean and lube if needed.
8. Inspect the brake disc for runout, thickness, parallelism (see page 19-19) and check for damage and cracks.
9. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainer mating surface of the caliper bracket (indicated by the arrows).
10. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the brake disc and the brake pads.

(cont'd)

Front Brake Pad Inspection and Replacement (cont'd)

11. Install the brake caliper piston compressor tool (A) on the caliper body (B).

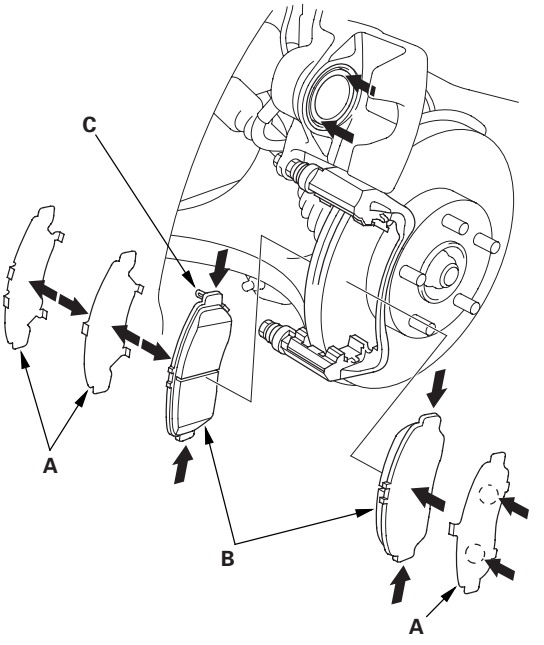


12. Press in the piston with the brake caliper piston compressor tool so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

    NOTE: Be careful when pressing in the piston; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.

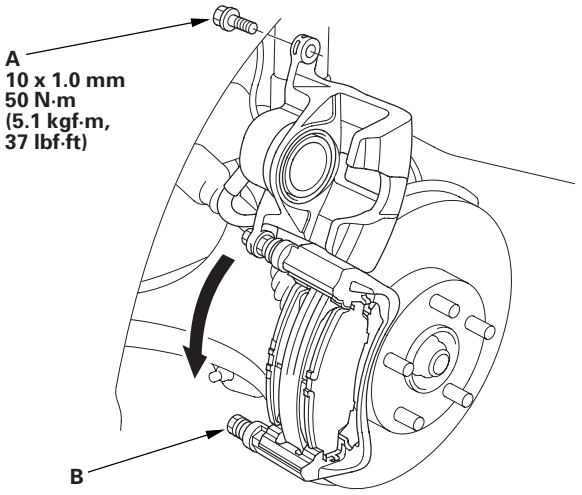
13. Remove the brake caliper piston compressor tool.

14. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B), and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and the brake pads friction material. Keep grease and assembly paste off the brake disc and the brake pads. Contaminated brake disc or brake pads reduce stopping ability.



15. Install the brake pads and the pad shims correctly. Install the brake pad with the wear indicator (C) on the upper inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

16. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque while holding the caliper pin (B) with a wrench being careful not to damage the pin boot.



17. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

18. Press the brake pedal several times to make sure the brakes work.

    NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

19. Add brake fluid as needed.

20. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then recheck for leaks (see page 19-37).

Inspection - Type S Model

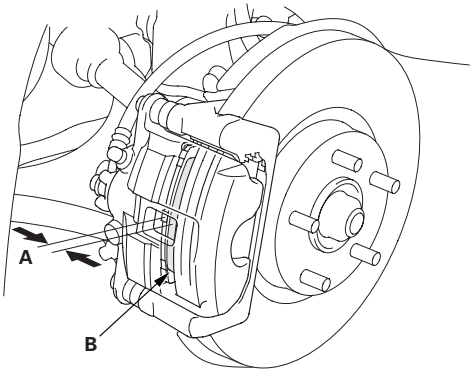
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheels.

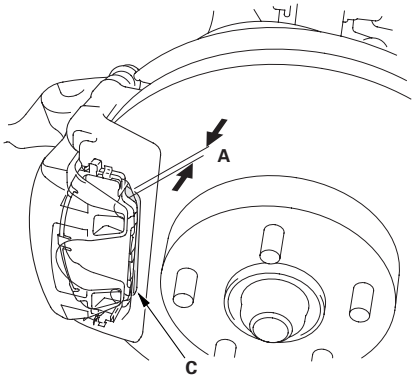
3. Check the thickness (A) of the inner pad (B) and the outer pad (C). Do not include the thickness of the backing plate.

   Brake pad thickness:
   Standard: 9.0—9.7 mm (0.35—0.38 in.)
   Service limit: 1.6 mm (0.06 in.)

   Inner pad



   Outer pad



4. If any part of the brake pad thickness is less than the service limit, replace the front brake pads as a set.

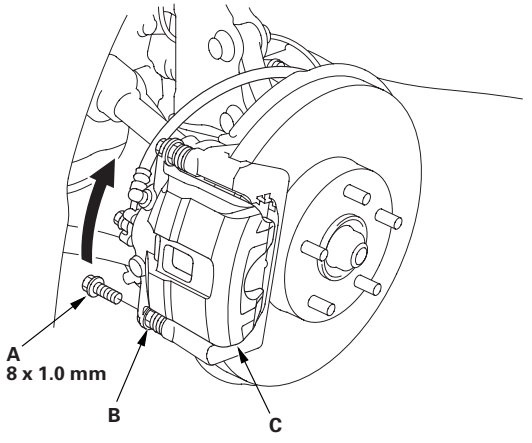
5. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

(cont'd)

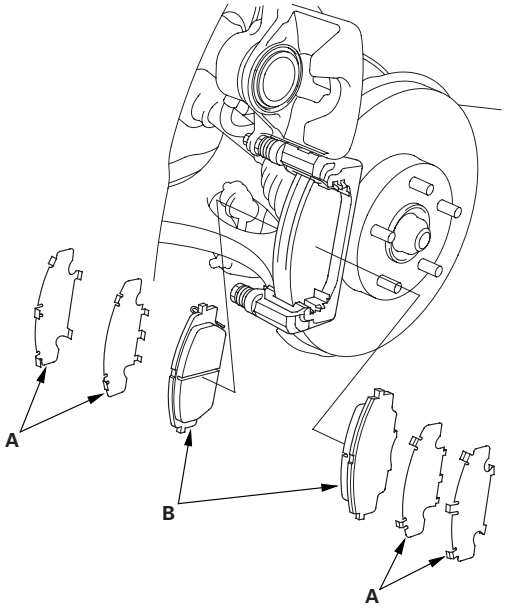
Front Brake Pad Inspection and Replacement (cont'd)

Replacement - Type S Model

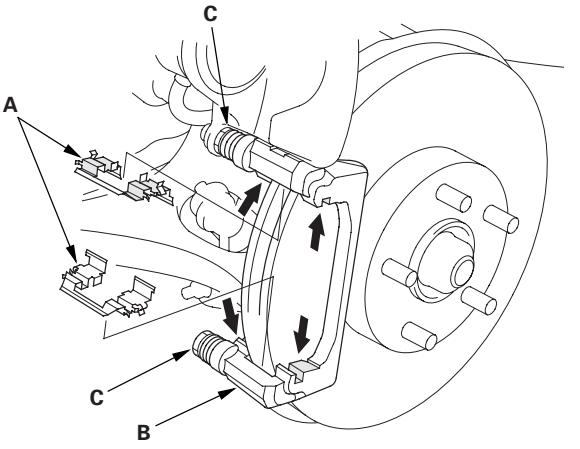
1. Remove some brake fluid from the master cylinder.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
3. Remove the front wheels.
4. Remove the flange bolt (A) while holding the caliper pin (B) with a wrench. Be careful not to damage the pin boot, and pivot the caliper (C) up out of the way. Check the hose and pin boots for damage and deterioration.



5. Remove the pad shims (A) and the brake pads (B).

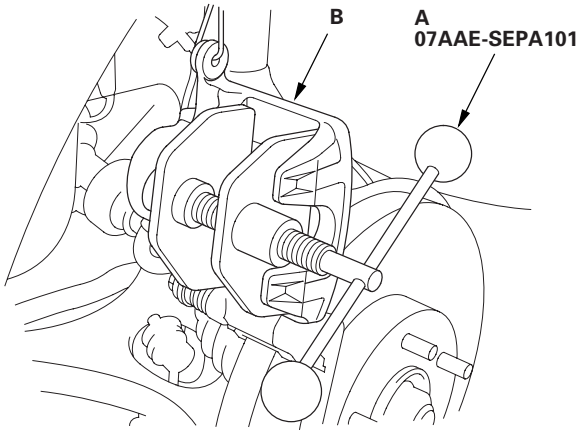


6. Remove the pad retainers (A).



7. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks. Verify that the caliper pins (C) move in and out smoothly. Clean and lube if needed.
8. Inspect the brake disc for runout, thickness, parallelism (see page 19-19) and check for damage and cracks.
9. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainer mating surface of the caliper bracket (indicated by the arrows).
10. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the brake disc and the brake pads.

11. Install the brake caliper piston compressor tool (A) on the caliper body (B).

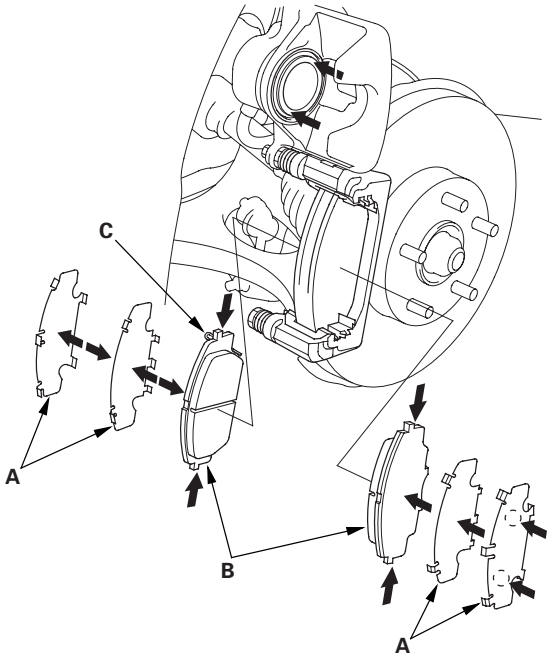


12. Press in the piston with the brake caliper piston compressor tool so the caliper will fit over the brake pads. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.

    NOTE: Be careful when pressing in the piston; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.

13. Remove the brake caliper piston compressor tool.

14. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B) and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and the brake pads friction material. Keep grease and assembly paste off the brake disc and the brake pads. Contaminated brake disc or brake pads reduce stopping ability.

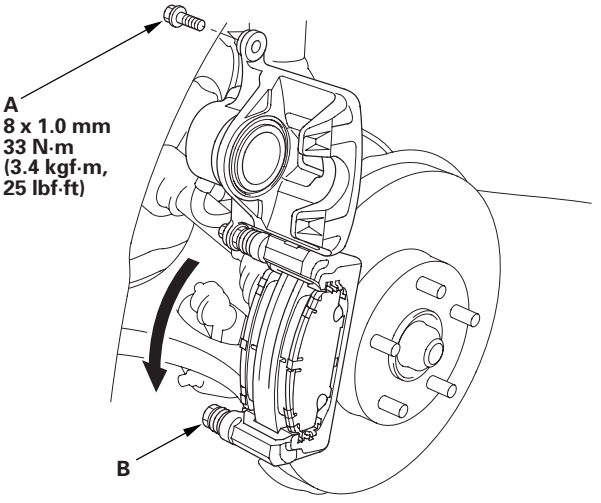


15. Install the brake pads and the pad shims correctly. Install the brake pad with the wear indicator (C) on the upper inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

(cont'd)

Front Brake Pad Inspection and Replacement (cont'd)

16. Pivot the caliper down into position. Install the flange bolt (A), and tighten it to the specified torque while holding the caliper pin (B), with a wrench being careful not to damage the pin boot.



17. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

18. Press the brake pedal several times to make sure the brakes work.

    NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

19. Add brake fluid as needed.

20. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then recheck for leaks (see page 19-37).

Front Brake Disc Inspection

Runout

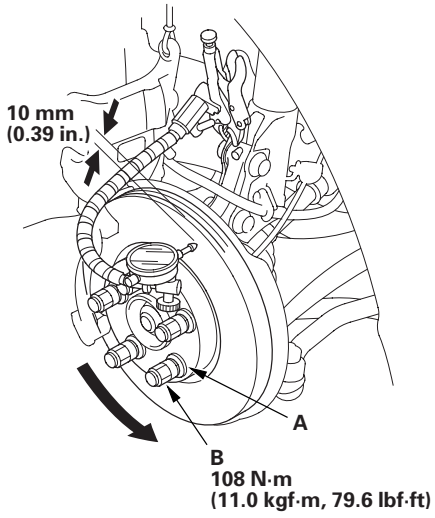
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the front wheels.

3. Remove the brake pads: Except Type S model (see page 19-13), Type S model (see page 19-16).

4. Inspect the brake disc to wheel surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.

5. Install suitable flat washers (A) and wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc securely against the hub.



6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.39 in.) from the outer edge of the brake disc.

   Brake disc runout:
   Service limit: 0.04 mm (0.0016 in.)

7. If the brake disc is beyond the service limit, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

   Max. refinishing limit:
   Except Type S model: 21.0 mm (0.83 in.)
   Type S model: 23.0 mm (0.91 in.)

   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 19-21).
   - If the brake disc is replaced with a new one, check the new disc for runout. If the new disc is out of specification, refinish the disc.

8. Install the brake pads: Except Type S model (see page 19-13), Type S model (see page 19-16).

9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

(cont'd)

Front Brake Disc Inspection (cont'd)

Thickness and Parallelism

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

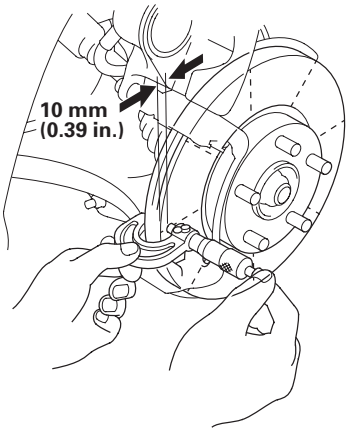
2. Remove the front wheels.

3. Remove the brake pads: Except Type S model (see page 19-13), Type S model (see page 19-16).

4. Using a micrometer, measure the brake disc thickness at eight points, about 45 ° apart and 10 mm (0.39 in.) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake disc thickness:
   Standard:
   Except Type S model: 22.9—23.1 mm (0.90—0.91 in.)
   Type S model: 24.9—25.1 mm (0.98—0.99 in.)
   Max. refinishing limit:
   Except Type S model: 21.0 mm (0.83 in.)
   Type S model: 23.0 mm (0.91 in.)
   Brake disc parallelism: 0.015 mm (0.0006 in.) max.

   NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 19-21).

6. Install the brake pads: Except Type S model (see page 19-13), Type S model (see page 19-16).

7. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheels.

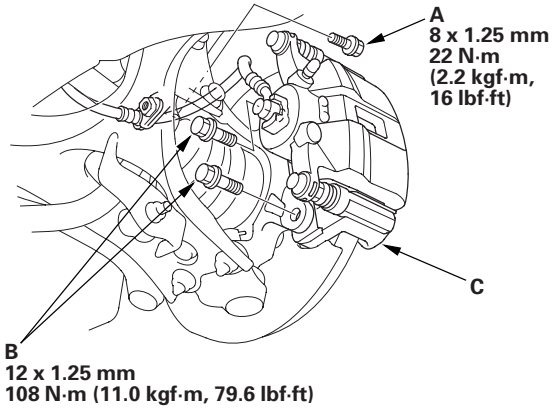
Front Brake Disc Replacement

NOTE: Keep any grease off the brake disc and brake pads.

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

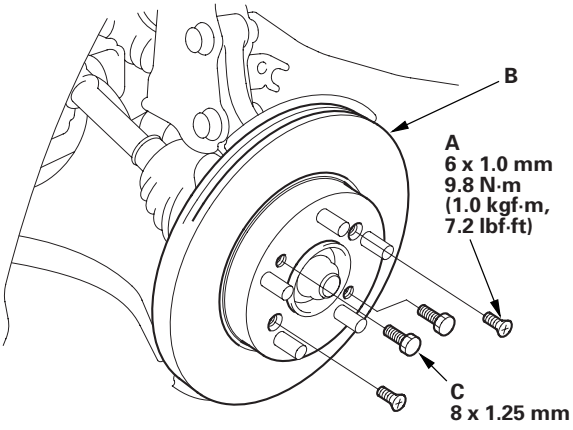
2. Remove the front wheel.

3. Remove the brake hose mounting bolt (A) from the damper.



4. Remove the brake caliper bracket mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose excessively.

5. Remove the brake disc flathead screws (A).



6. Remove the brake disc (B) from the front hub.

   NOTE: If the brake disc is stuck to the front hub, thread two 8 x 1.25 mm bolts (C) into the brake disc to push it away from the front hub. Turn each bolt 90 degrees at a time to prevent the brake disc from binding.

7. Install the brake disc in the reverse order of removal.

   NOTE: Before installing the brake disc, clean the mating surfaces between the front hub and the inside of the brake disc.

8. Inspect the brake disc runout (see page 19-19).

9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheel.

Front Brake Caliper Overhaul

⚠CAUTION

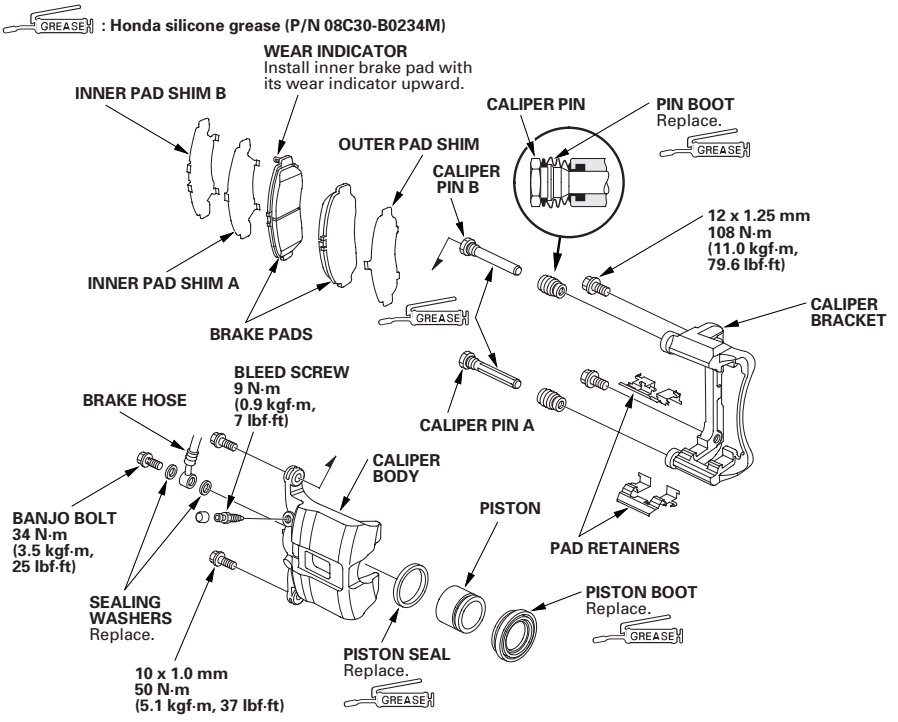
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Except Type S Model

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Coat the piston, the piston seal groove, and the caliper bore with clean brake fluid.
- Use recommended greases in the front caliper set.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.



⚠CAUTION

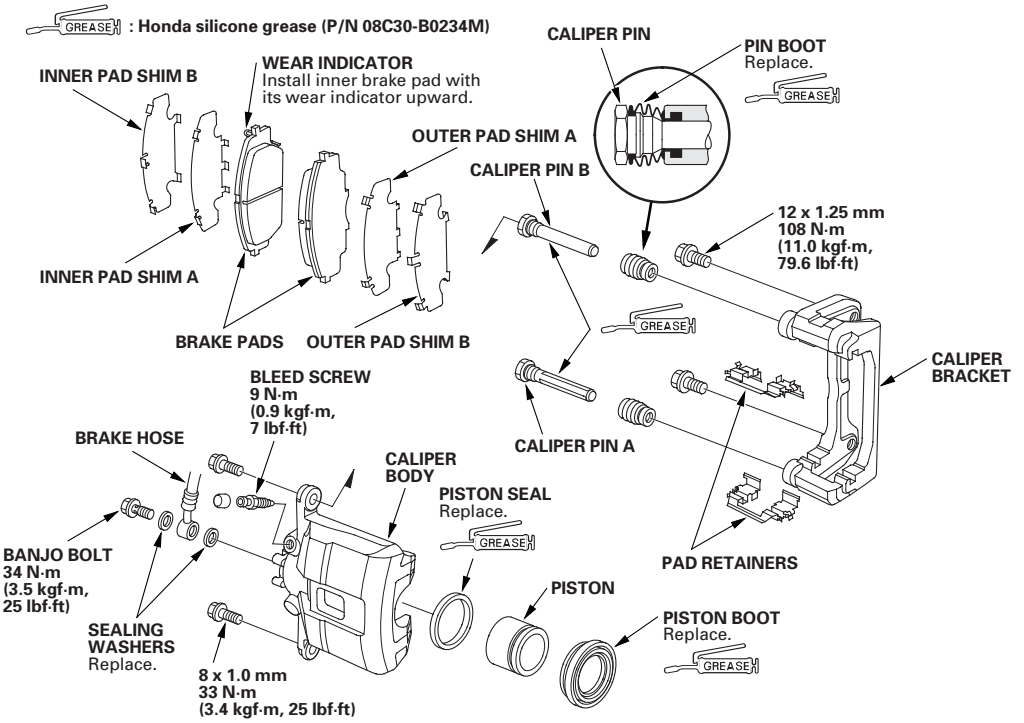
Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Type S Model

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid brake pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Coat the piston, the piston seal groove, and the caliper bore with clean brake fluid.
- Use recommended greases in the front caliper set.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.

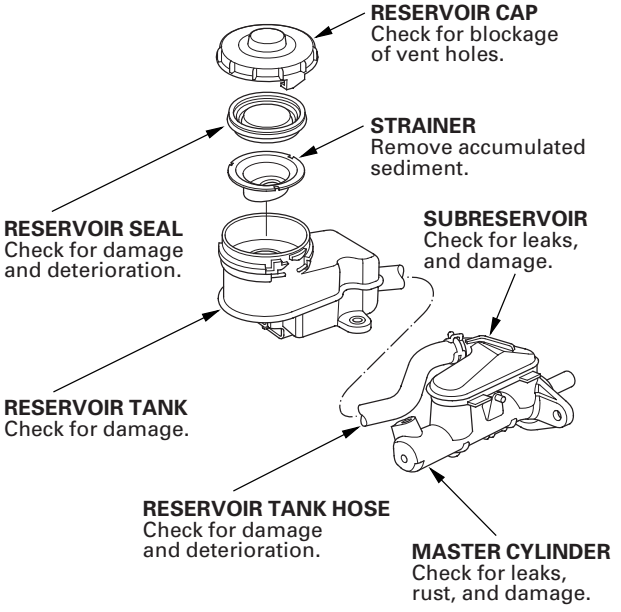


Master Cylinder Inspection

1. Remove the master cylinder (see page 19-24).

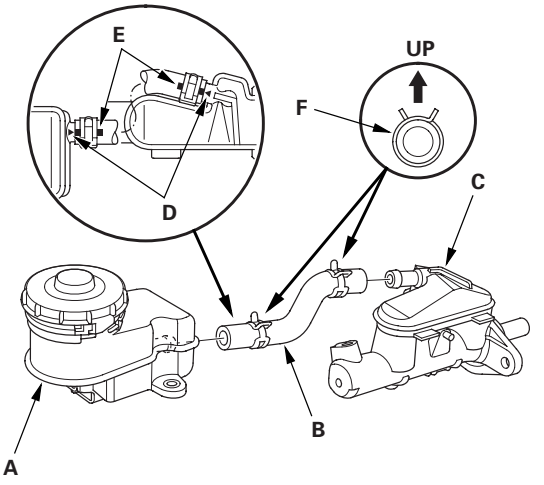
2. Inspect and note these items:

   - Before reassembling, check that all parts are free of dirt and other foreign particles.
   - Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary.
   - Do not allow dirt or foreign matter to contaminate the brake fluid.



3. If the reservoir tank hose was disconnected, install the reservoir tank (A) and the reservoir tank hose (B) to the subreservoir (C).

   NOTE:
   - Align the ''△'' marks (D) on the reservoir tank and subreservoir with the paint marks (E) on the hose.
   - Position the direction of the clamp (F).



4. Install the master cylinder (see page 19-24).

Brake Booster Test

Functional Test

1. With the ignition switch in LOCK (0), press the brake pedal several times to deplete the vacuum reservoir, then press the brake pedal hard, and hold it for 15 seconds. If the brake pedal sinks, either the master cylinder is bypassing internally, or the brake system is leaking. Inspect the brake hoses and lines (see page 19-37).

2. Start the engine with the brake pedal pressed. If the brake pedal sinks slightly, the vacuum booster is operating normally. If the brake pedal height does not vary, do the brake system test (see page 19-4).

Leak Test

1. Press the brake pedal with the engine running, then stop the engine. The brake pedal height should not vary while pressed for 30 seconds.

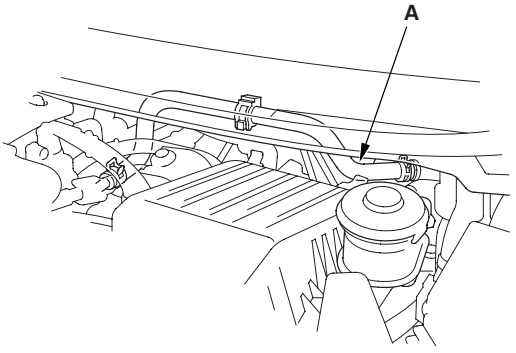
   - If the pedal height rises, go to step 6.
   - If it does not rise, go to step 2.

2. Start the engine and let it idle for 30 seconds. Turn the ignition switch to LOCK (0), and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise. Does the pedal rise on each consecutive application?

   - If it rises the booster is OK.
   - If it does not rise, go to step 3.

3. Disconnect the brake booster vacuum hose (A) at the booster. The check valve is built into the hose.

   NOTE: If the check valve is faulty, replace the brake booster vacuum hose/check valve as an assembly.



4. Start the engine, and let it idle. There should be vacuum available.

   - If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve, and retest.
   - If there is vacuum, go to step 5.

5. With the ignition switch in LOCK (0), reconnect the vacuum hose to the brake booster.

6. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.

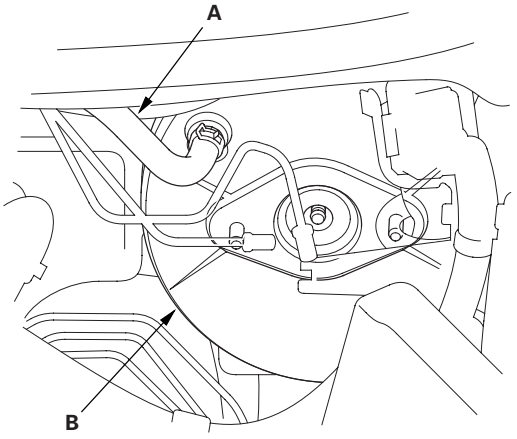
7. Turn the ignition switch to LOCK (0), and wait 30 seconds. Press the brake pedal several times using normal pressure. When the pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise.

   - If the pedal position does not vary inspect the seal between the master cylinder and booster. If the seal is OK, replace the brake booster.
   - If the pedal position varies, replace the brake booster vacuum hose/check valve as an assembly.

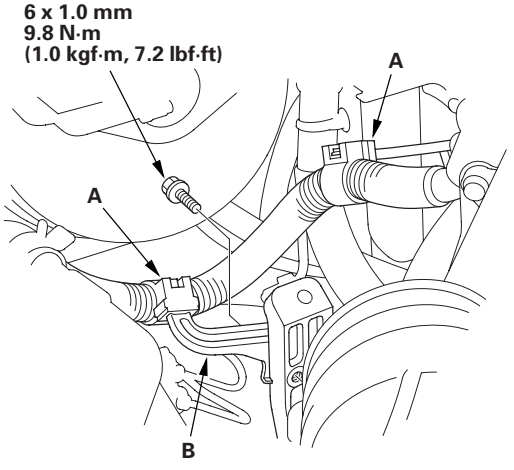
Brake Booster Replacement

1. Remove the master cylinder (see page 19-24).

2. Disconnect the brake booster vacuum hose (A) from the brake booster (B).

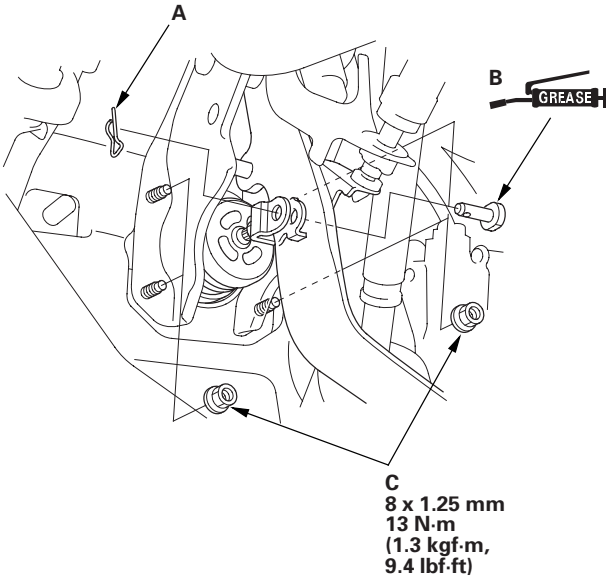


3. Remove the engine wire harness clamps (A).



4. Remove the air cleaner bracket (B).

5. Remove the lock pin (A) and the clevis pin (B), then disconnect the yoke from the brake pedal.



6. Remove the brake booster mounting nuts (C).

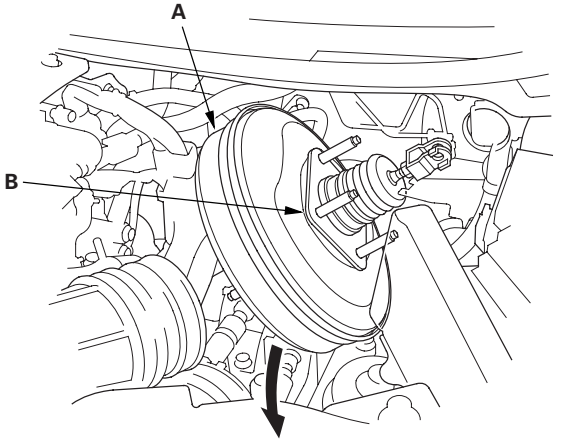
(cont'd)

Brake Booster Replacement (cont'd)

7. Pull the brake booster (A) forward.

NOTICE

- Be careful not to damage the brake booster mounting surfaces and the threads on the booster studs.
- Be careful not to bend or damage the brake lines.



8. Remove the brake booster by pulling it out and turning it, and remove it from the engine compartment.

   NOTE: Use a new brake booster gasket (B) during reassembly.

9. Install the brake booster in the reverse order of removal, and note these items:

   - Install the master cylinder after installing the brake booster (see page 19-24).
   - Replace the master cylinder rod seal.
   - Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see page 19-6).
   - Bleed the brake system (see page 19-9).

Master Cylinder Replacement

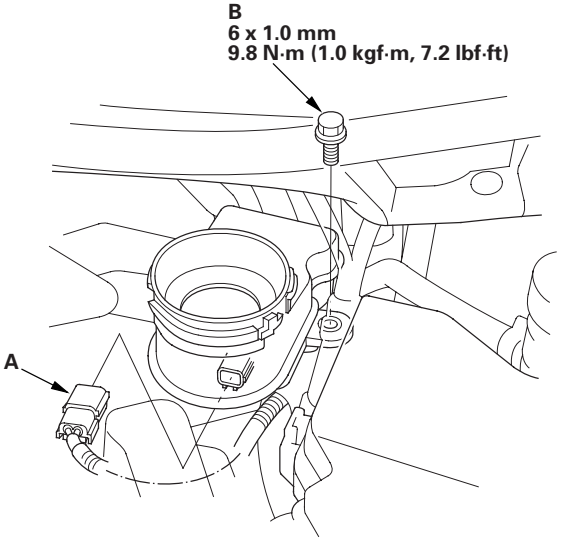
NOTICE

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- Plug the ends of the hoses and the joints to prevent spilling brake fluid.

1. Remove the air cleaner (see page 11-345).

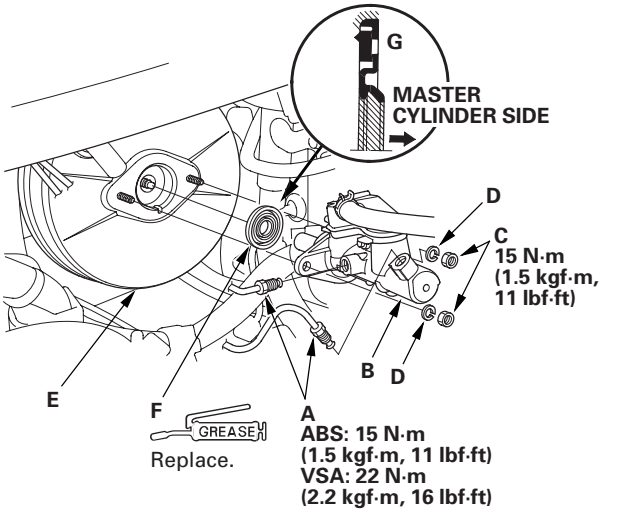
2. Remove the reservoir cap and brake fluid from the master cylinder reservoir with a syringe.

3. Disconnect the brake fluid level switch connector (A).



4. Remove the reservoir tank mounting bolt (B).

5. Disconnect the brake lines (A) from the master cylinder (B). To prevent spills, cover the hose joints with clean rags or shop towels.



6. Remove the master cylinder mounting nuts (C) and washers (D).

7. Remove the master cylinder from the brake booster (E). Be careful not to bend or damage the brake lines when removing the master cylinder.

8. Remove the rod seal (F) from the master cylinder.

   NOTE: During installation, set a new rod seal onto the master cylinder with its grooved side (G) toward the master cylinder.

9. Install the master cylinder in the reverse order of removal, and note these items:

   - Coat the inner bore lip and outer circumference of the new rod seal with the Shin-Etsu silicone grease (P/N 08798-9013).
   - Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.
   - Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see page 19-6).

10. Bleed the brake system (see page 19-9).

11. Spin the wheels to check for brake drag.

Rear Brake Pad Inspection and Replacement

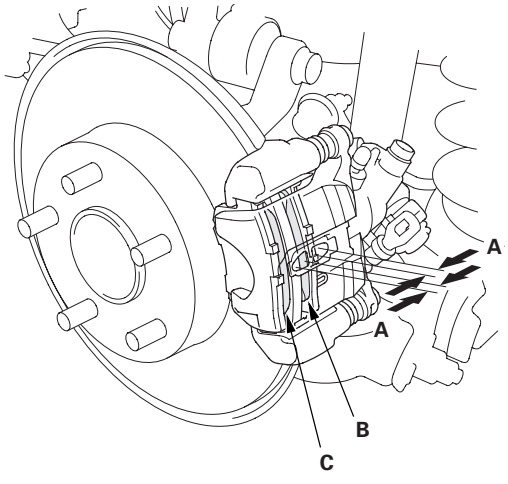
⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Inspection

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
2. Remove the rear wheels.
3. Check the thickness (A) of the inner pad (B) and the outer pad (C). Do not include the thickness of the backing plate.

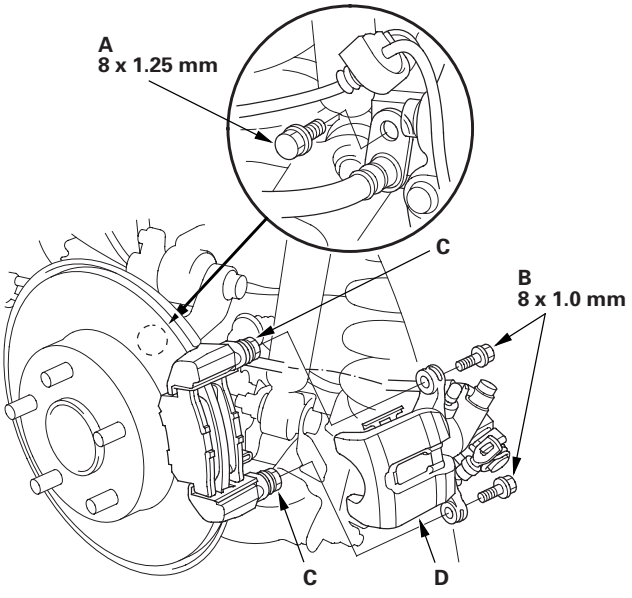
   Brake pad thickness:
   Standard: 8.3—9.4 mm (0.33—0.37 in.)
   Service limit: 1.6 mm (0.06 in.)



4. If any part of the brake pad thickness is less than the service limit, replace the rear brake pads as a set.
5. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

Replacement

1. Remove some brake fluid from the master cylinder.
2. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
3. Remove the rear wheels.
4. Remove the brake hose mounting bolt (A).



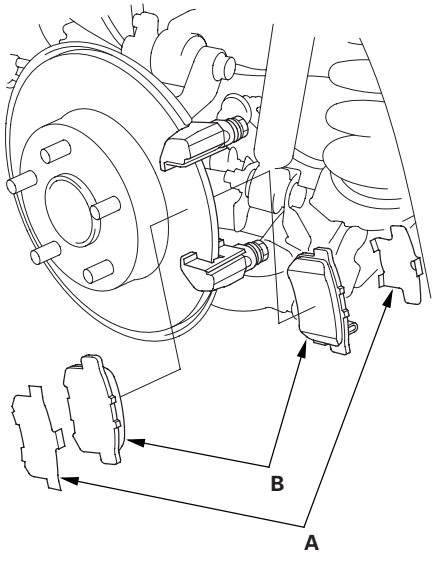
5. Remove the flange bolts (B) while holding respective caliper pin (C) with a wrench. Be careful not to damage the pin boot, and remove the caliper (D). Check the hose and pin boots for damage and deterioration.

   NOTE: Do not twist the brake hose and the parking brake cable to prevent damage.

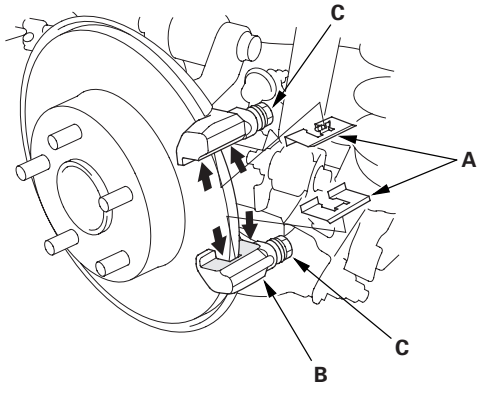
(cont'd)

Rear Brake Pad Inspection and Replacement (cont'd)

6. Remove the pad shims (A) and the brake pads (B).



7. Remove the pad retainers (A).



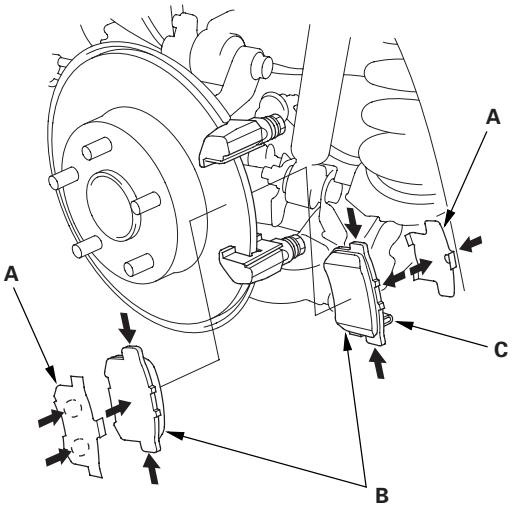
8. Clean the caliper bracket (B) thoroughly; remove any rust, and check for grooves and cracks. Verify that the caliper pins (C) move in and out smoothly. Clean and lube if needed.

9. Inspect the brake disc for runout, thickness, parallelism (see page 19-32) and check for damage and cracks.

10. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainer mating surface of the caliper bracket (indicated by the arrows).

11. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep the assembly paste off the brake disc and brake pads.

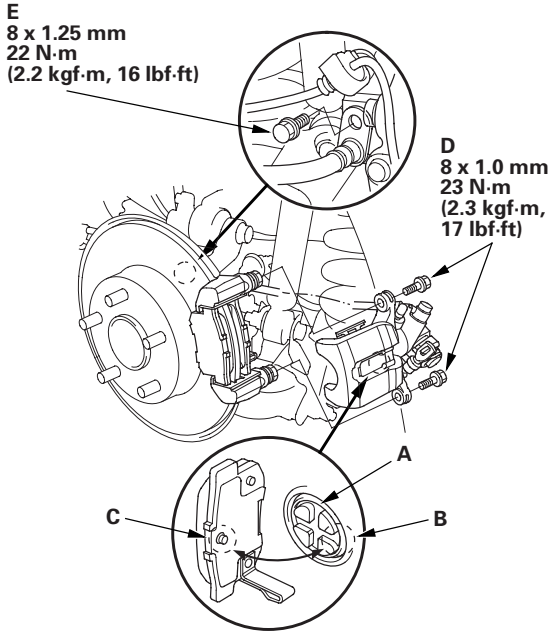
12. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of the shims (A), the back of the brake pads (B), and the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and the brake pads friction material. Keep grease and assembly paste off the brake disc and the brake pads. Contaminated brake disc or brake pads reduce stopping ability.



13. Install the brake pads and the pad shims correctly. Install the brake pad with the wear indicator (C) on the bottom inside. If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

14. Rotate the caliper piston (A) clockwise into the cylinder, then align the cutout (B) in the piston with the tab (C) on the inner pad by turning the piston back. Lubricate the boot with rubber grease to avoid twisting the piston boot. If the piston boot is twisted, back it out so it is positioned properly.

    NOTE: Be careful when moving the piston back in the caliper; brake fluid might overflow from the master cylinder's reservoir. If brake fluid gets on any painted surface, wash it off immediately with water.



15. Install the caliper. Install the flange bolts (D), and tighten it to the specified torque while holding the respective caliper pin with a wrench being careful not to damage the pin boots.

16. Install the brake hose mounting bolt (E).

17. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

18. Press the brake pedal several times to make sure the brakes work.

    NOTE: Engagement may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

19. Add brake fluid as needed.

20. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Test-drive the vehicle, then recheck for leaks (see page 19-37).

Rear Brake Disc Inspection

Runout

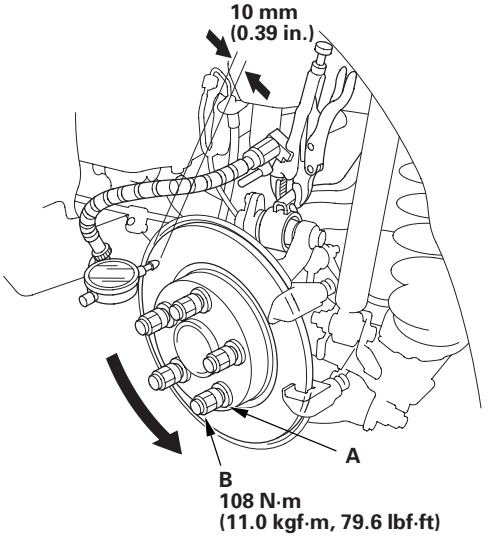
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Remove the rear wheels.

3. Remove the brake pads (see page 19-29).

4. Inspect the brake disc to wheel surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.

5. Install suitable flat washers (A) and wheel nuts (B), and tighten the wheel nuts to the specified torque to hold the brake disc securely against the hub.



6. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.39 in.) from the outer edge of the brake disc.

   Brake disc runout:
   Service limit: 0.04 mm (0.0016 in.)

7. If the brake disc is beyond the service limit, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

   Max. refinishing limit: 8.0 mm (0.31 in.)

   NOTE:
   - If the brake disc is beyond the service limit for refinishing, replace it (see page 19-34).
   - If the brake disc is replaced with a new one, check the new disc for runout. If the new disc is out of specification, refinish the disc.

8. Install the brake pads (see page 19-29).

9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

Thickness and Parallelism

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).

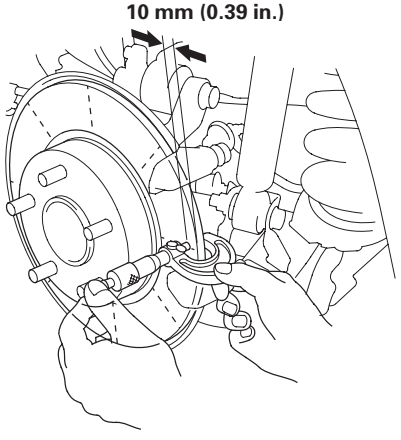
2. Remove the rear wheels.

3. Remove the brake pads (see page 19-29).

4. Using a micrometer, measure the brake disc thickness at eight points, about 45 ° apart and 10 mm (0.39 in.) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

   Brake disc thickness:
   Standard: **8.9—9.1 mm (0.35—0.36 in.)**
   Max. refinishing limit: **8.0 mm (0.31 in.)**
   Brake disc parallelism: **0.015 mm (0.0006 in.) max.**

   NOTE: This is the maximum allowable difference between the thickness measurements.



5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with a Honda-approved commercially available on-car brake lathe.

   NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see page 19-34).

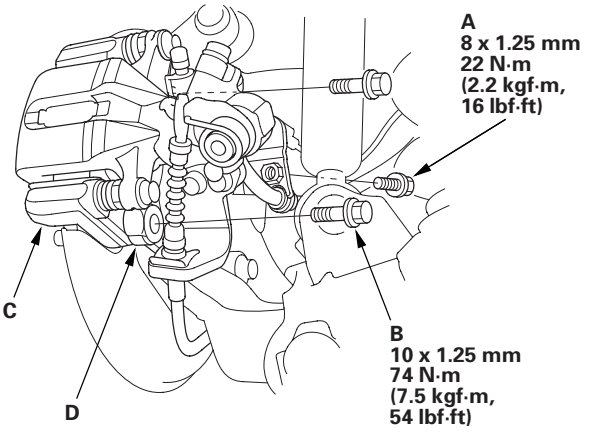
6. Install the brake pads (see page 19-29).

7. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheels.

Rear Brake Disc Replacement

NOTE: Keep any grease off the brake disc and brake pads.

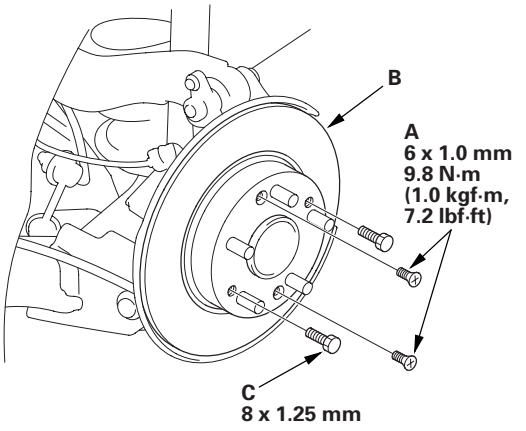
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-11).
2. Remove the rear wheel.
3. Release the parking brake lever fully.
4. Remove the brake hose mounting bolt (A) from the bracket.



5. Remove the brake caliper bracket mounting bolts (B), then remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose and the parking brake cable excessively.

   NOTE: Make sure the washers (D) position on reassembly, if they are removed (see step 5 on page 18-32).

6. Remove the brake disc flathead screws (A).



7. Remove the brake disc (B) from the hub bearing unit.

   NOTE: If the brake disc is stuck to the hub bearing unit, thread two 8 x 1.25 mm bolts (C) into the brake disc to push it away from the hub bearing unit. Turn each bolt 90 degrees at a time to prevent the brake disc from binding.

8. Install the brake disc in the reverse order of removal, and note these items:

   - Before installing the brake disc, clean the mating surfaces between the hub bearing unit and the inside of the brake disc.
   - Adjust the parking brake (see page 19-8).

9. Inspect the brake disc runout (see page 19-32).
10. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the rear wheel.

Rear Brake Caliper Overhaul

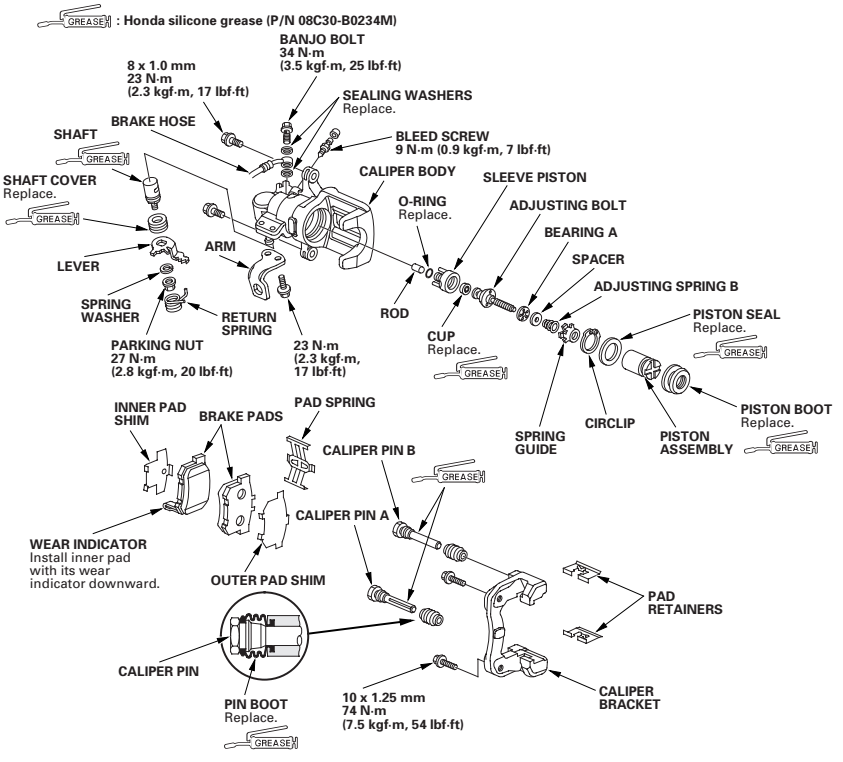
⚠CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.
- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

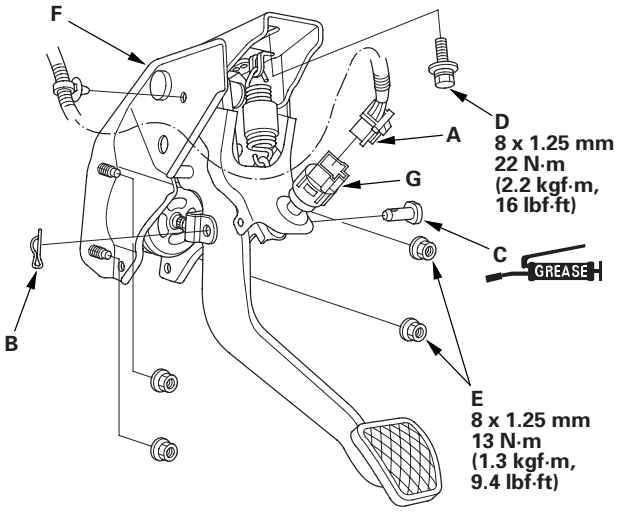
NOTE: Make sure that the caliper pins are installed correctly. Upper caliper pin B and lower caliper pin A are different. If these caliper pins are installed in the wrong location, it will cause vibration, uneven or rapid pad wear, and possibly uneven tire wear.

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets into the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing brake pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Coat the piston, the piston seal groove, and the caliper bore with clean brake fluid.
- Use recommended greases in the rear caliper set.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.



Brake Pedal Replacement

1. Disconnect the brake pedal position switch connector (A).

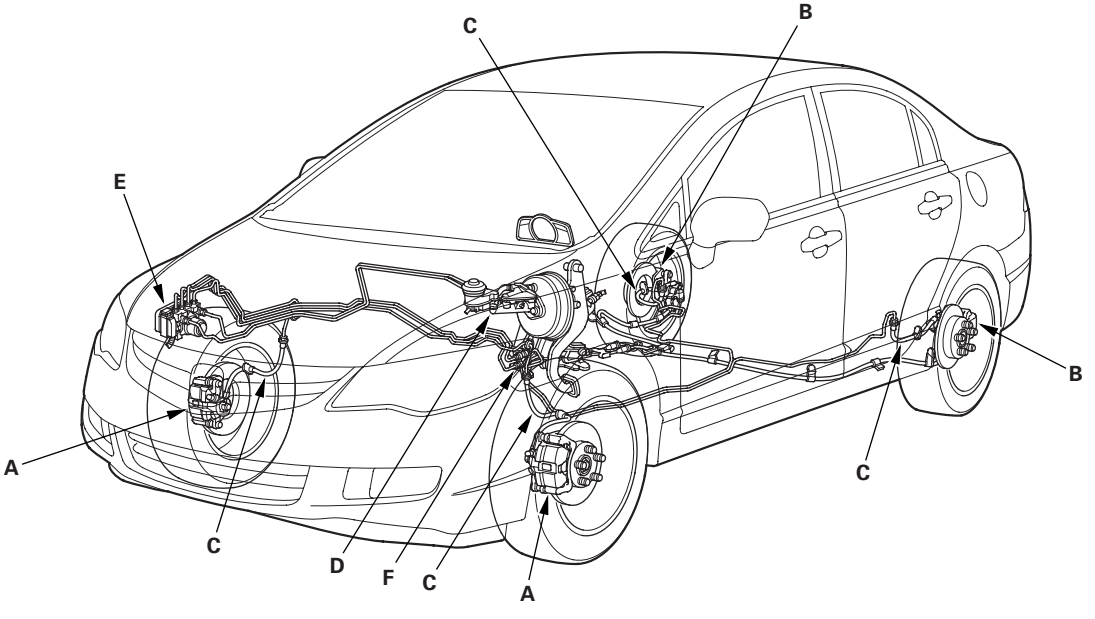


2. Remove the lock pin (B) and the clevis pin (C).
3. Remove the brake pedal bracket mounting bolt (D) and nuts (E).
4. Remove the brake pedal with bracket (F).
5. Remove the brake pedal position switch (G) by turning it counterclockwise.
6. Install in the reverse order of removal.
7. Adjust the brake pedal and the brake pedal position switch (see page 19-6).

Brake Hose and Line Inspection

1. Inspect the brake hoses for damage, deterioration, leaks, interference, and twisting.
2. Check the brake lines for damage, rusting, and leaks. Also check for bent brake lines.
3. Check for leaks at hose and line joints and connections, and retighten if necessary.
4. Check the master cylinder and the ABS or VSA modulator-control unit for damage and leaks.

Connection Point	Component	Connected to	Specified Torque Value	Note
A	Front brake caliper	Brake hose	34 N·m (3.5 kgf·m, 25 lbf·ft)	Banjo bolt
		Bleed screw	9 N·m (0.9 kgf·m, 7 lbf·ft)	
B	Rear brake caliper	Brake hose	34 N·m (3.5 kgf·m, 25 lbf·ft)	Banjo bolt
		Bleed screw	9 N·m (0.9 kgf·m, 7 lbf·ft)	
C	Brake hose	Brake line	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut
D	Master cylinder (ABS)	Brake line	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut
	Master cylinder (VSA)		22 N·m (2.2 kgf·m, 16 lbf·ft)	
E	ABS modulator-control unit	Brake line	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut
	VSA modulator-control unit	Brake line (10 mm nut)	15 N·m (1.5 kgf·m, 11 lbf·ft)	
		Brake line (12 mm nut)	22 N·m (2.2 kgf·m, 16 lbf·ft)	
F	4-way joint	Brake line	15 N·m (1.5 kgf·m, 11 lbf·ft)	Flare nut

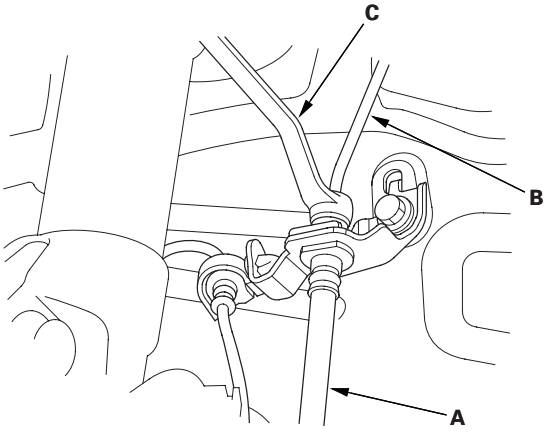


Brake Hose Replacement

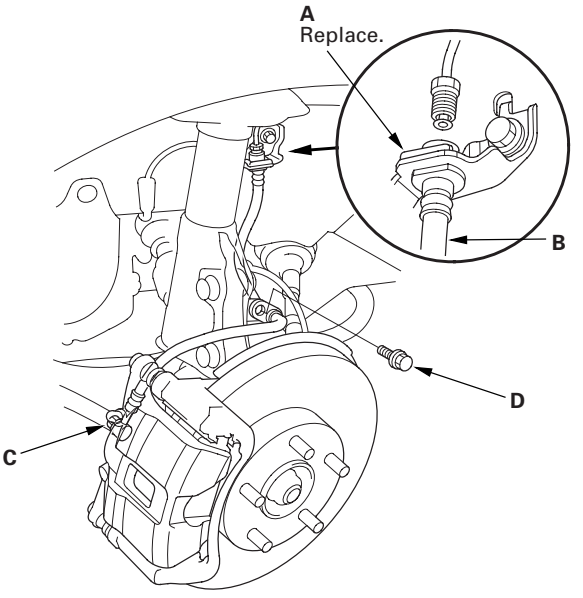
NOTE:
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Plug the ends of the hoses and the joints to prevent spilling brake fluid.
- The illustrations show only the front of the vehicle except where the procedure is different for the rear.

1. Remove the wheel.

2. Disconnect the brake hose (A) from the brake line (B) using a 10 mm flare-nut wrench (C).



3. Front: Remove the brake hose clip (A) from the brake hose (B).

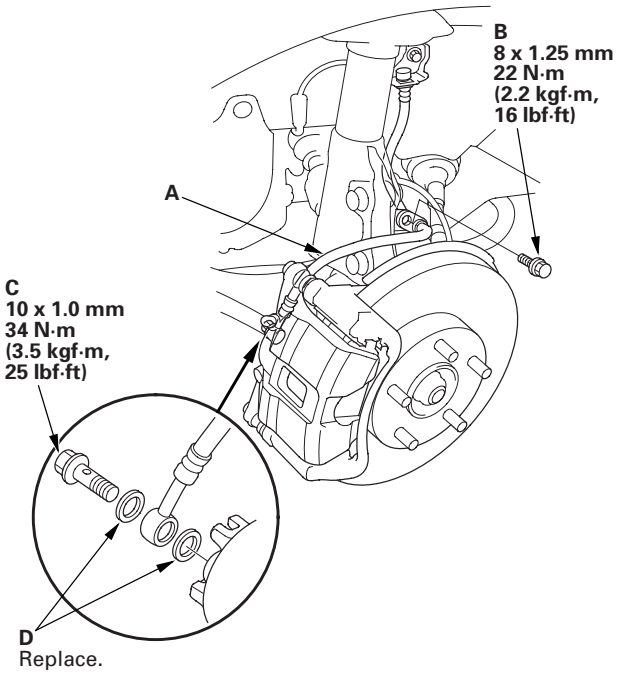


4. Remove the banjo bolt (C), and disconnect the brake hose from the caliper.

5. Remove the brake hose mounting bolt(s) (D), then remove the brake hose.

   NOTE: Rear: Remove the brake hose with the bracket.

6. Install the brake hose (A) with the brake hose mounting bolt (B).

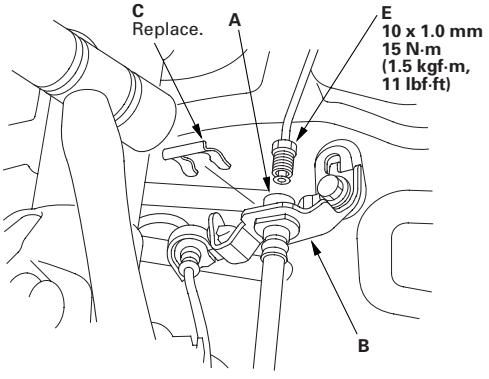


7. Connect the brake hose to the caliper with the banjo bolt (C) and the new sealing washers (D).

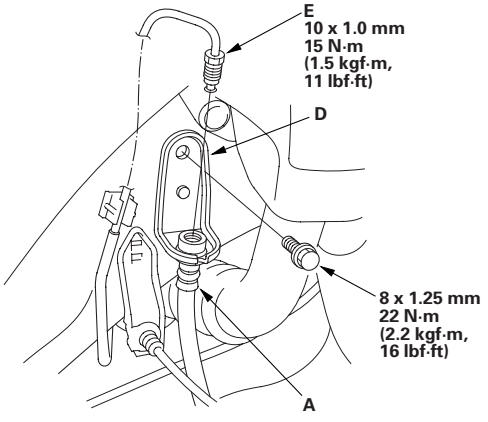
8. Position the brake hose ends (A).

NOTE:
- Front: Install the brake hose on the brake hose bracket (B) with a new brake hose clip (C).
- Rear: Install the brake hose bracket (D) to the frame.

Front



Rear



9. Connect the brake line (E) to the brake hose.

10. After installing the brake hose, bleed the brake system (see page 19-9).

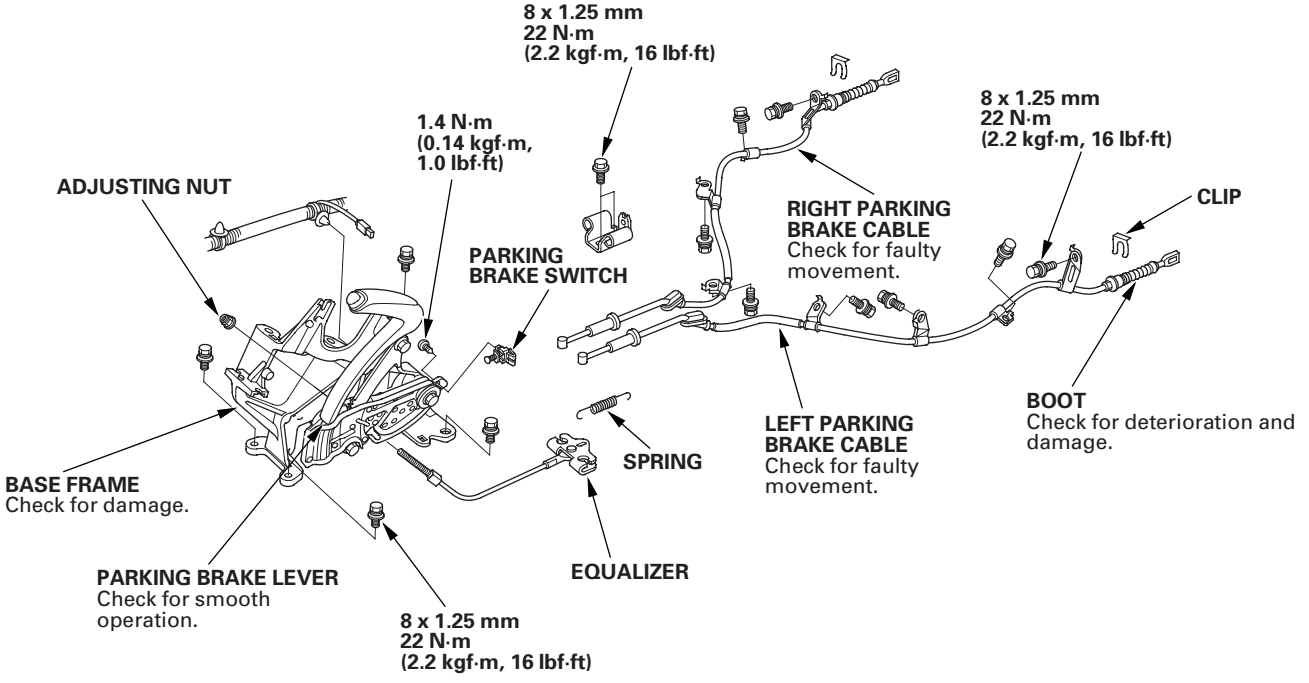
11. Do the following checks:

- Check the brake hose and line joint for leaks, and tighten if necessary.
- Check the brake hoses for interference and twisting.

12. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the wheel.

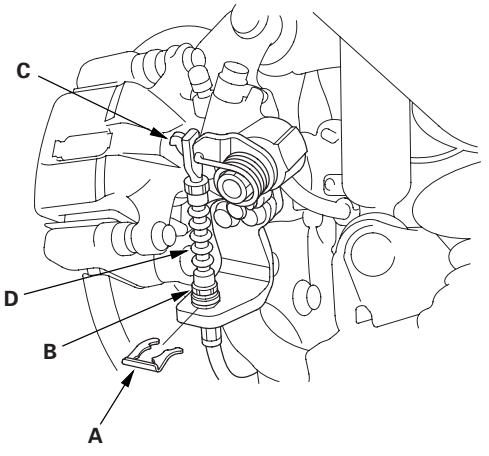
Parking Brake Cable Replacement

Exploded View



NOTE:
- The parking brake cables must not be bent or distorted. This will lead to stiff operation and premature failure.
- Refer to the Exploded View as needed during this procedure.

1. Release the parking brake lever fully.
2. Loosen the parking brake cable adjusting nut (see page 19-8).
3. Remove the parking brake cable clip (A) from the brake cable (B).



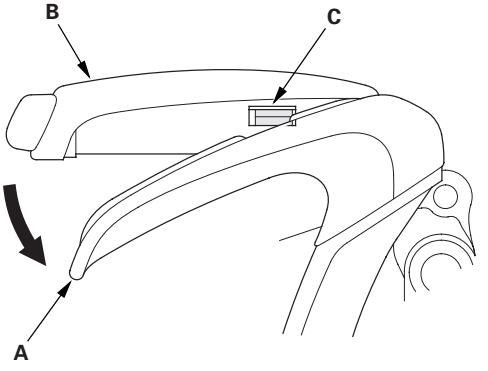
4. Disconnect the parking brake cable from the lever (C).
5. Remove the parking brake cable mounting hardware, then remove the cable.
6. Install the parking brake cable in the reverse order of removal, and note these items:
   - Be careful not to bend or distort the cable and boot (D).
   - Make sure the parking brake cable clip is fully seated on the cable housing.
   - Adjust the parking brake (see page 19-8).

Parking Brake Lever Grip and Cover Replacement

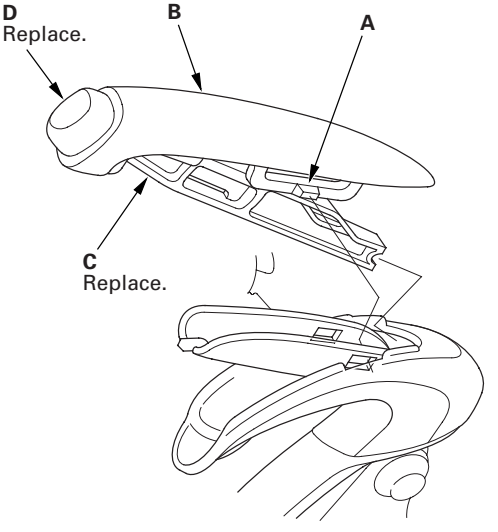
Removal

Lever Grip

1. Remove the center console (see page 20-92).
2. Pull up the parking brake fully (8 to 10 clicks).
3. Start at the front edge (A), peel lever grip away from lever cap (B). Continue to peel the grip from the lever to gain access to the hooks (C).



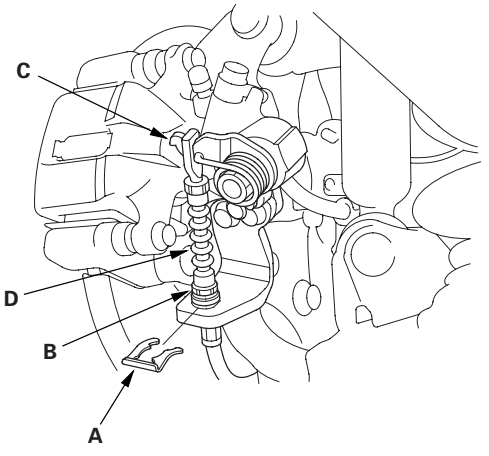
4. Push in both sides of the hook (A) on the lever cap (B), and remove the lever cap and the pushrod (C) with the knob (D).



(cont'd)

NOTE:
- The parking brake cables must not be bent or distorted. This will lead to stiff operation and premature failure.
- Refer to the Exploded View as needed during this procedure.

1. Release the parking brake lever fully.
2. Loosen the parking brake cable adjusting nut (see page 19-8).
3. Remove the parking brake cable clip (A) from the brake cable (B).



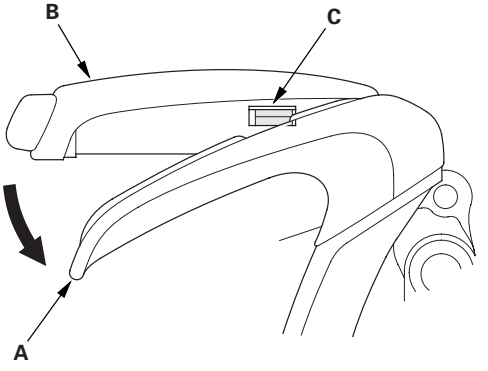
4. Disconnect the parking brake cable from the lever (C).
5. Remove the parking brake cable mounting hardware, then remove the cable.
6. Install the parking brake cable in the reverse order of removal, and note these items:
   - Be careful not to bend or distort the cable and boot (D).
   - Make sure the parking brake cable clip is fully seated on the cable housing.
   - Adjust the parking brake (see page 19-8).

Parking Brake Lever Grip and Cover Replacement

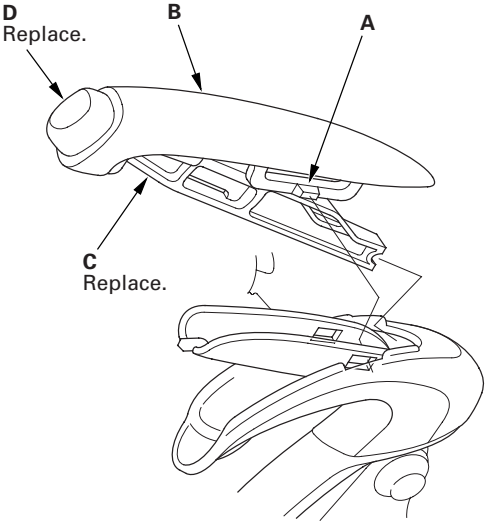
Removal

Lever Grip

1. Remove the center console (see page 20-92).
2. Pull up the parking brake fully (8 to 10 clicks).
3. Start at the front edge (A), peel lever grip away from lever cap (B). Continue to peel the grip from the lever to gain access to the hooks (C).



4. Push in both sides of the hook (A) on the lever cap (B), and remove the lever cap and the pushrod (C) with the knob (D).



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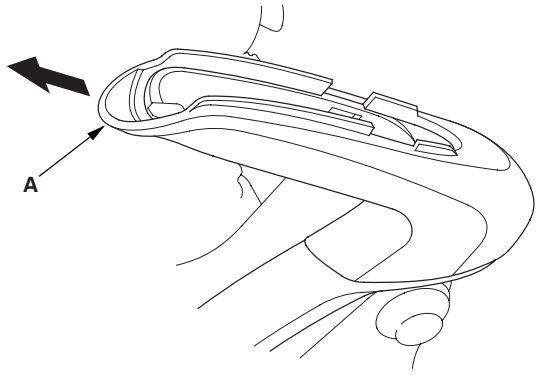
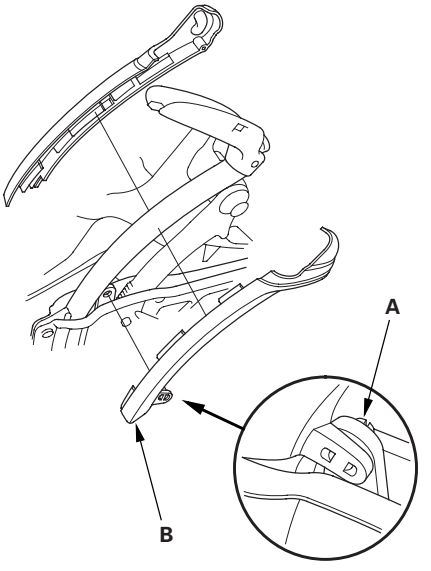
Parking Brake Lever Grip and Cover Replacement (cont'd)

5. Remove the lever grip (A) by sliding it up.



Lever Cover

6. Remove the clip (A) on the driver's side of the parking brake lever cover (B).

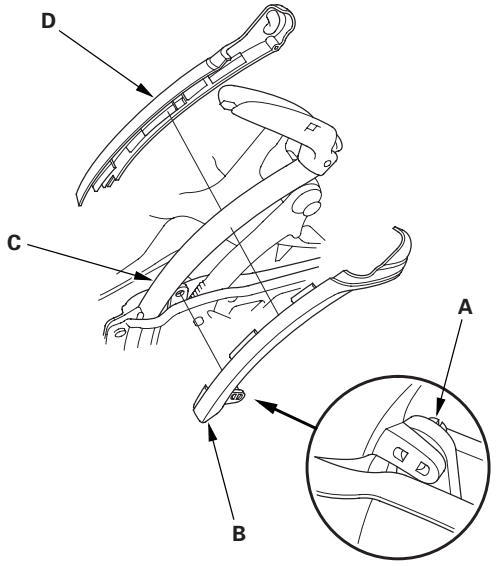


7. Separate the parking brake lever covers, and remove them.

Installation

Lever Cover

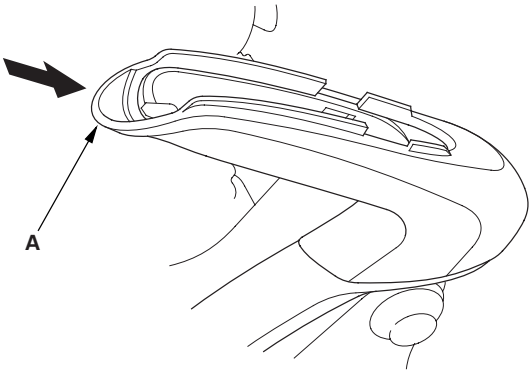
1. Install the clip (A) on driver's side of the parking brake lever cover (B) to the lever (C).



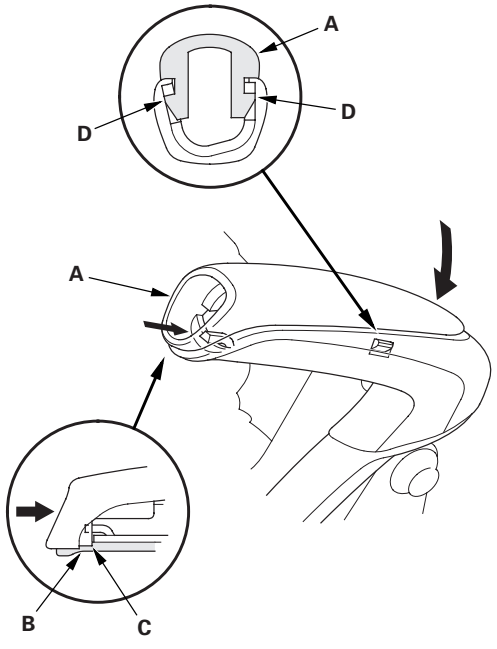
2. Install the passenger's side of the parking brake lever cover (D), and squeeze both sides of the cover together.

Lever Grip

3. Install a new lever grip (A) by sliding it over the cover.



4. Install a new lever cap (A) on to the lever by aligning the notch (B) in the cap with the tab (C) on the lever.

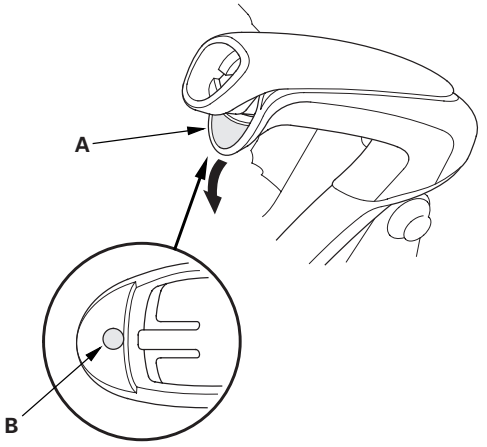


5. With the lever cap and grip in position, push down on the cap to lock the hooks (D) into place.

(cont'd)

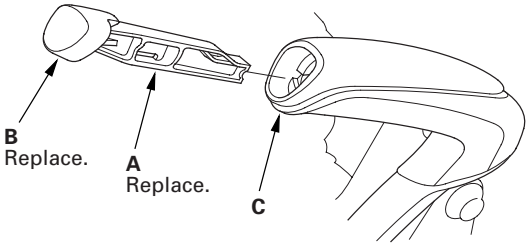
Parking Brake Lever Grip and Cover Replacement (cont'd)

6. Carefully peel back the front edge (A) of the lever grip, and apply a small amount of gel type super glue (B). Carefully push the grip back into place and hold while waiting a minute for the glue to dry.



7. Install a new pushrod (A) with the knob (B), and push them into the parking brake lever (C).

   NOTE: Do not use the removed pushrod and knob.



8. Release and pull the parking brake about 10 times.

9. Check the push knob play of about 2 mm (0.08 in.) and that the parking brake lever moves smoothly then do the parking brake inspection (see page 19-7).

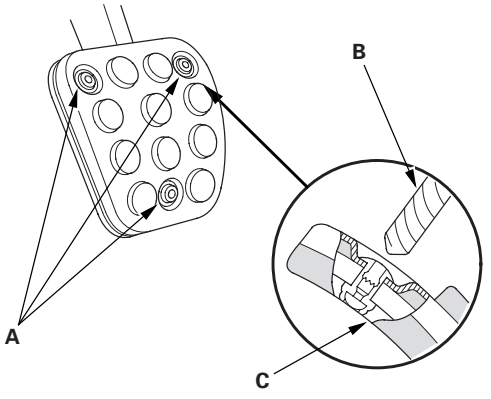
10. Install the center console (see page 20-92).

Brake Pedal Cover Replacement

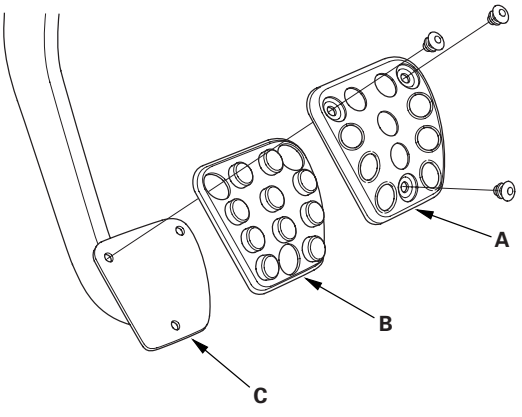
NOTE: This procedure shows a model equipped with a metal brake pedal cover.

1. Cover the carpet under the brake pedal to prevent metal shavings from getting on the carpet.
2. Center-punch each of rivets (A), and drill their heads off with a 3 mm (0.12 in.) drill bit (B).

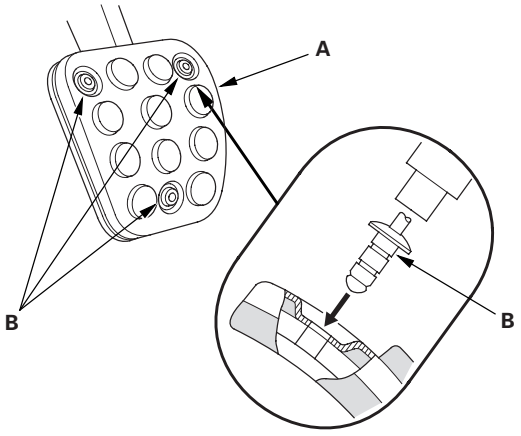
   NOTE: Do not drill the brake pedal pad (C).



3. Remove the brake pedal plate (A) and the brake pedal cover (B) from the brake pedal pad (C).



4. Set the brake pedal cover to the brake pedal plate.
5. Install the brake pedal plate (A) with the rivets (B) firmly.

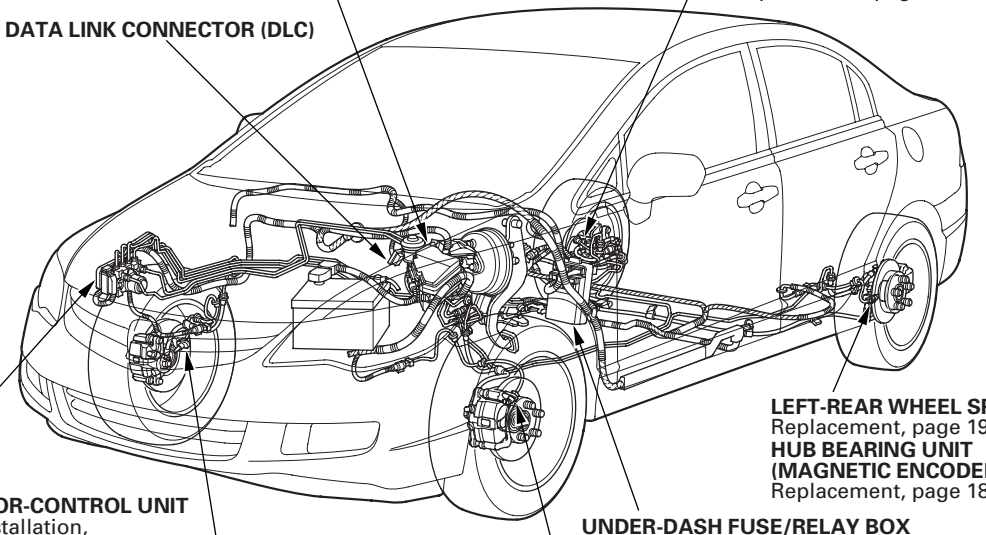


6. Make sure the brake pedal cover and plate is securely fastened on the brake pedal.
7. Check the brake pedal height (see page 19-6).

DYNOMITE -2009-

Brakes

Component Location Index



UNDER-HOOD FUSE/RELAY BOX

RIGHT-REAR WHEEL SPEED SENSOR
Replacement, page 19-93
HUB BEARING UNIT
(MAGNETIC ENCODER)
Replacement, page 18-32

DATA LINK CONNECTOR (DLC)

LEFT-REAR WHEEL SPEED SENSOR
Replacement, page 19-93
HUB BEARING UNIT
(MAGNETIC ENCODER)
Replacement, page 18-32

ABS MODULATOR-CONTROL UNIT
Removal and Installation,
page 19-90

UNDER-DASH FUSE/RELAY BOX

LEFT-FRONT WHEEL SPEED SENSOR
Replacement, page 19-92
WHEEL BEARING
(MAGNETIC ENCODER)
Replacement, page 18-18

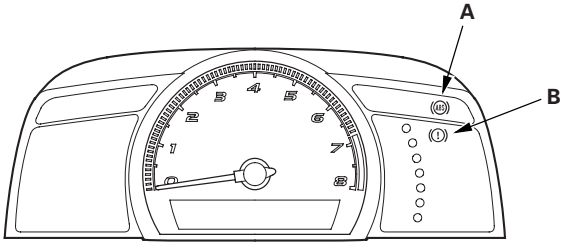
RIGHT-FRONT WHEEL SPEED SENSOR
Replacement, page 19-92
WHEEL BEARING
(MAGNETIC ENCODER)
Replacement, page 18-18

General Troubleshooting Information

System Indicator

This system has two indicators:

- ABS indicator (A)
- Brake system indicator (B)



When the system is OK, each indicator comes on for about 2 seconds after turning the ignition switch to ON (II), then goes off.
When the system detects a problem, a DTC is set and, depending upon the failure, the ABS modulator-control unit determines which indicator(s) are turned on. If the problem goes away (system returns to normal), the indicator(s) are controlled in the following way depending upon the DTC that is set:

- The indicator(s) come on and stay on when the ignition switch is ON (II).
- The indicator(s) automatically go off.
- The indicator(s) go off after the vehicle is driven.

ABS Indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake System Indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

NOTE: If two or more wheel speed sensors fail, the brake system indicator comes on.

(cont'd)

General Troubleshooting Information (cont'd)

Diagnostic Trouble Code (DTC)

- The memory holds all DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in the order they occur.
- The DTCs are memorized in the EEPROM. Therefore, the memorized DTCs cannot be erased by disconnecting the battery. Do the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
  – Initial diagnosis: Done right after the ignition switch is turned to ON (II) and until the ABS indicator goes off.
  – Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned to LOCK (0).
- When the system detects a problem, the ABS modulator-control unit shifts to fail-safe mode.

Kickback

The pump motor operates when the ABS modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the ABS modulator-control unit is functioning.
- The ABS modulator-control unit checks the pump motor operation one time after completing initial diagnosis during regular diagnosis when the vehicle is driven over 15 km/h (10 mph).

Brake Fluid Replacement/Air Bleeding

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles without ABS (see page 19-9).

How to Troubleshoot DTCs

The troubleshooting procedures assume that the cause of the problem is still present, and the ABS indicator is still on. Following a troubleshooting procedure for a code that has been cleared but does not reset can result in incorrect diagnosis.

1. Question the client about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS indicator came on, such as during activation, after activation, when the vehicle was traveling at a certain speed, etc. If necessary, have the client demonstrate the concern.

2. When the ABS indicator does not come on during the test-drive, check for loose connectors, poor contact of the terminals, etc. in the circuit indicated by the DTC before you start troubleshooting.

3. After troubleshooting, or the repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions that originally set the DTCs. Make sure the ABS indicator does not come on.

4. Check for DTCs from other systems which are connected via F-CAN. If there are DTCs that are related to F-CAN, one possible cause was that the ignition switch was turned to ON (II) with the ABS modulator-control unit connector disconnected. Clear the DTCs. Check for fuel and emissions DTC's first.

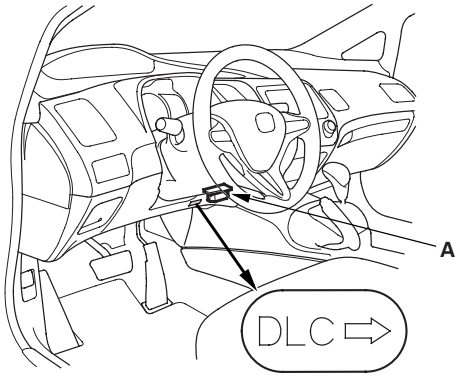
   NOTE: Always troubleshoot fuel and emissions DTC's first.

Intermittent Failures

The term ''intermittent failure'' means a system may have had a failure, but it checks OK now. If you cannot reproduce the condition, check for loose connectors or terminal pins related to the circuit that you are troubleshooting.

How to Use the HDS (Honda Diagnostic System)

1. If the system indicators stay on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the ABS modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).

4. Check the diagnostic trouble code (DTC) for all systems, troubleshoot the powertrain DTCs first and note it. Then refer to the indicated DTC's troubleshooting, and do the appropriate troubleshooting procedure.

   NOTE:
   - The HDS communication stops when the vehicle speed is at 50 km/h (31 mph) or more.
   - The HDS can read the DTC, the current data, and other system data.
   - For specific operations, refer to the Help menu that came with the HDS.

How to Retrieve DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.

2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the ABS modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).

4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC troubleshooting. Do the all systems DTC check, and troubleshoot any powertrain DTCs first.

5. Turn the ignition switch to LOCK (0).

How to Clear DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.

2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the ABS modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).

4. Clear the DTC(s) by following the screen prompts on the HDS.

5. Turn the ignition switch to LOCK (0).

DTC Troubleshooting Index

DTC		Detection Item	ABS Indicator	Brake System Indicator	Note
11	-13	Right-front Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*	(see page 19-65)
12	-11	Right-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*	(see page 19-68)
	-12	Right-front Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*	(see page 19-69)
	-21	Right-front Wheel Speed Sensor Installation Error	ON	ON/OFF*	(see page 19-71)
	-22	Right-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF*	(see page 19-71)
	-23	Right-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF*	(see page 19-72)
13	-13	Left-front Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*	(see page 19-65)
14	-11	Left-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*	(see page 19-68)
	-12	Left-front Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*	(see page 19-69)
	-21	Left-front Wheel Speed Sensor Installation Error	ON	ON/OFF*	(see page 19-71)
	-22	Left-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF*	(see page 19-71)
	-23	Left-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF*	(see page 19-72)
15	-13	Right-rear Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*	(see page 19-65)
16	-11	Right-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*	(see page 19-68)
	-12	Right-rear Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*	(see page 19-69)
	-21	Right-rear Wheel Speed Sensor Installation Error	ON	ON/OFF*	(see page 19-71)
	-22	Right-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF*	(see page 19-71)
	-23	Right-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF*	(see page 19-72)
17	-13	Left-rear Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF*	(see page 19-65)
18	-11	Left-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF*	(see page 19-68)
	-12	Left-rear Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF*	(see page 19-69)
	-21	Left-rear Wheel Speed Sensor Installation Error	ON	ON/OFF*	(see page 19-71)
	-22	Left-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF*	(see page 19-71)
	-23	Left-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF*	(see page 19-72)
21	-11	Right-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*	(see page 19-72)
22	-11	Left-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*	(see page 19-72)
23	-11	Right-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*	(see page 19-72)
24	-11	Left-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF*	(see page 19-72)
31	-01	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)
32	-01	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)
33	-01	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)

*: Brake system indicator turns ON when two or more wheels fail.

DTC		Detection Item	ABS Indicator	Brake System Indicator	Note
34	-01	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)
35	-01	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)
36	-01	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)
37	-01	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)
38	-01	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	(see page 19-73)
	-21	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	(see page 19-73)
	-22	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	(see page 19-73)
	-23	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	(see page 19-73)
41	-21	Right-front Wheel Lock	ON	ON/OFF*	(see page 19-74)
42	-21	Left-front Wheel Lock	ON	ON/OFF*	(see page 19-74)
43	-21	Right-rear Wheel Lock	ON	ON/OFF*	(see page 19-74)
44	-21	Left-rear Wheel Lock	ON	ON/OFF*	(see page 19-74)
51	-11	Motor Lock	ON	OFF	(see page 19-75)
	-12	Motor Drive Circuit Malfunction	ON	OFF	(see page 19-76)
	-13	Motor Drive Circuit Malfunction	ON	OFF	(see page 19-75)
52	-12	Motor Stuck OFF	ON	OFF	(see page 19-78)
53	-01	Motor Relay Stuck ON 1	ON	OFF	(see page 19-78)
	-12	Motor Relay Stuck ON 2	ON	OFF	(see page 19-78)
54	-03	Fail-safe Relay 1 Stuck ON	ON	ON	(see page 19-79)
	-04	Fail-safe Relay 1 Stuck OFF (Initial)	ON	ON	(see page 19-80)
	-21	Fail-safe Relay 1 Stuck OFF (Main)	ON	ON	(see page 19-80)
61	-01	ABS Modulator-control Unit Initial IG Low Voltage	ON	ON	(see page 19-81)
	-21	ABS Modulator-control Unit Power Source Low Voltage 1	ON	ON	(see page 19-81)
	-22	ABS Modulator-control Unit Power Source Low Voltage 2	ON	OFF	(see page 19-81)
	-23	ABS Modulator-control Unit Power Source Low Voltage 3	ON	ON	(see page 19-81)
62	-21	ABS Modulator-control Unit IG High Voltage	ON	ON	(see page 19-82)

*: Brake system indicator turns ON when two or more wheels fail.

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC		Detection Item	ABS Indicator	Brake System Indicator	Note
71	-21	Right-front or Left-rear Different Diameter Tire Malfunction	ON	ON	(see page 19-83)
	-22	Left-front or Right-rear Different Diameter Tire Malfunction	ON	ON	(see page 19-83)
	-23	Right-front and Right-rear Different Diameter Tire Malfunction	ON	ON	(see page 19-83)
	-24	Left-front and Left-rear Different Diameter Tire Malfunction	ON	ON	(see page 19-83)
	-25	Right-front and Left-front Different Diameter Tire Malfunction	ON	ON	(see page 19-83)
	-26	Right-rear and Left-rear Different Diameter Tire Malfunction	ON	ON	(see page 19-83)
81	-01	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-05	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-06	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-08	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-11	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-14	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-23	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-30	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-31	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-32	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-51	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-52	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	(see page 19-84)
	-71	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	OFF	(see page 19-84)
86	-01	F-CAN Bus-off Malfunction	OFF	OFF	(see page 19-85)
	-24	F-CAN Communication with Engine Malfunction	OFF	OFF	(see page 19-86)
	-25	F-CAN Communication with Engine Malfunction	OFF	OFF	(see page 19-86)
	-FF	F-CAN Communication with ABS Malfunction	OFF	OFF	(see page 19-87)

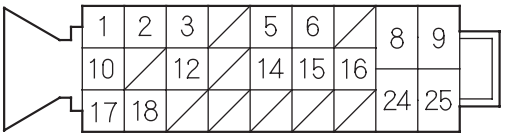
Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure
HDS does not communicate with the ABS modulator-control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-204).
ABS indicator and brake system indicator do not come on	1. Do the gauge control module troubleshooting (see page 22-241). 2. Substitute a known-good ABS modulator-control unit, then recheck. If it is OK, replace the original ABS modulator-control unit (see page 19-90).
ABS indicator and brake system indicator do not go off	1. Check for F-CAN DTCs, and troubleshoot and repair those first. 2. Symptom troubleshooting (see page 19-88). 3. Do the gauge control module troubleshooting (see page 22-241).

System Description

ABS Modulator-control Unit Inputs and Outputs for 25P Connector (Connector Disconnected)



Wire side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal sign	Description	Signal
1	WHT	CAN-H	F-CAN communication circuit	———
2	GRN	FR +B	Detects right-front wheel speed sensor signal	
3	RED	FL-GND	Detects left-front wheel speed sensor signal	
5	PUR	RL-GND	Detects left-rear wheel speed sensor signal	
6	LT GRN	RR +B	Detects right-rear wheel speed sensor signal	
8	WHT	FSR +B	Power source for the fail-safe relay	Battery voltage at all times
9	RED	MR +B	Power source for the motor relay	Battery voltage at all times

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal sign	Description	Signal
10	LT BLU	K-LINE	Communication with HDS	———
12	WHT	FL +B	Detects left-front wheel speed sensor signal	
14	YEL	RL +B	Detects left-rear wheel speed sensor signal	
15	BLU	RR-GND	Detects right-rear wheel speed sensor signal	
16	YEL*1 GRY*2	IG1	Power source for activating the system	With ignition switch ON (II): about battery voltage
17	RED	CAN-L	F-CAN communication circuit	———
18	PNK	FR-GND	Detects right-front wheel speed sensor signal	
24	BLK	GND	Ground for the ABS modulator-control unit	Continuity to ground
25	BLK	MR-GND	Ground for the pump motor	Continuity to ground

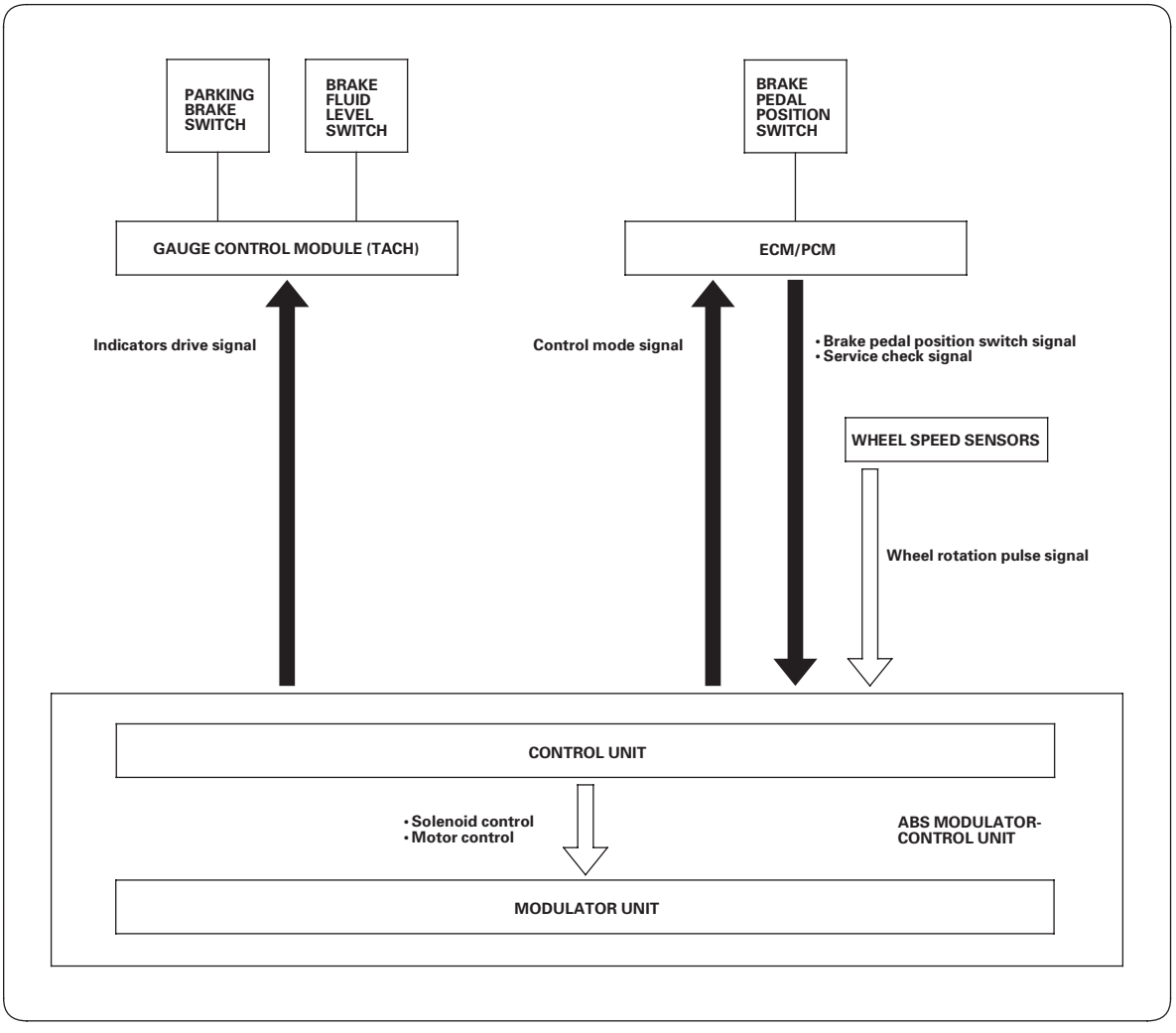
*1: '06 model
*2: '07 model

(cont'd)

System Description (cont'd)

System Outline

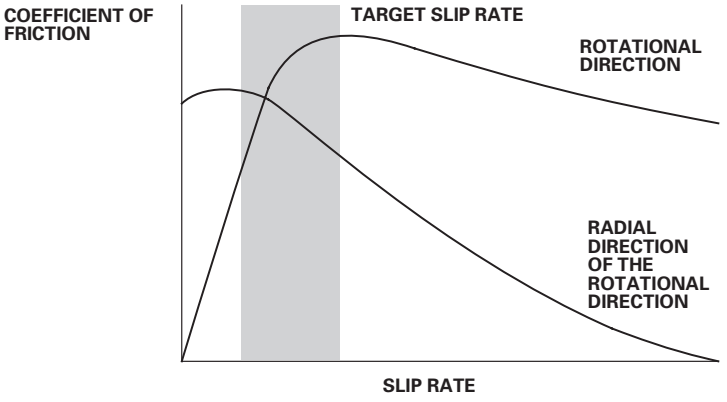
This system is composed of the ABS modulator-control unit, the wheel speed sensors, and the system indicators in the gauge control module (tach). The ABS modulator-control unit controls the anti-lock brake and the brakes distribution function.



ABS Features

Without ABS, when the brake pedal is pressed while driving, the wheels sometimes lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. With ABS, the system precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle. The ABS calculates the slip rate of the wheels based on the four wheel speeds, and then it controls the brake fluid pressure to reach the target slip rate.

Grip force of tire and road surface

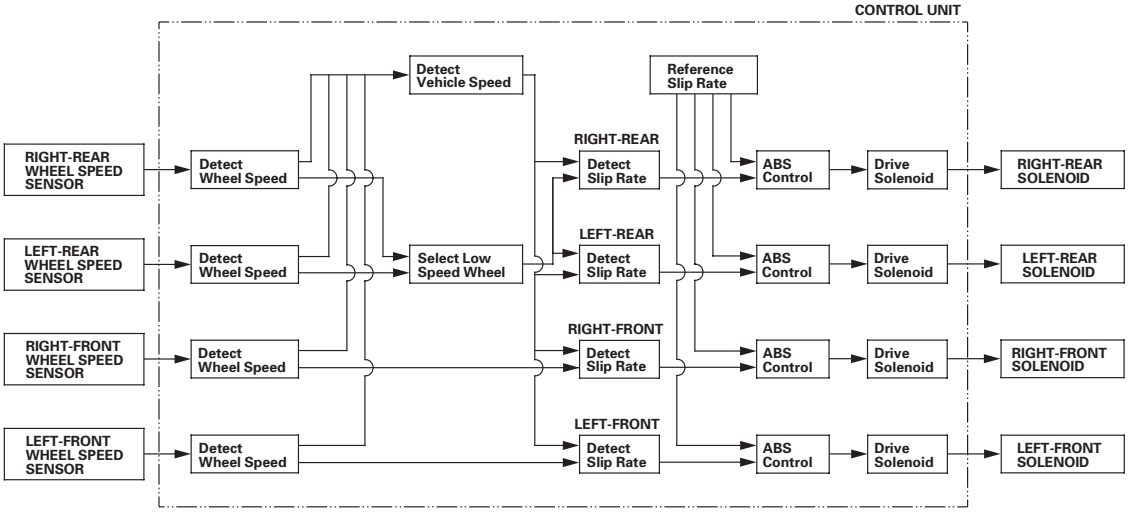


Main control

The control unit detects the wheel speed based on the wheel speed sensor signals it receives, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the wheel speeds.

The control unit calculates the slip rate of each wheel, and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The hydraulic control has three modes: Pressure intensifying, pressure reducing, and pressure retaining.

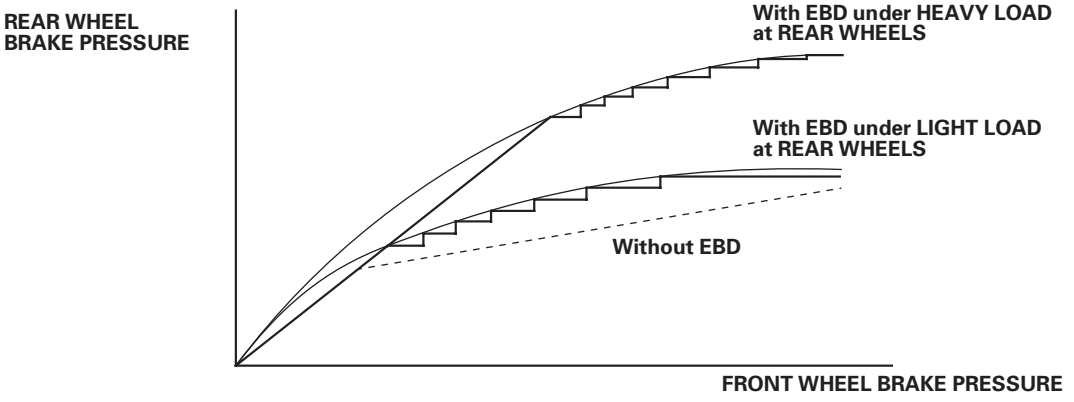


(cont'd)

System Description (cont'd)

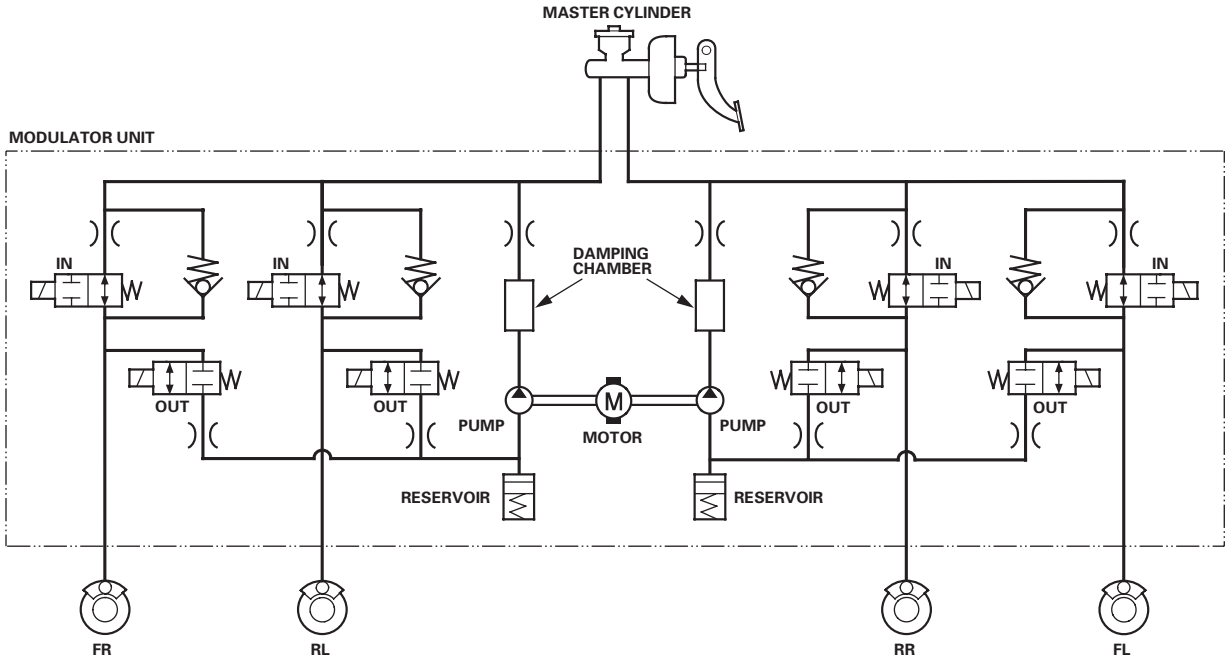
EBD Features

The electronic brake distribution (EBD) feature helps control vehicle braking by adjusting the rear brake force in accordance with the rear wheel load before the ABS operates. Based on the wheel speed sensor signals, the control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the ABS modulator-control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases, and approaches the front wheel speed, the ABS modulator-control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, kickback may be felt at the brake pedal.



Modulator Unit

The ABS modulator consists of the inlet solenoid valve, the outlet solenoid valve, the reservoir, the pump, the pump motor, and the damping chamber. The modulator reduces the caliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the caliper, the reservoir, and the master cylinder. The hydraulic control has three modes; pressure intensifying, pressure retaining, and pressure reducing. The hydraulic circuit is an independent four channel type; one channel for each wheel.



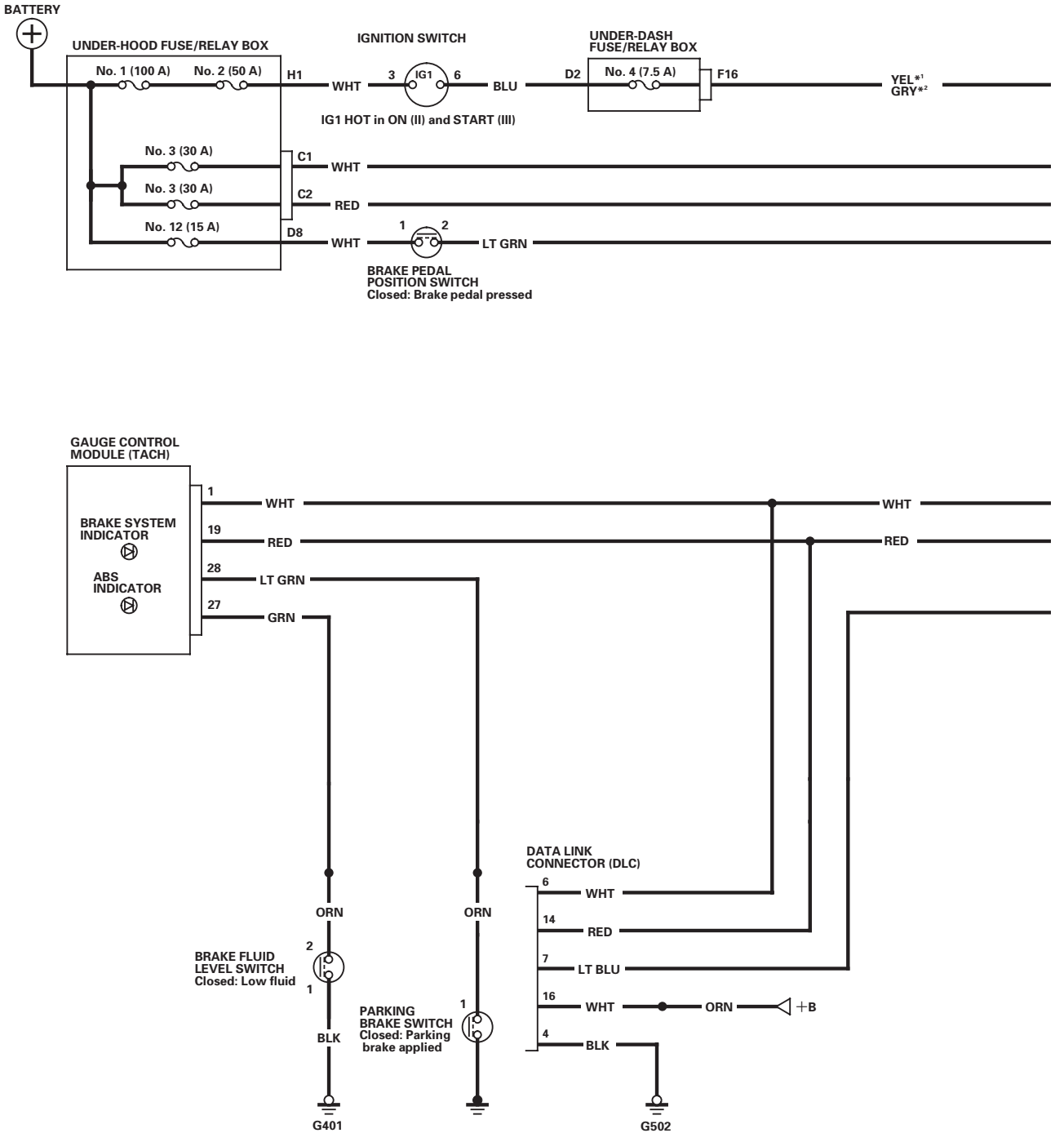
IN: INLET SOLENOID VALVE (NORMALLY OPEN)
OUT: OUTLET SOLENOID VALVE (NORMALLY CLOSED)

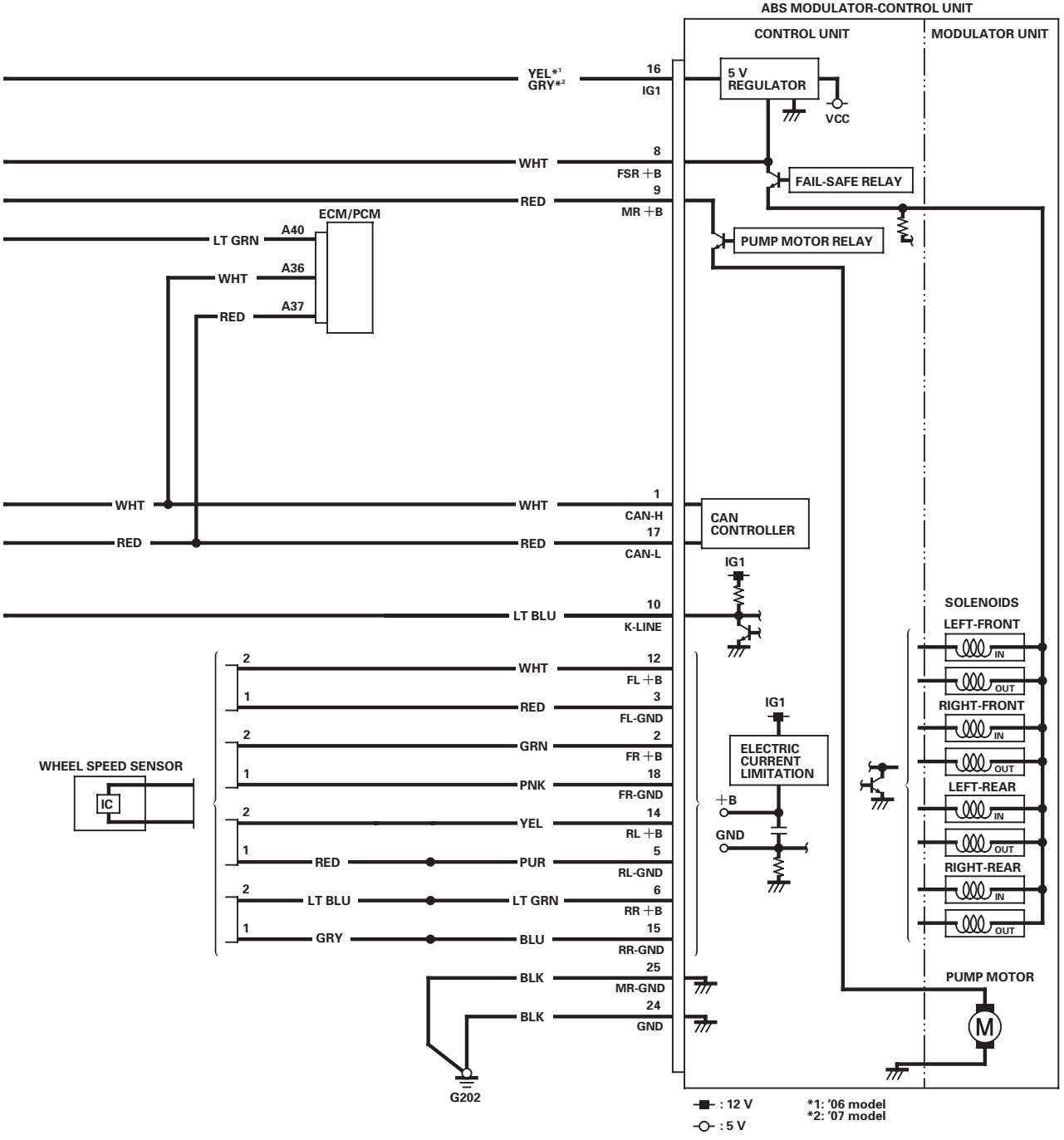
Mode	Inlet Solenoid Valve	Outlet Solenoid Valve	Brake Fluid
Pressure intensifying mode	open	closed	Master cylinder fluid is pumped out to the caliper.
Pressure retaining mode	closed	closed	Caliper fluid is retained by the inlet and outlet valves.
Pressure reducing mode	closed	open	• Caliper fluid flows through the outlet valve to the reservoir. • The motor pumps the reservoir fluid through the damping chamber to the master cylinder*.

*: The motor will keep running until the operation of the one anti-lock brake control is finished with the first pressure reducing mode.

ABS Components

Circuit Diagram





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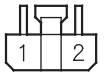
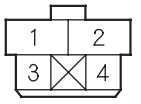
Circuit Diagram (cont'd)

UNDER-HOOD FUSE/RELAY BOX CONNECTOR C (2P)

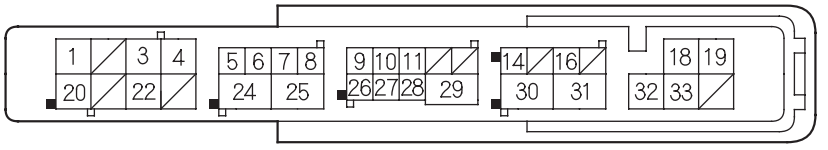


BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



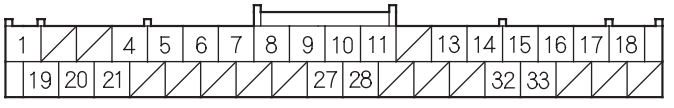
BRAKE FLUID LEVEL SWITCH 2P CONNECTOR

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)

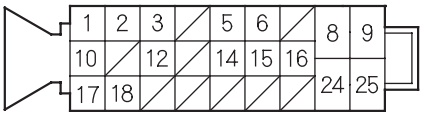


PARKING BRAKE SWITCH 1P CONNECTOR

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



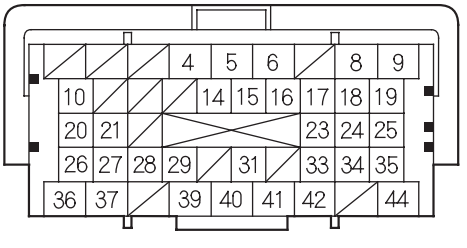
ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



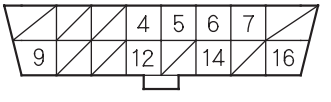
WHEEL SPEED SENSOR 2P CONNECTOR

Wire side of female terminals

ECM/PCM CONNECTOR A (44P)



DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

DTC Troubleshooting

DTC 11-13: Right-front Wheel Speed Sensor Circuit Malfunction

DTC 13-13: Left-front Wheel Speed Sensor Circuit Malfunction

DTC 15-13: Right-rear Wheel Speed Sensor Circuit Malfunction

DTC 17-13: Left-rear Wheel Speed Sensor Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

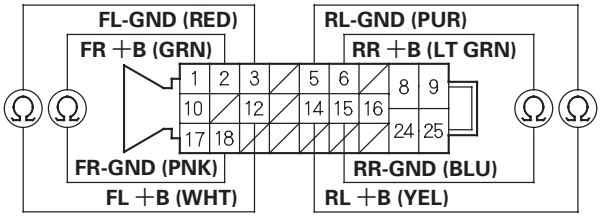
   Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).
7. Disconnect the appropriate wheel speed sensor 2P connector.
8. Check for continuity between the appropriate ABS modulator-control unit 25P connector wheel speed sensor +B and GND terminals (see table).

DTC	ABS Modulator-control Unit 25P Connector Terminal	
11-13	No. 2	No. 18
13-13	No. 12	No. 3
15-13	No. 6	No. 15
17-13	No. 14	No. 5

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the appropriate wheel speed sensor and the ABS modulator-control unit. ■

NO—Go to step 9.

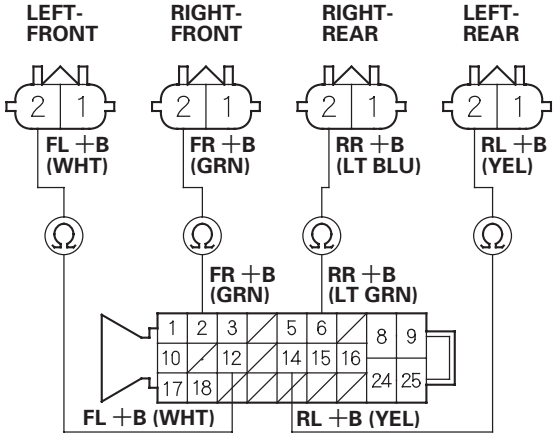
(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between the appropriate ABS modulator-control unit 25P connector terminal and the wheel speed sensor 2P connector terminal (see table).

DTC	ABS Modulator-control Unit 25P Connector Terminal	Appropriate Wheel Speed Sensor 2P Connector Terminal
11-13	No. 2	Right-front
13-13	No. 12	Left-front
15-13	No. 6	Right-rear
17-13	No. 14	Left-rear

WHEEL SPEED SENSOR 2P CONNECTOR
Terminal side of female terminals



ABS MODULATOR-CONTROL UNIT 25P CONNECTOR
Wire side of female terminals

Is there continuity?

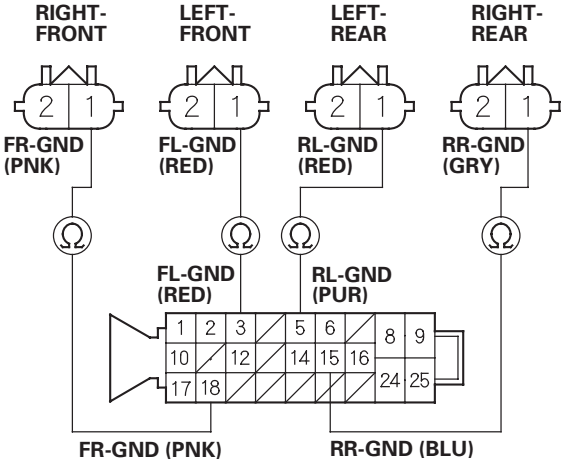
YES—Go to step 10.

NO—Repair open in the wire between the appropriate wheel speed sensor and the ABS modulator-control unit. ■

10. Check for continuity between the appropriate ABS modulator-control unit 25P connector terminal and the wheel speed sensor 2P connector terminal (see table).

DTC	ABS Modulator-control Unit 25P Connector Terminal	Appropriate Wheel Speed Sensor 2P Connector Terminal
11-13	No. 18	Right-front
13-13	No. 3	Left-front
15-13	No. 15	Right-rear
17-13	No. 5	Left-rear

WHEEL SPEED SENSOR 2P CONNECTOR
Terminal side of female terminals



ABS MODULATOR-CONTROL UNIT 25P CONNECTOR
Wire side of female terminals

Is there continuity?

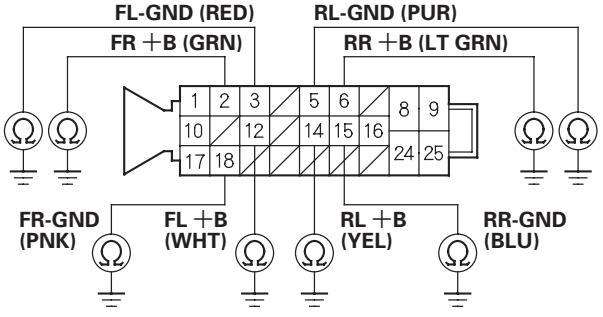
YES—Go to step 11.

NO—Repair open in the wire between the appropriate wheel speed sensor and the ABS modulator-control unit. ■

11. Check for continuity between body ground and the appropriate ABS modulator-control unit 25P connector terminal (see table).

DTC	ABS Modulator-control Unit 25P Connector Terminal	
11-13	No. 2	No. 18
13-13	No. 12	No. 3
15-13	No. 6	No. 15
17-13	No. 14	No. 5

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the appropriate wheel speed sensor and the ABS modulator-control unit. ■

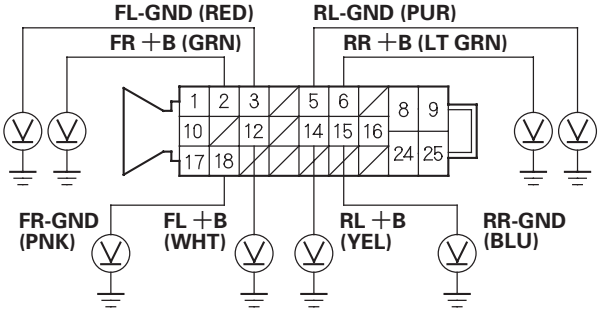
NO—Go to step 12.

12. Turn the ignition switch to ON (II).

13. Measure the voltage between body ground and the appropriate ABS modulator-control unit 25P connector terminal (see table).

DTC	ABS Modulator-control Unit 25P Connector Terminal	
11-13	No. 2	No. 18
13-13	No. 12	No. 3
15-13	No. 6	No. 15
17-13	No. 14	No. 5

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the appropriate wheel speed sensor and the ABS modulator-control unit. ■

NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0).
15. Substitute the appropriate wheel speed sensor with opposite wheel speed sensor, or with a known-good wheel speed sensor.
16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
20. Check for DTCs with the HDS.

    Is DTC indicated that is indicated in step 4?

    YES—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

    NO—Replace the original wheel speed sensor (see page 19-92). ■

DTC 12-11: Right-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 14-11: Left-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 16-11: Right-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 18-11: Left-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption

NOTE: These DTCs may be caused by electrical interference. Check for aftermarket devices installed in the vehicle when these DTCs are indicated.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 12-11, 14-11, 16-11, and/or 18-11 indicated?

   YES—If DTC 12-12, 14-12, 16-12, or 18-12 is indicated at the same time, do the DTC 12-12, 14-12, 16-12, or 18-12 troubleshooting first (see page 19-69). If DTC 12-12, 14-12, 16-12, or 18-12 is not indicated, go to step 5.

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there is an intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■

5. Turn the ignition switch to LOCK (0).

6. Check that the appropriate wheel speed sensor is properly mounted (see page 19-92).

DTC	Appropriate Wheel Speed Sensor
12-11	Right-front
14-11	Left-front
16-11	Right-rear
18-11	Left-rear

Is the wheel speed sensor installation OK?

YES—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-92). ■

DTC 12-12: Right-front Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 14-12: Left-front Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 16-12: Right-rear Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 18-12: Left-rear Wheel Speed Sensor Short to the Other Sensor Circuit

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Test-drive the vehicle at 20 km/h (13 mph) or more, and go a distance of 100 m (328 ft) or more.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 12-12, 14-12, 16-12, and/or 18-12 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).

(cont'd)

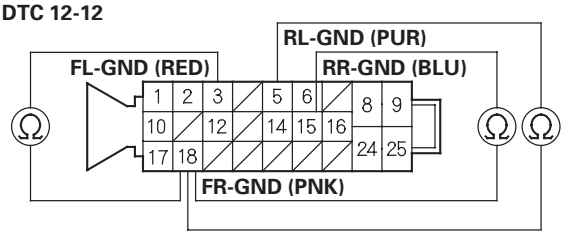
DTC Troubleshooting (cont'd)

7. Check for continuity between the appropriate ABS modulator-control unit 25P connector wheel speed sensor GND terminals (see table).

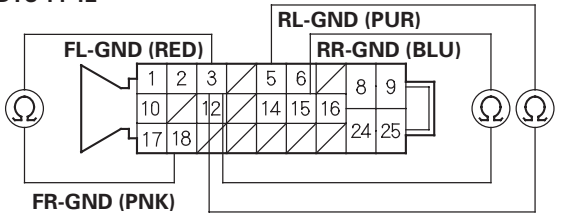
DTC	ABS Modulator-control Unit 25P Connector Terminal			
	Appropriate Terminal	Other Terminals		
12-12	No. 18	No. 3	No. 15	No. 5
14-12	No. 3	No. 18	No. 15	No. 5
16-12	No. 15	No. 18	No. 3	No. 5
18-12	No. 5	No. 18	No. 3	No. 15

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR

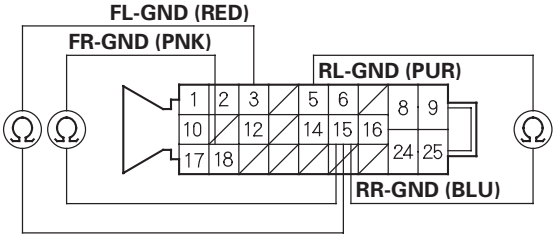
DTC 12-12



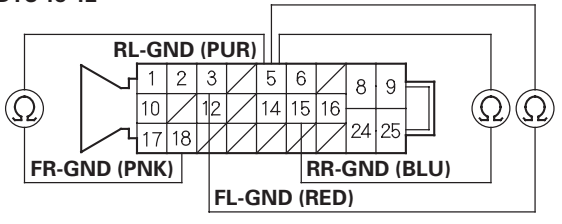
DTC 14-12



DTC 16-12



DTC 18-12



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the appropriate wheel speed sensor and the ABS modulator-control unit. ■

NO—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

DTC 12-21: Right-front Wheel Speed Sensor Installation Error

DTC 14-21: Left-front Wheel Speed Sensor Installation Error

DTC 16-21: Right-rear Wheel Speed Sensor Installation Error

DTC 18-21: Left-rear Wheel Speed Sensor Installation Error

1. Test-drive the vehicle at 10 km/h (7 mph).

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RF, LF, RR, LR WHEEL SPEED in the ABS DATA LIST with the HDS.

   Are all four values the same?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-92).

DTC	Appropriate Wheel Speed Sensor
12-21	Right-front
14-21	Left-front
16-21	Right-rear
18-21	Left-rear

   Is the wheel speed sensor installation OK?

   YES—Replace the appropriate wheel speed sensor (see page 19-92). ■

   NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-92). ■

DTC 12-22: Right-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

DTC 14-22: Left-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

DTC 16-22: Right-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

DTC 18-22: Left-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

1. Test-drive the vehicle between 30 km/h (19 mph) and 50 km/h (31 mph) for 70 seconds or more.

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RF, LF, RR, LR WHEEL SPEED in the ABS DATA LIST with the HDS.

   Are all four values the same?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-92).

DTC	Appropriate Wheel Speed Sensor
12-22	Right-front
14-22	Left-front
16-22	Right-rear
18-22	Left-rear

   Is the wheel speed sensor installation OK?

   YES—Replace the appropriate wheel speed sensor (see page 19-92). ■

   NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-92). ■

DTC Troubleshooting (cont'd)

DTC 12-23: Right-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

DTC 14-23: Left-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

DTC 16-23: Right-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

DTC 18-23: Left-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

1. Test-drive the vehicle between 1 km/h (1 mph) and 15 km/h (9 mph).

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RF, LF, RR, LR WHEEL SPEED in the ABS DATA LIST with the HDS.

   Are all four values the same?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50).■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-92).

DTC	Appropriate Wheel Speed Sensor
12-23	Right-front
14-23	Left-front
16-23	Right-rear
18-23	Left-rear

   Is the wheel speed sensor installation OK?

   YES—Replace the appropriate wheel speed sensor (see page 19-92).■

   NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-92).■

DTC 21-11: Right-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 22-11: Left-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 23-11: Right-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 24-11: Left-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Test-drive the vehicle at 20 km/h (13 mph) or more, and go a distance of 100 m (328 ft) or more.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 21-11, 22-11, 23-11, and/or 24-11 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50).■

5. Turn the ignition switch to LOCK (0).

6. Inspect the appropriate magnetic encoder for damage, debris, and correct installation.

DTC	Appropriate Magnetic Encoder	Note
21-11	Right-front	Remove the driveshaft outboard joint from the appropriate wheel hub (see page 18-15).
22-11	Left-front	
23-11	Right-rear	Remove the hub bearing unit (see page 18-32).
24-11	Left-rear	

Is the magnetic encoder surface OK?

YES—Remove the debris from the magnetic encoder, or replace the wheel bearing (front) or the hub bearing unit (rear):

- Front: Replace the front wheel bearing (see page 18-18). ■
- Rear: Replace the rear hub bearing unit (see page 18-32). ■

NO—Clean off debris from the appropriate magnetic encoder surface on the wheel bearing or the hub bearing unit, then go to step 1, and recheck. If the DTC is still present, replace the appropriate wheel bearing or hub bearing unit.

DTC 31-xx*: ABS Right-front Inlet Solenoid Valve Malfunction

DTC 32-xx*: ABS Right-front Outlet Solenoid Valve Malfunction

DTC 33-xx*: ABS Left-front Inlet Solenoid Valve Malfunction

DTC 34-xx*: ABS Left-front Outlet Solenoid Valve Malfunction

DTC 35-xx*: ABS Right-rear Inlet Solenoid Valve Malfunction

DTC 36-xx*: ABS Right-rear Outlet Solenoid Valve Malfunction

DTC 37-xx*: ABS Left-rear Inlet Solenoid Valve Malfunction

DTC 38-xx*: ABS Left-rear Outlet Solenoid Valve Malfunction

* :Any two-character subcode (see table)

Subcode	Malfunction	Note (DTC)
01	Solenoid Initial Pulse	31-01, 32-01, 33-01, 34-01, 35-01, 36-01, 37-01, 38-01
21	Solenoid Pulse	31-21, 32-21, 33-21, 34-21, 35-21, 36-21, 37-21, 38-21
22	Solenoid Speculative	31-22, 32-22, 33-22, 34-22, 35-22, 36-22, 37-22, 38-22
23	Solenoid Stuck ON	31-23, 32-23, 33-23, 34-23, 35-23, 36-23, 37-23, 38-23

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

(cont'd)

DTC Troubleshooting (cont'd)

4. Check for DTCs with the HDS.

   Is DTC 31-xx, 32-xx, 33-xx, 34-xx, 35-xx, 36-xx, 37-xx, or 38-xx indicated?

   YES—Replace the ABS modulator-control unit (see page 19-90). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 41-21: Right-front Wheel Lock

DTC 42-21: Left-front Wheel Lock

DTC 43-21: Right-rear Wheel Lock

DTC 44-21: Left-rear Wheel Lock

The DTCs may be indicated under these conditions:

- The vehicle goes into a spin.
- The ABS continues to operate for a long time.
- Snow, dirt, or debris build-up on the wheel speed sensor or magnetic encoder.
- Misadjusted brake pedal position switch.
- Contaminated brake fluid.

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Turn the appropriate wheel by hand.

DTC	Appropriate Wheel
41-21	Right-front
42-21	Left-front
43-21	Right-rear
44-21	Left-rear

   Is there brake drag?

   YES—Repair the brake drag. ■

   NO—Go to step 3.

3. Check that the appropriate wheel speed sensor is properly mounted (see page 19-92).

   Is the wheel speed sensor installation OK?

   YES—Go to step 4.

   NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-92). ■

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle at 10 km/h (7 mph) for 20 seconds or more.

   NOTE: Drive the vehicle on the road, not on a lift.

7. Check for DTCs with the HDS.

   Is DTC 41-21, 42-21, 43-21, or 44-21 indicated?

   YES—Check for loose terminals between the wheel speed sensor 2P connector and the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at the time. ■

DTC 51-11: Motor Lock

DTC 51-13: Motor Drive Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Wait 5 seconds.
5. Operate any one of the four solenoids, as listed, in the ABS FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

6. Check for DTCs with the HDS.

   Is DTC 51-11 or 51-13 indicated?

   YES—Replace the ABS modulator-control unit (see page 19-90). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 51-12: Motor Drive Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 51-12 indicated?

   YES—Go to step 5.

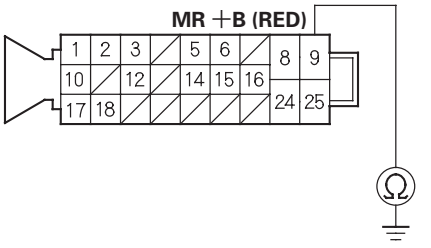
   NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 (30 A) fuse in the under-hood fuse/relay box.

   Is the fuse blown?

   YES—Go to step 7.

   NO—Reinstall the checked fuse, then go to step 14.
7. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).
8. Check for continuity between ABS modulator-control unit 25P connector terminal No. 9 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the No. 3 (30 A) fuse in the under-hood fuse/relay box and the ABS modulator-control unit. ■

NO—Install a new No. 3 (30 A) fuse in the under-hood fuse/relay box, then go to step 9.

9. Reconnect the ABS modulator-control unit 25P connector.

10. Turn the ignition switch to ON (II).

11. Clear the DTC with the HDS.

12. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

13. Check for DTCs with the HDS.

    Is DTC 51-12 indicated?

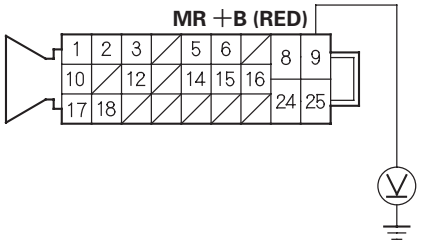
    YES—Replace the ABS modulator-control unit (see page 19-90). ■

    NO—Troubleshooting is complete. ■

14. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).

15. Measure the voltage between ABS modulator-control unit 25P connector terminal No. 9 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

NO—Repair open in the wire between the No. 3 (30 A) fuse in the under-hood fuse/relay box and the ABS modulator-control unit. ■

DTC Troubleshooting (cont'd)

DTC 52-12: Motor Stuck OFF

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Operate any one of the four solenoids, as listed, in the ABS FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

5. Check for DTCs with the HDS.

   Is DTC 52-12 indicated?

   YES—Replace the ABS modulator-control unit (see page 19-90). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 53-01: Motor Relay Stuck ON 1

DTC 53-12: Motor Relay Stuck ON 2

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 53-01 or 53-12 indicated?

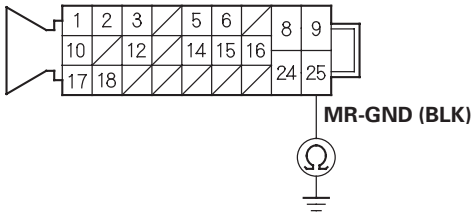
   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).

7. Check for continuity between ABS modulator-control unit 25P connector terminal No. 25 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

NO—Repair open in the wire between the ABS modulator-control unit and body ground (G202). ■

DTC 54-03: Fail-safe Relay 1 Stuck ON

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 54-03 indicated?

   YES—Replace the ABS modulator-control unit (see page 19-90). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 54-04: Fail-safe Relay 1 Stuck OFF (Initial)

DTC 54-21: Fail-safe Relay 1 Stuck OFF (Main)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 54-04 or 54-21 indicated?

   YES—Go to step 5.

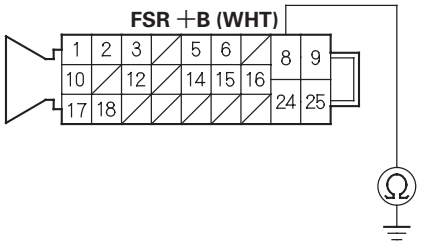
   NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 (30 A) fuse in the under-hood fuse/relay box.

   Is the fuse blown?

   YES—Go to step 7.

   NO—Reinstall the checked fuse, then go to step 14.
7. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).
8. Check for continuity between ABS modulator-control unit 25P connector terminal No. 8 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the No. 3 (30 A) fuse in the under-hood fuse/relay box and the ABS modulator-control unit. ■

NO—Install a new No. 3 (30 A) fuse in the under-hood fuse/relay box, then go to step 9.

9. Reconnect the ABS modulator-control unit 25P connector.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
13. Check for DTCs with the HDS.

    Is DTC 54-04 or 54-21 indicated?

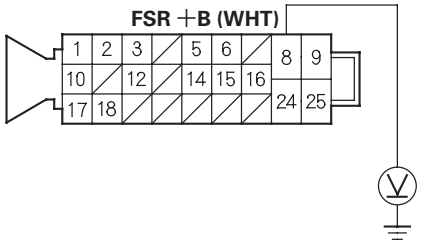
    YES—Replace the ABS modulator-control unit (see page 19-90). ■

    NO—Troubleshooting is complete. ■

14. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).

15. Measure the voltage between ABS modulator-control unit 25P connector terminal No. 8 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

NO—Repair open in the wire between the No. 3 (30 A) fuse in the under-hood fuse/relay box and the ABS modulator-control unit. ■

DTC 61-01: ABS Modulator-control Unit Initial IG Low Voltage

DTC 61-21: ABS Modulator-control Unit Power Source Low Voltage 1

DTC 61-22: ABS Modulator-control Unit Power Source Low Voltage 2

DTC 61-23: ABS Modulator-control Unit Power Source Low Voltage 3

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0), then start the engine.

4. Check for DTCs with the HDS.

   Is DTC 61-01, 61-21, 61-22, or 61-23 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■

5. Check and note BATTERY voltage in the ABS DATA LIST with the HDS.

6. Using a voltmeter, measure and note the voltage between the battery terminals.

   NOTE: If the battery voltage is below 9.5 V, check the battery (see page 22-67), and troubleshoot the alternator regulator circuit (see page 4-28).

(cont'd)

DTC Troubleshooting (cont'd)

7. Compare the data list voltage noted in step 5 to the battery voltage in step 6.

   Is the difference between the two voltage readings less than 3 V?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). If the code resets after clearing, replace the ABS modulator-control unit (see page 19-90). ■

   NO—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

DTC 62-21: ABS Modulator-control Unit IG High Voltage

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

   Is DTC 62-21 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■

5. Check and note BATTERY voltage in the ABS DATA LIST with the HDS.
6. Using a voltmeter, measure and note the voltage between the battery terminals.

   NOTE: If the voltage is above 15.1 V, troubleshoot the alternator regulator circuit (see page 4-28).

7. Compare the data list voltage noted in step 5 to the battery voltage in step 6.

   Is the difference between the two voltage readings less than 3 V?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals at the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). If the code resets after clearing, replace the ABS modulator-control unit (see page 19-90). ■

   NO—Replace the ABS modulator-control unit (see page 19-90), and retest. ■

DTC 71-21: Right-front or Left-rear Different Diameter Tire Malfunction

DTC 71-22: Left-front or Right-rear Different Diameter Tire Malfunction

DTC 71-23: Right-front and Right-rear Different Diameter Tire Malfunction

DTC 71-24: Left-front and Left-rear Different Diameter Tire Malfunction

DTC 71-25: Right-front and Left-front Different Diameter Tire Malfunction

DTC 71-26: Right-rear and Left-rear Different Diameter Tire Malfunction

NOTE: The DTC is indicated when the vehicle has a different diameter tire(s) compared to the other tire(s).

DTC	Sectional
71-21	Right-front or left-rear
71-22	Left-front or right-rear
71-23	Right-front and right-rear
71-24	Left-front and left-rear
71-25	Right-front and left-front
71-26	Right-rear and left-rear

1. Check the tires for proper inflation and the correct size (see page 18-5).
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
5. Check for DTCs with the HDS.

   Is DTC 71-21, 71-22, 71-23, 71-24, 71-25, or 71-26 indicated?

   YES—Replace tires as needed until all their diameters match (see page 18-5). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 81-xx*: Central Processing Unit (CPU) Internal Circuit Malfunction

*: Any two-character subcode (Except these combinations: DTC 81-11, 81-51, and 81-52)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 81-xx indicated?

   YES—If DTC 81-11, 81-51, or 81-52 is indicated at the same time, do the appropriate troubleshooting first. If DTC 81-11, 81-51, or 81-52 is not indicated, replace the ABS modulator-control unit (see page 19-90), and retest. ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 81-11: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-51: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-52: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 81-11, 81-51, or 81-52 indicated?

   YES—Replace the ABS modulator-control unit (see page 19-90). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 86-01: F-CAN Bus-off Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

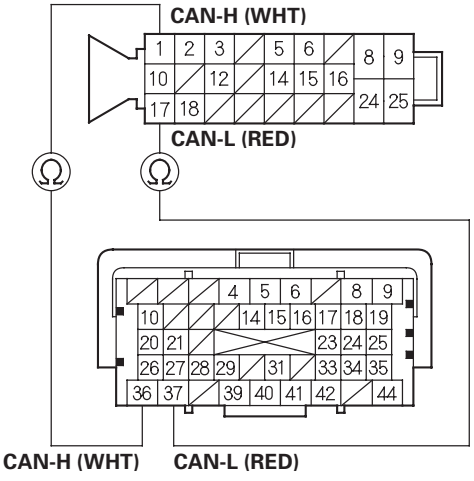
   Is DTC 86-01 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (44P) and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■
5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).
9. Check for continuity between ABS modulator-control unit 25P connector terminal and ECM/PCM connector A (44P) terminal (see table).

Sign	ABS Modulator-control Unit 25P Connector Terminal	ECM/PCM Connector A (44P) Terminal
CAN-L	No. 17	No. 37
CAN-H	No. 1	No. 36

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

Is there continuity?

YES—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

NO—Repair open in the wire between the ECM/PCM and the ABS modulator-control unit. ■

DTC Troubleshooting (cont'd)

DTC 86-24: F-CAN Communication with Engine Malfunction

DTC 86-25: F-CAN Communication with Engine Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 10 km/h (7 mph) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

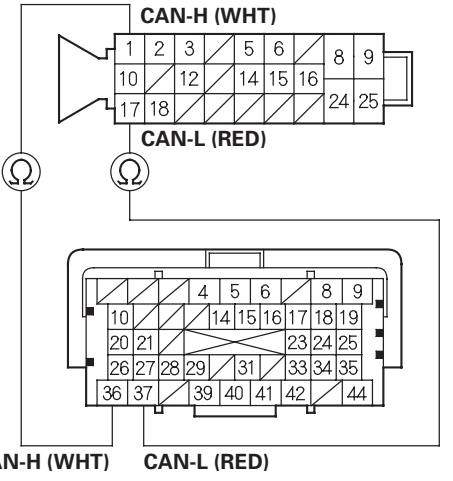
   Is DTC 86-24 and/or 86-25 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (44P) and the ABS modulator-control unit 25P connector. Refer to intermittent failures troubleshooting (see page 19-50). ■
5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).
9. Check for continuity between ABS modulator-control unit 25P connector terminal and ECM/PCM connector A (44P) terminal (see table).

Sign	ABS Modulator-control Unit 25P Connector Terminal	ECM/PCM Connector A (44P) Terminal
CAN-L	No. 17	No. 37
CAN-H	No. 1	No. 36

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the ECM/PCM and the ABS modulator-control unit. ■

10. Reconnect all connectors.
11. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle at 10 km/h (7 mph) or more.

    NOTE: Drive the vehicle on the road, not on a lift.
14. Check for DTCs with the HDS.

    Is DTC 86-24 and/or 86-25 indicated?

    YES—Replace the ABS modulator-control unit (see page 19-90). ■

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). ■

DTC 86-FF: F-CAN Communication with ABS Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 86-FF indicated?

   YES—Replace the ABS modulator-control unit (see page 19-90). ■

   NO—Intermittent failure, the system is OK at this time. ■

Symptom Troubleshooting

ABS indicator and brake system indicator do not go off

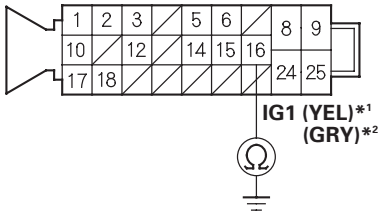
1. Turn the ignition switch to LOCK (0).
2. Check the No. 4 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse blown?

   YES—Go to step 3.

   NO—Reinstall the checked fuse, then go to step 8.
3. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).
4. Check for continuity between ABS modulator-control unit 25P connector terminal No. 16 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

***1: '06 model**
***2: '07 model**

Is there continuity?

YES—Repair short to body ground in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the ABS modulator-control unit. ■

NO—Install a new No. 4 (7.5 A) fuse in the under-dash fuse/relay box, then go to step 5.

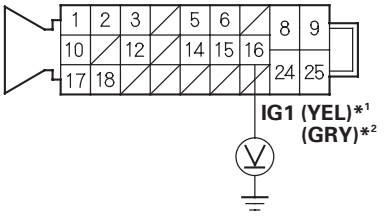
5. Reconnect the ABS modulator-control unit 25P connector.
6. Turn the ignition switch to ON (II).
7. Check the ABS indicator and the brake system indicator for several seconds when the ignition switch is tuned to ON (II).

   Does the indicators come on then go off?

   YES—Troubleshooting is complete. ■

   NO—Replace the ABS modulator-control unit (see page 19-90). ■
8. Disconnect the ABS modulator-control unit 25P connector (see step 2 on page 19-90).
9. Turn the ignition switch to ON (II).
10. Measure the voltage between ABS modulator-control unit 25P connector terminal No. 16 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

***1: '06 model**
***2: '07 model**

Is there battery voltage?

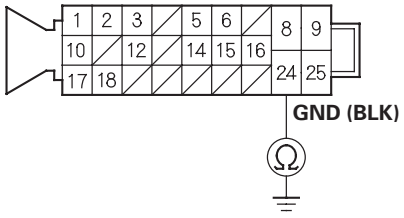
YES—Go to step 11.

NO—Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the ABS modulator-control unit. ■

11. Turn the ignition switch to LOCK (0).

12. Check for continuity between ABS modulator-control unit 25P connector terminal No. 24 and body ground.

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 13.

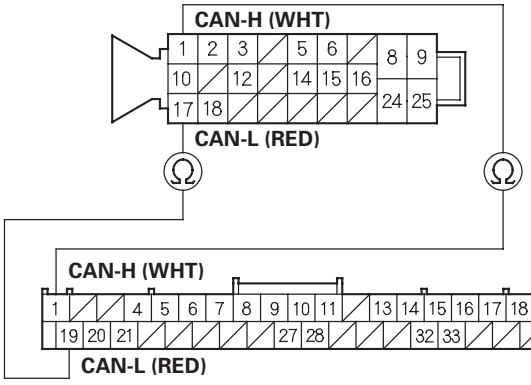
NO—Repair open in the wire between the ABS modulator-control unit and body ground (G202). ■

13. Disconnect the gauge control module (tach) 36P connector.

14. Check for continuity between the ABS modulator-control unit 25P connector terminal and gauge control module (tach) 36P connector terminal (see table).

Sign	ABS Modulator-control Unit 25P Connector Terminal	Gauge Control Module (Tach) 36P Connector Terminal
CAN-L	No. 17	No. 19
CAN-H	No. 1	No. 1

ABS MODULATOR-CONTROL UNIT 25P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the ABS modulator-control unit 25P connector. If necessary, substitute a known-good ABS modulator-control unit (see page 19-90), and retest. ■

NO—Repair open in the wire between the gauge control module (tach) and the ABS modulator-control unit. ■

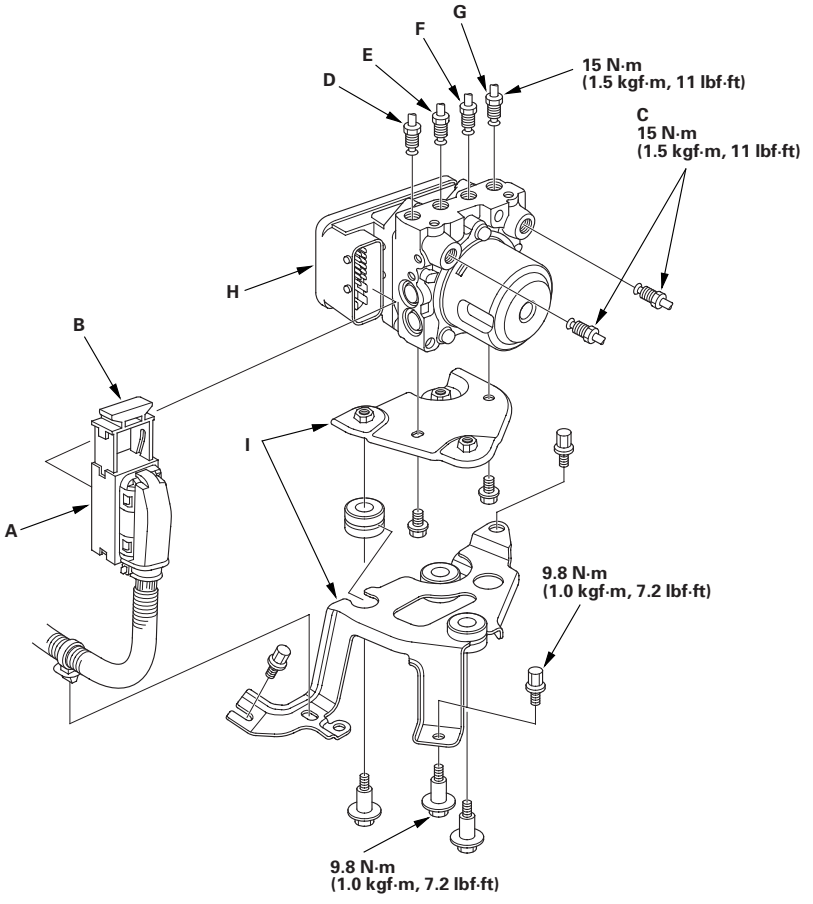
ABS Modulator-Control Unit Removal and Installation

NOTE:
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- Plug the ends of the hoses and the joints to prevent spilling brake fluid.

Removal

1. Turn the ignition switch to LOCK (0).

2. Disconnect the ABS modulator-control unit 25P connector (A) by pulling up the lock (B); the connector disconnects itself.



3. Disconnect the six brake lines from the ABS modulator-control unit.

   NOTE: Brake lines are connected to the master cylinder (C) and to the right-front (D), the left-rear (E), the right-rear (F), and the left-front (G) brake systems.

4. Remove the ABS modulator-control unit (H) with the brackets (I) from the body.

5. Remove the ABS modulator-control unit from the brackets.

6. Separate the bracket if necessary.

Installation

1. Install the ABS modulator-control unit onto the brackets.
2. Install the bracket with the ABS modulator-control unit to the body.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the ABS modulator-control unit 25P connector to the ABS modulator-control unit.
5. Lower the lock of the ABS modulator-control unit 25P connector, then confirm the connector is fully seated.
6. Bleed the brake system (see page 19-9).
7. Start the engine, and make sure the ABS indicator goes off.
8. Test-drive the vehicle, and make sure the ABS indicator does not come on.

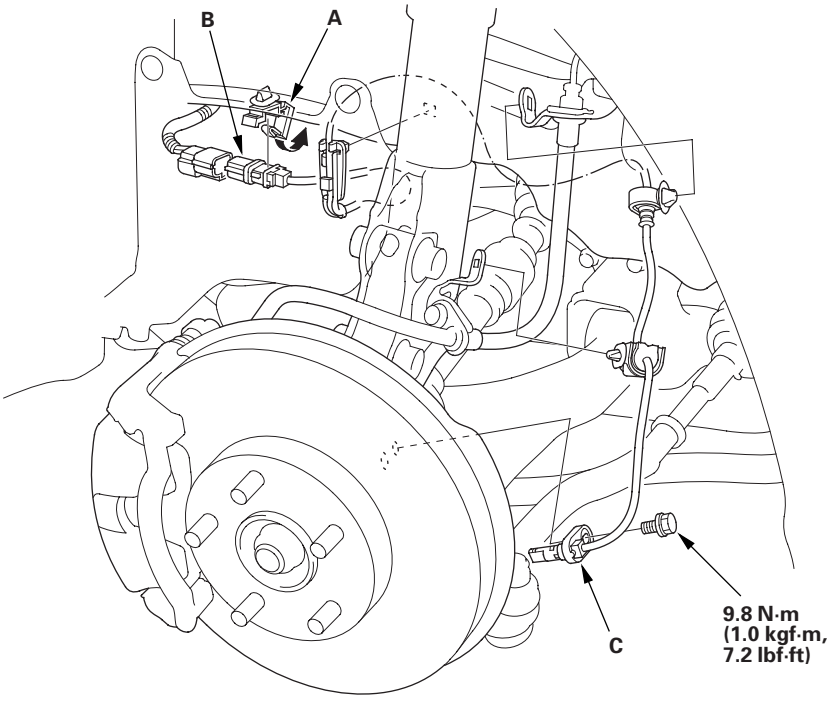
   NOTE: If the brake pedal is spongy, there may be air trapped in the modulator which could then be induced into the normal brake system during modulation. Bleed the brake system again (see page 19-9).

Wheel Speed Sensor Replacement

Special Tools Required
Guide pin tool 07AAG-SVBA100

Front

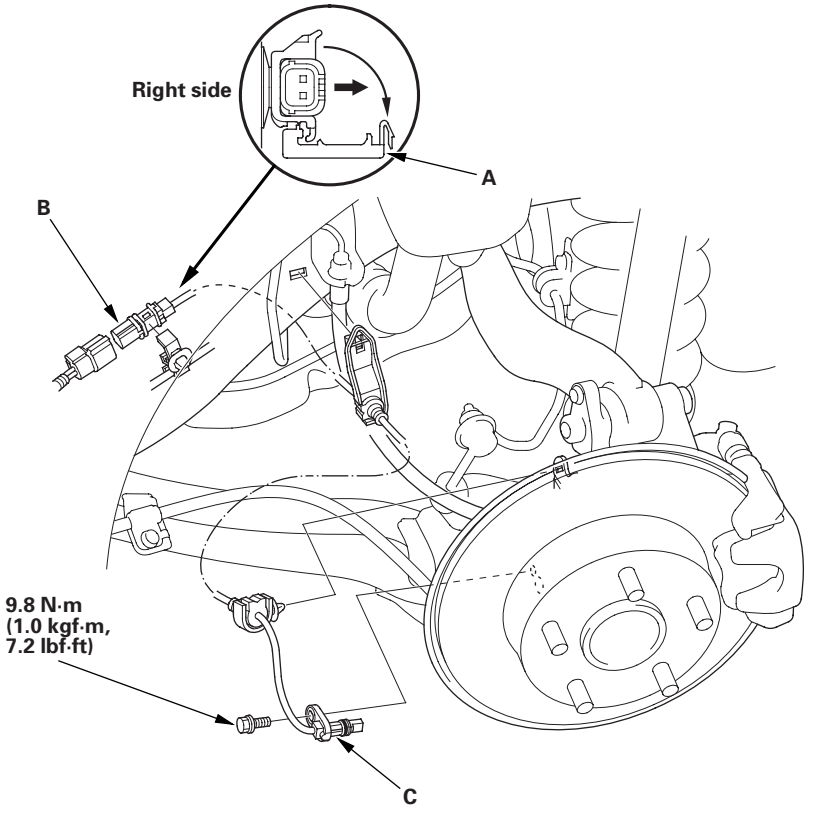
1. Turn the ignition switch to LOCK (0).
2. Release the connector clamp (A), then disconnect the wheel speed sensor connector (B).



3. Remove the clips, the bolt, and the wheel speed sensor (C).
4. Install the wheel speed sensor in the reverse order of removal, and note these items:
   - Install the sensor carefully to avoid twisting the wires.
   - If the wheel speed sensor comes in contact with the wheel bearing, it is faulty. Investigate the cause before replacing the sensor.
5. Start the engine, and make sure the ABS indicator goes off.
6. Test-drive the vehicle, and make sure the ABS indicator does not come on.

Rear

1. Turn the ignition switch to LOCK (0).
2. Release the connector clamp (A), then disconnect the wheel speed sensor connector (B).

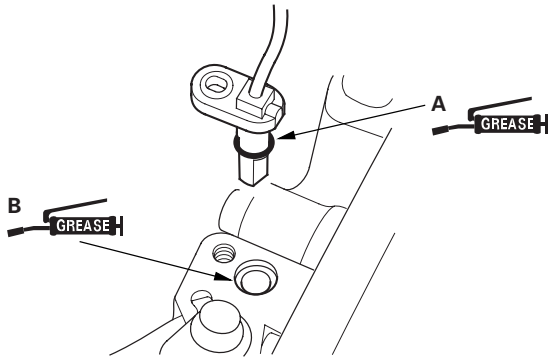


3. Remove the clips, the bolt, and the wheel speed sensor (C).

(cont'd)

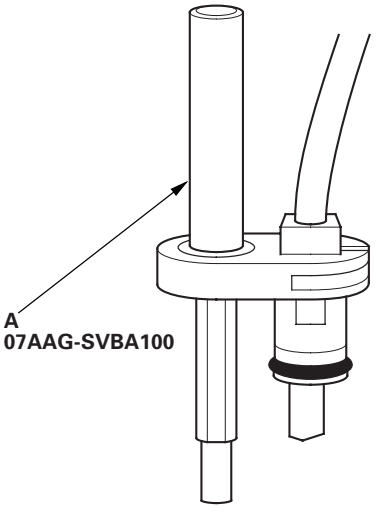
Wheel Speed Sensor Replacement (cont'd)

4. Apply multi-purpose grease to the wheel speed sensor O-ring (A) and the sensor hole in the knuckle (B).



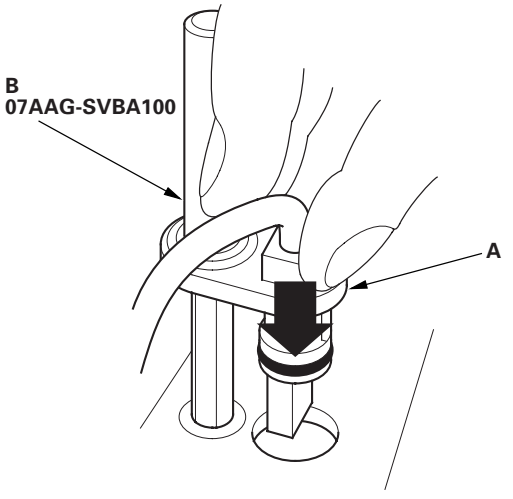
5. Insert the guide pin tool (A) into the wheel speed sensor bolt hole until the shoulder of the tool contacts the wheel speed sensor bracket.

   NOTE: To prevent O-ring damage, the wheel speed sensor must be installed with the guide pin tool.



6. Insert the wheel speed sensor (A) and the guide pin tool (B) into the bolt hole on the knuckle.

   NOTE: To ensure proper alignment when pushing the wheel speed sensor into the knuckle housing, do not hold the sensor bracket during installation, hold the sensor wire.



7. Gently push and pull the wheel speed sensor in and out to make sure the O-ring is sliding properly in its housing. While you are doing this, make sure the sensor doesn't come out of the knuckle assembly. If the sliding effort is too high, remove the wheel speed sensor, inspect the O-ring for damage, and start the installation process again.

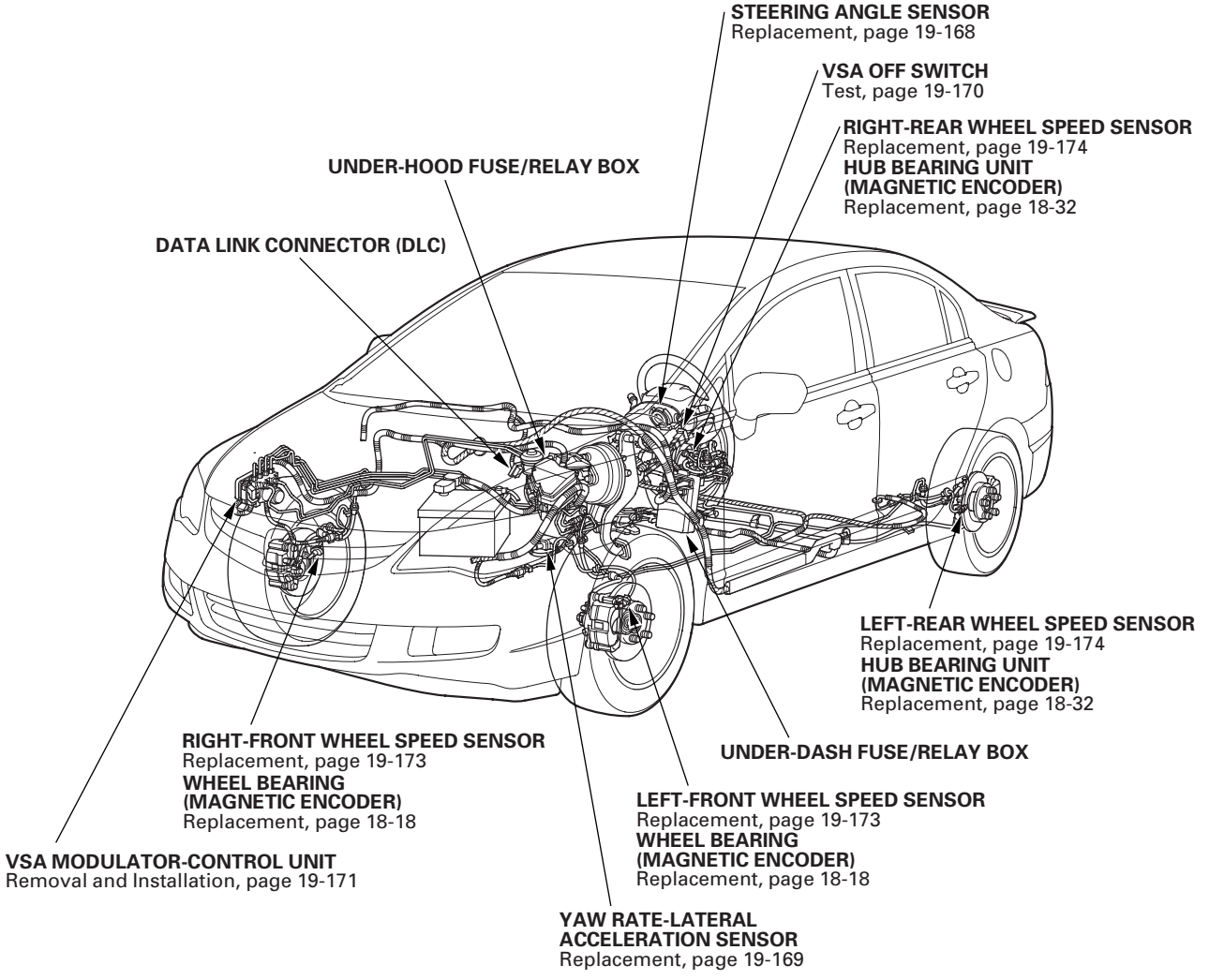
8. Remove the guide pin tool, then install the bolt, and tighten it to specified torque.

9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheel.

10. Start the engine, and make sure the ABS indicators go off.

11. Test-drive the vehicle, and make sure the ABS indicators do not come on.

Component Location Index

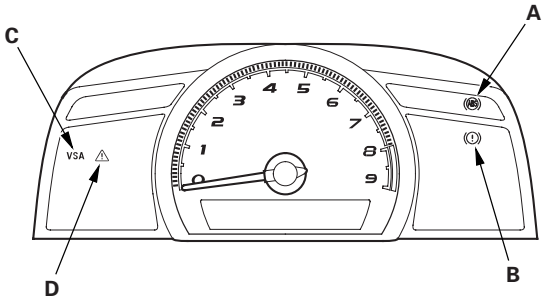


General Troubleshooting Information

System Indicator

This system has four indicators:

- ABS indicator (A)
- Brake system indicator (B)
- VSA indicator (C)
- VSA activation indicator (D)



When the system is OK, each indicator comes on for about 2 seconds after turning the ignition switch to ON (II), then goes off.
When the system detects a problem, a DTC is set and, depending upon the failure, the VSA modulator-control unit determines which indicator(s) are turned on. If the problem goes away (system returns to normal), the indicator(s) are controlled in the following way depending upon the DTC that is set:

- The indicator(s) come on and stay on when the ignition switch is ON (II).
- The indicator(s) automatically go off.
- The indicator(s) go off after the vehicle is driven.

ABS Indicator

The ABS indicator comes on when the ABS function is lost. The brakes still work like a conventional system.

Brake System Indicator

The brake system indicator comes on when the EBD function is lost, the parking brake is applied, and/or the brake fluid level is low.

NOTE: If two or more wheel speed sensors fail, the brake system indicator comes on.

VSA Indicator

The VSA indicator comes on when the VSA function is lost.

VSA Activation Indicator

The VSA activation indicator blinks when the VSA function is activating. The VSA activation indicator comes on and stays on when the VSA is turned OFF by using the VSA OFF switch, or when the VSA function is lost.

(cont'd)

General Troubleshooting Information (cont'd)

Diagnostic Trouble Code (DTC)

- The memory holds all DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in the order they occur.
- The DTCs are memorized in the EEPROM. Therefore, the memorized DTCs cannot be erased by disconnecting the battery. Do the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
  – Initial diagnosis: Done right after the ignition switch is turned to ON (II) and until the ABS and VSA indicators go off.
  – Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned to LOCK (0).
- When the system detects a problem, the VSA modulator-control unit shifts to fail-safe mode.

Kickback

The pump motor operates when the VSA modulator-control unit is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the VSA modulator-control unit is functioning.
- The VSA modulator-control unit checks the pump motor operation one time after completing initial diagnosis during regular diagnosis when the vehicle is driven over 15 km/h (10 mph).

Brake Fluid Replacement/Air Bleeding

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles without the VSA system (see page 19-9).

How to Troubleshoot DTCs

The troubleshooting procedures assume that the cause of the problem is still present, and the ABS and/or VSA indicator is still on. Following a troubleshooting procedure for a code that has been cleared but does not reset can result in incorrect diagnosis.

1. Question the client about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or VSA indicator came on, such as during activation, after activation, when the vehicle was traveling at a certain speed, etc. If necessary, have the client demonstrate the concern.

2. When the ABS or VSA indicator does not come on during the test-drive, check for loose connectors, poor contact of the terminals, etc. in the circuit indicated by the DTC before you start troubleshooting.

3. After troubleshooting, or the repairs are done, clear the DTCs, and test-drive the vehicle under the same conditions that originally set the DTCs. Make sure the ABS and VSA indicators do not come on.

4. Check for DTCs from other systems which are connected via F-CAN. If there are DTCs that are related to F-CAN, one possible cause was that the ignition switch was turned to ON (II) with the VSA modulator-control unit connector disconnected. Clear the DTCs. Check for fuel and emissions DTC's first.

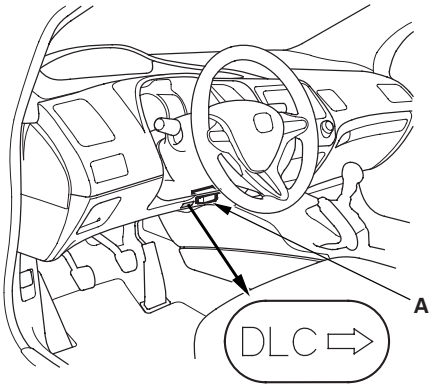
   NOTE: Always troubleshoot fuel and emissions DTC's first.

Intermittent Failures

The term ''intermittent failure'' means a system may have had a failure, but it checks OK now. If you cannot reproduce the condition, check for loose connectors or terminal pins related to the circuit that you are troubleshooting.

How to Use the HDS (Honda Diagnostic System)

1. If the system indicators stay on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).

4. Check the diagnostic trouble code (DTC) for all systems, troubleshoot the powertrain DTCs first and note it. Then refer to the indicated DTC's troubleshooting, and do the appropriate troubleshooting procedure.

   NOTE:
   - The HDS communication stops when the vehicle speed is at 50 km/h (31 mph) or more.
   - The HDS reads the DTC, current data, and other system data.
   - For specific operations, refer to the Help menu that came with the HDS.

How to Retrieve DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.

2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see page 11-204).

4. Follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC troubleshooting. Do the all systems DTC check, and troubleshoot any powertrain DTCs first.

5. Turn the ignition switch to LOCK (0).

How to Clear DTCs

1. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) under the driver's side of the dashboard.

2. Turn the ignition switch to ON (II).

3. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see page 11-204).

4. Clear the DTC(s) by following the screen prompts on the HDS.

5. Turn the ignition switch to LOCK (0).

DTC Troubleshooting Index

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
11	-13	Right-front Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF *1	ON	ON	(see page 19-117)
12	-11	Right-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF *1	ON	ON	(see page 19-120)
	-12	Right-front Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF *1	ON	ON	(see page 19-121)
	-21	Right-front Wheel Speed Sensor Installation Error	ON	ON/OFF *1	ON	ON	(see page 19-123)
	-22	Right-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF *1	ON	ON	(see page 19-124)
	-23	Right-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF *1	ON	ON	(see page 19-124)
13	-13	Left-front Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF *1	ON	ON	(see page 19-117)
14	-11	Left-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF *1	ON	ON	(see page 19-120)
	-12	Left-front Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF *1	ON	ON	(see page 19-121)
	-21	Left-front Wheel Speed Sensor Installation Error	ON	ON/OFF *1	ON	ON	(see page 19-123)
	-22	Left-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF *1	ON	ON	(see page 19-124)
	-23	Left-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF *1	ON	ON	(see page 19-124)
15	-13	Right-rear Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF *1	ON	ON	(see page 19-117)
16	-11	Right-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF *1	ON	ON	(see page 19-120)
	-12	Right-rear Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF *1	ON	ON	(see page 19-121)
	-21	Right-rear Wheel Speed Sensor Installation Error	ON	ON/OFF *1	ON	ON	(see page 19-123)
	-22	Right-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF *1	ON	ON	(see page 19-124)
	-23	Right-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF *1	ON	ON	(see page 19-124)
17	-13	Left-rear Wheel Speed Sensor Circuit Malfunction	ON	ON/OFF *1	ON	ON	(see page 19-117)
18	-11	Left-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption	ON	ON/OFF *1	ON	ON	(see page 19-120)
	-12	Left-rear Wheel Speed Sensor Short to the Other Sensor Circuit	ON	ON/OFF *1	ON	ON	(see page 19-121)
	-21	Left-rear Wheel Speed Sensor Installation Error	ON	ON/OFF *1	ON	ON	(see page 19-123)
	-22	Left-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)	ON	ON/OFF *1	ON	ON	(see page 19-124)
	-23	Left-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))	ON	ON/OFF *1	ON	ON	(see page 19-124)
21	-11	Right-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF *1	ON	ON	(see page 19-125)
22	-11	Left-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF *1	ON	ON	(see page 19-125)
23	-11	Right-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF *1	ON	ON	(see page 19-125)
24	-11	Left-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)	ON	ON/OFF *1	ON	ON	(see page 19-125)

* 1: Brake system indicator turns ON when two or more wheels fail.

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
25	-11*2	Yaw Rate Sensor Internal Circuit Malfunction (Initial)	OFF	OFF	ON	ON	(see page 19-126)
	-12	Yaw Rate Sensor Internal Circuit Malfunction (Open, Short)	OFF	OFF	ON	ON	(see page 19-126)
	-13	Yaw Rate Sensor Communication Error	OFF	OFF	ON	ON	(see page 19-126)
	-14*2	Yaw Rate/Lateral Acceleration Sensor Circuit High Voltage	OFF	OFF	ON	ON	(see page 19-127)
	-15*2	Yaw Rate/Lateral Acceleration Sensor Circuit Low Voltage	OFF	OFF	ON	ON	(see page 19-127)
	-16*2	Yaw Rate/Lateral Acceleration Sensor Internal Circuit Malfunction (Keep Alive Memory (KAM) Error)	OFF	OFF	ON	ON	(see page 19-126)
	-17*3	Yaw Rate/Lateral Acceleration Sensor Power Source Voltage Malfunction	OFF	OFF	ON	ON	(see page 19-127)
	-18*3	Yaw Rate/Lateral Acceleration Sensor Internal Circuit Malfunction	OFF	OFF	ON	ON	(see page 19-126)
	-19*3	Yaw Rate/Lateral Acceleration Sensor Startup Time Malfunction	OFF	OFF	ON	ON	(see page 19-127)
	-21	Yaw Rate Sensor Neutral Position Malfunction	OFF	OFF	ON	ON	(see page 19-126)
	-22	Yaw Rate Sensor Stuck	OFF	OFF	ON	ON	(see page 19-128)
	-23	Yaw Rate Sensor Circuit Intermittent Interruption	OFF	OFF	ON	ON	(see page 19-127)
	-24	Yaw Rate Sensor Gain Low	OFF	OFF	ON	ON	(see page 19-128)
	-25	Yaw Rate Sensor Gain High	OFF	OFF	ON	ON	(see page 19-128)
26	-11*2	Lateral Acceleration Sensor Internal Circuit Malfunction (Initial)	OFF	OFF	ON	ON	(see page 19-126)
	-12	Lateral Acceleration Sensor Internal Circuit Malfunction (Open, Short)	OFF	OFF	ON	ON	(see page 19-126)
	-13	Lateral Acceleration Sensor Communication Error	OFF	OFF	ON	ON	(see page 19-126)
	-21	Lateral Acceleration Sensor Neutral Position Malfunction	OFF	OFF	ON	ON	(see page 19-129)
	-22	Lateral Acceleration Sensor Stuck	OFF	OFF	ON	ON	(see page 19-129)
	-23	Lateral Acceleration Sensor Circuit Intermittent Interruption	OFF	OFF	ON	ON	(see page 19-129)
	-24	Lateral Acceleration Sensor Gain Low	OFF	OFF	ON	ON	(see page 19-128)
	-25	Lateral Acceleration Sensor Gain High	OFF	OFF	ON	ON	(see page 19-128)
27	-11	Steering Angle Sensor DIAG Signal Error (Initial)	OFF	OFF	ON	ON	(see page 19-130)
	-21	Steering Angle Sensor Stuck Neutral Position	OFF	OFF	ON	ON	(see page 19-132)
	-22	Steering Angle Sensor Stuck Offset Position	OFF	OFF	ON	ON	(see page 19-132)
	-23	Steering Angle Sensor Counter Malfunction	OFF	OFF	ON	ON	(see page 19-135)
	-24	Steering Angle Sensor Exchange Malfunction	OFF	OFF	ON	ON	(see page 19-135)
	-26	Steering Angle Sensor DIAG Signal Error (Main)	OFF	OFF	ON	ON	(see page 19-130)
31	-01	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Right-front Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)
32	-01	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Right-front Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)

* 2: '07-08 models
* 3: '09 model

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
33	-01	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Left-front Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)
34	-01	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Left-front Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)
35	-01	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Right-rear Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)
36	-01	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Right-rear Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)
37	-01	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Left-rear Inlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)
38	-01	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Initial Pulse)	ON	ON	ON	ON	(see page 19-136)
	-21	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Pulse)	ON	ON	ON	ON	(see page 19-136)
	-22	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Speculative)	ON	ON	ON	ON	(see page 19-136)
	-23	ABS Left-rear Outlet Solenoid Valve Malfunction (Solenoid Stuck ON)	ON	ON	ON	ON	(see page 19-136)
41	-21	Right-front Wheel Lock	ON	ON/OFF *1	ON	ON	(see page 19-137)
42	-21	Left-front Wheel Lock	ON	ON/OFF *1	ON	ON	(see page 19-137)
43	-21	Right-rear Wheel Lock	ON	ON/OFF *1	ON	ON	(see page 19-137)
44	-21	Left-rear Wheel Lock	ON	ON/OFF *1	ON	ON	(see page 19-137)
51	-11	Motor Lock	ON	OFF	ON	ON	(see page 19-138)
	-12	Motor Lock Circuit Malfunction	ON	OFF	ON	ON	(see page 19-138)
	-13	Motor Relay OFF Malfunction	ON	OFF	ON	ON	(see page 19-138)
52	-12	Motor Stuck OFF	ON	OFF	ON	ON	(see page 19-140)
53	-01	Motor Relay Stuck ON 1	ON	OFF	ON	ON	(see page 19-141)
	-12	Motor Relay Stuck ON 2	ON	OFF	ON	ON	(see page 19-141)
54	-03	Fail-safe Relay 1 Stuck ON	ON	ON	ON	ON	(see page 19-142)
	-04	Fail-safe Relay 1 Stuck OFF (Initial)	ON	ON	ON	ON	(see page 19-142)
	-21	Fail-safe Relay 1 Stuck OFF (Main)	ON	ON	ON	ON	(see page 19-142)
56	-01	Initial VIG FET Stuck OFF	ON	ON	ON	ON	(see page 19-142)
	-02	Initial VIG FET Stuck ON	ON	ON	ON	ON	(see page 19-142)
	-11	VIG FET Stuck OFF	ON	ON	ON	ON	(see page 19-142)

* 1: Brake system indicator turns ON when two or more wheels fail.

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
61	-01	VSA Modulator-control Unit Initial IG Low Voltage	ON	ON	ON	ON	(see page 19-143)
	-21	VSA Modulator-control Unit Power Source Low Voltage 1	ON	ON	ON	ON	(see page 19-143)
	-22	VSA Modulator-control Unit Power Source Low Voltage 2	ON	OFF	ON	ON	(see page 19-143)
	-23	VSA Modulator-control Unit Power Source Low Voltage 3	ON	ON	ON	ON	(see page 19-143)
62	-21	VSA Modulator-control Unit IG High Voltage	ON	ON	ON	ON	(see page 19-144)
64	-11	Steering Angle Sensor Power Circuit Short	OFF	OFF	ON	ON	(see page 19-144)
	-12	Steering Angle Sensor Power Circuit Open	OFF	OFF	ON	ON	(see page 19-145)
65	-21	Brake Fluid Level Stuck ON	OFF	OFF	ON	ON	(see page 19-147)
66	-11	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	OFF	OFF	ON	ON	(see page 19-148)
	-12	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	OFF	OFF	ON	ON	(see page 19-148)
	-13	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	OFF	OFF	ON	ON	(see page 19-148)
	-14	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	OFF	OFF	ON	ON	(see page 19-148)
	-15	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	OFF	OFF	ON	ON	(see page 19-149)
	-16	Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction	OFF	OFF	ON	ON	(see page 19-148)
68	-21	Brake Pedal Position Switch Stuck OFF	OFF	OFF	ON	ON	(see page 19-149)
	-22	Brake Pedal Position Switch Stuck ON	OFF	OFF	ON	ON	(see page 19-151)
71	-21	Right-front or Left-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	(see page 19-152)
	-22	Left-front or Right-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	(see page 19-152)
	-23	Right-front and Right-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	(see page 19-152)
	-24	Left-front and Left-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	(see page 19-152)
	-25	Right-front and Left-front Different Diameter Tire Malfunction	ON	ON	ON	ON	(see page 19-152)
	-26	Right-rear and Left-rear Different Diameter Tire Malfunction	ON	ON	ON	ON	(see page 19-152)
	-27	Right-front or Left-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	(see page 19-152)
	-28	Left-front or Right-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	(see page 19-152)
	-29	Right-front and Right-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	(see page 19-152)
	-2A	Left-front and Left-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	(see page 19-152)
	-2B	Right-front and Left-front Different Diameter Tire Malfunction	OFF	OFF	ON	ON	(see page 19-152)
	-2C	Right-rear and Left-rear Different Diameter Tire Malfunction	OFF	OFF	ON	ON	(see page 19-152)
81	-01	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-02	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-03	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-05	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-06	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-07	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-08	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-11	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-12	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-13	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-14	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-21	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-22	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-23	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC		Detection Item	ABS Indicator	Brake System Indicator	VSA Indicator	VSA Activation Indicator	Note
81	-31	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-32	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-33	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-35	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-36	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-37	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-38	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-39	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-3A	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-3C	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-3D	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-155)
	-3E	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-155)
	-40	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-41	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-42	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-51	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-154)
	-52	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-53	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-154)
	-54	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-55	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-154)
	-56	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-57	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-154)
	-58	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-59	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-155)
	-61	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
	-71	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	OFF	ON	ON	(see page 19-153)
	-80	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-153)
83	-13	ECM/PCM Communication Error	OFF	OFF	ON	ON	(see page 19-155)
	-14	ECM/PCM Communication Error	OFF	OFF	ON	ON	(see page 19-155)
84	-21	VSA Sensor Neutral Position Not Writing	OFF	OFF	ON	ON	(see page 19-156)
86	-01	F-CAN Bus-off Malfunction	OFF	OFF	ON	ON	(see page 19-156)
	-11	F-CAN Communication with ECM/PCM Malfunction	OFF	OFF	ON	ON	(see page 19-157)
	-21	F-CAN Communication with Engine Malfunction	OFF	OFF	ON	ON	(see page 19-157)
	-22	F-CAN Communication with Engine Malfunction	OFF	OFF	ON	ON	(see page 19-157)
	-23	F-CAN Communication with Engine Malfunction	OFF	OFF	ON	ON	(see page 19-157)
	-24	F-CAN Communication with Engine Malfunction	OFF	OFF	ON	ON	(see page 19-157)
	-25	F-CAN Communication with Engine Malfunction	OFF	OFF	ON	ON	(see page 19-157)
	-31	F-CAN Communication with Gauge Control Module Malfunction	OFF	OFF	ON	ON	(see page 19-159)
	-41*4	F-CAN Communication with EAT Malfunction	OFF	OFF	ON	ON	(see page 19-157)
	-71	F-CAN Communication with Yaw Rate-Lateral Acceleration Sensor Malfunction	OFF	OFF	ON	ON	(see page 19-160)
107	-22	Central Processing Unit (CPU) Internal Circuit Malfunction	OFF	OFF	OFF	ON	(see page 19-162)
108	-21	Steering Angle Sensor Malfunction	OFF	OFF	OFF	ON	(see page 19-162)
112	-01	Central Processing Unit (CPU) Internal Circuit Malfunction	ON	ON	ON	ON	(see page 19-163)
121	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-02	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-11	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-24	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
122	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-22	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-23	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
123	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-02	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-11	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-24	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
124	-01	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-21	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-22	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)
	-23	VSA Solenoid Valve Malfunction	ON	ON	ON	ON	(see page 19-164)

* 4: A/T

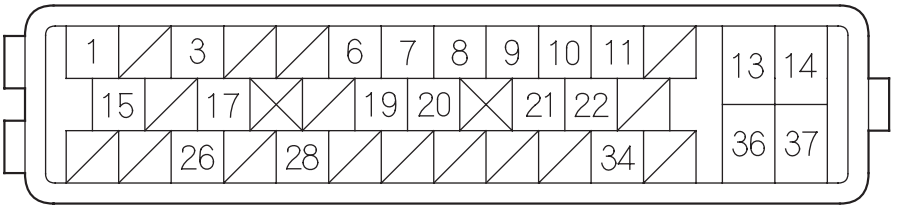
Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check for VSA diagnostic trouble codes (DTCs) with the HDS. If there are no DTCs, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure
HDS does not communicate with the VSA modulator-control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-204).
VSA activation indicator does not come on at start-up (bulb check)	1. Do the gauge control module troubleshooting (see page 22-241). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see page 19-171).
VSA activation indicator does not go off, and no DTCs are stored	1. Symptom Troubleshooting (see page 19-165). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see page 19-171).
ABS indicator, brake system indicator, and VSA indicator do not come on	1. Do the gauge control module troubleshooting (see page 22-241). 2. Substitute a known-good VSA modulator-control unit, then recheck. If it is OK, replace the original VSA modulator-control unit (see page 19-171).
ABS indicator, brake system indicator, and VSA indicator do not go off	1. Check for F-CAN DTCs, and troubleshoot and repair those first. 2. Do the gauge control module troubleshooting (see page 22-241). 3. Symptom Troubleshooting (see page 19-166).

System Description

VSA Modulator-Control Unit Inputs and Outputs for 37P Connector (Connector Disconnected)



Wire side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal sign	Description	Signal
1	RED	CAN-L	F-CAN communication circuit	———
3	BLU	STR-D	Detects steering angle sensor signal	
6	PNK	FR-GND	Detects right-front wheel speed sensor signal	
7	ORN	SVCC	Power source for the steering angle sensor	With ignition switch ON (II): about 5.0 V
8	PUR	RL-GND	Detects left-rear wheel speed sensor signal	———
9	LT GRN	RR +B	Detects right-rear wheel speed sensor signal	
10	BRN	SGND	Ground for the steering angle sensor	
11	RED	FL-GND	Detects left-front wheel speed sensor signal	
13	WHT	FSR +B	Power source for the fail-safe relay	Battery voltage at all times
14	RED	MR +B	Power source for the motor relay	Battery voltage at all times

NOTE: Standard battery voltage is about 12 V.

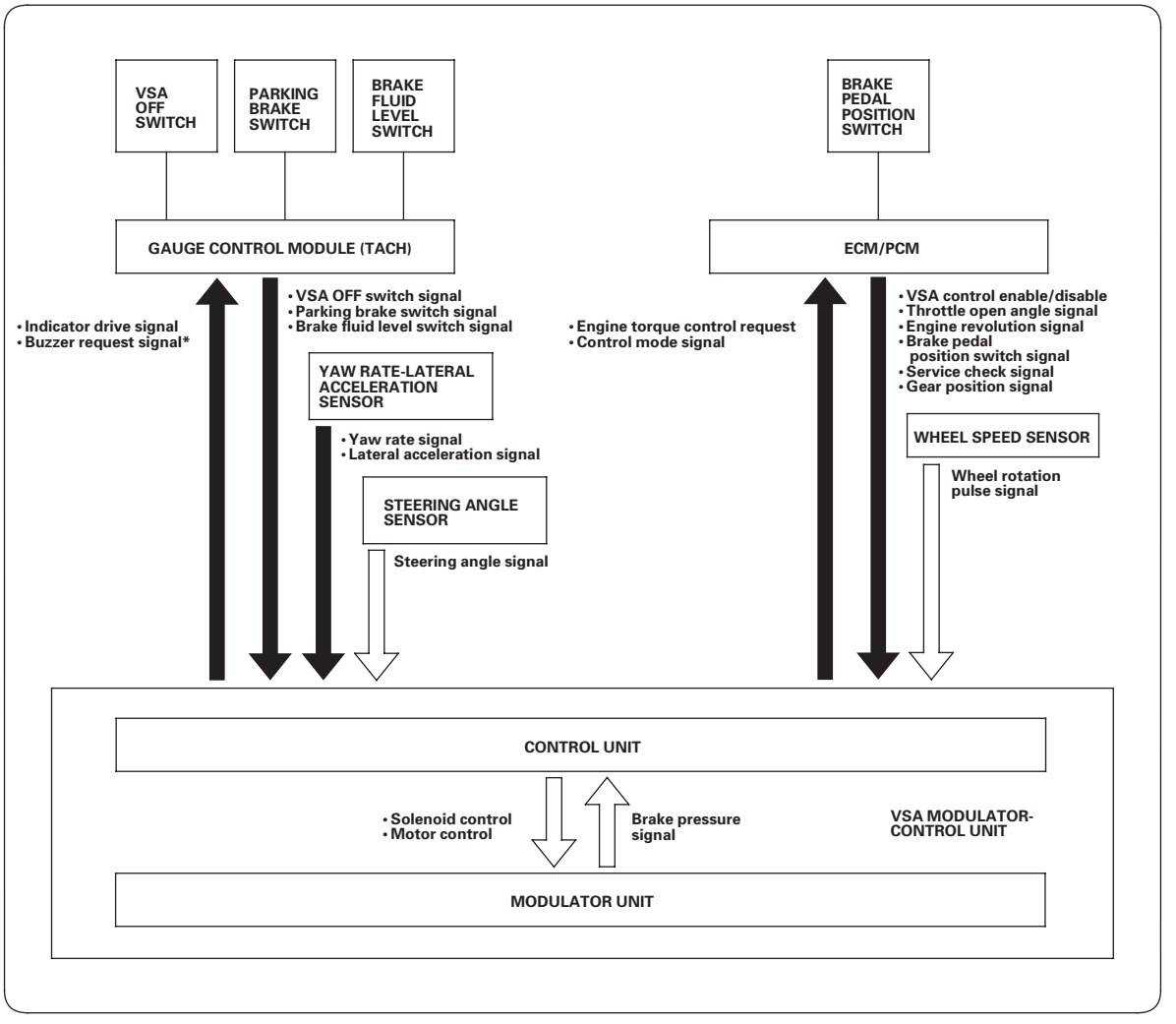
Terminal number	Wire color	Terminal sign	Description	Signal
15	WHT	CAN-H	F-CAN communication circuit	———
17	PUR	STR-B	Detects steering angle sensor signal	
19	GRN	FR +B	Detects right-front wheel speed sensor signal	
20	YEL	RL +B	Detects left-rear wheel speed sensor signal	
21	BLU	RR-GND	Detects right-rear wheel speed sensor signal	
22	WHT	FL +B	Detects left-front wheel speed sensor signal	
26	LT BLU	K-LINE	Communication with HDS	
28	GRY	IG1	Power source for activating the system	With ignition switch ON (II): about battery voltage
34	GRN	STR-A	Detects steering angle sensor signal	———
36	BLK	GND	Ground for the VSA modulator-control unit	Continuity to ground
37	BLK	MR-GND	Ground for the pump motor	Continuity to ground

(cont'd)

System Description (cont'd)

System Outline

This system is composed of the VSA modulator-control unit, the wheel speed sensors, the steering angle sensor, the yaw rate-lateral acceleration sensor, and the system indicators in the gauge control module (tach). The VSA modulator-control unit controls the ABS, EBD, TCS, VSA, and brake assist with the brake pressure of each wheel and reduces engine torque.

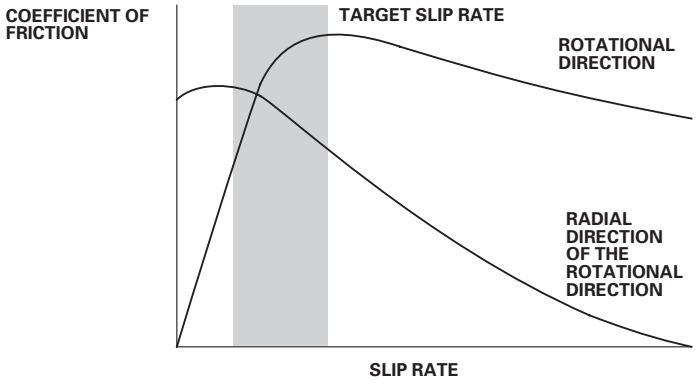


ABS Features

Anti-lock control

Without ABS, when the brake pedal is pressed while driving, the wheels sometimes lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. With ABS, the system precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle. The ABS calculates the slip rate of the wheels based on the four wheel speeds, and then it controls the brake fluid pressure to reach the target slip rate.

Grip force of tire and road surface

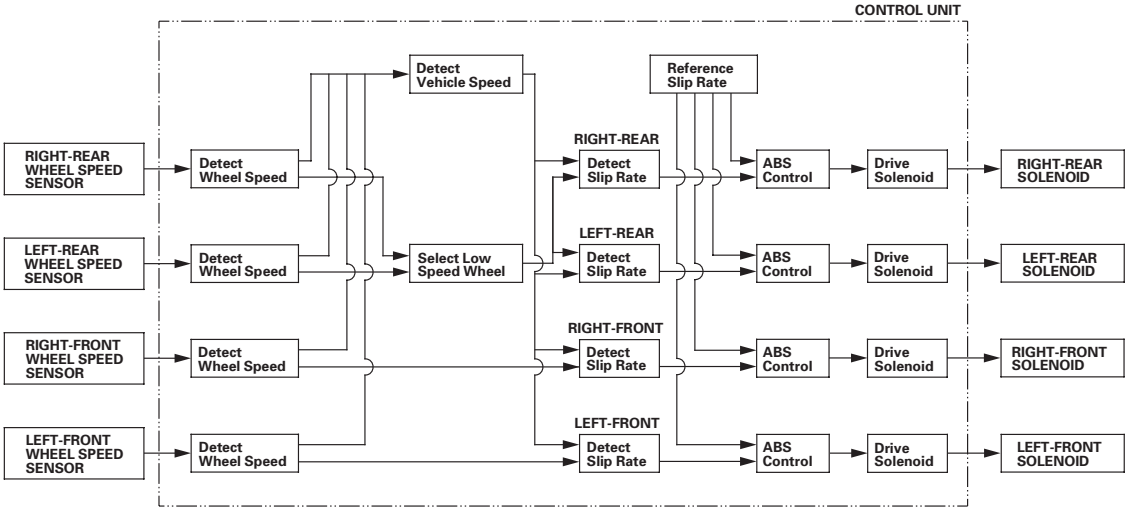


Main Control

The control unit detects the wheel speed based on the wheel speed sensor signals it receives, then it calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the wheel speeds.

The control unit calculates the slip rate of each wheel, and transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The hydraulic control has three modes: Pressure intensifying, pressure reducing, and pressure retaining.

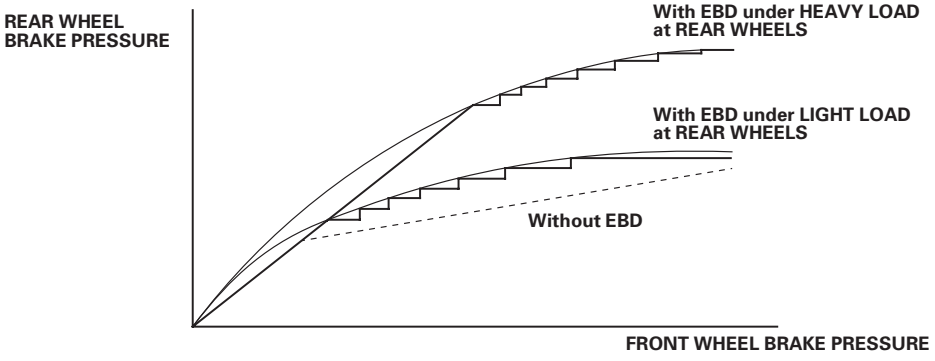


(cont'd)

System Description (cont'd)

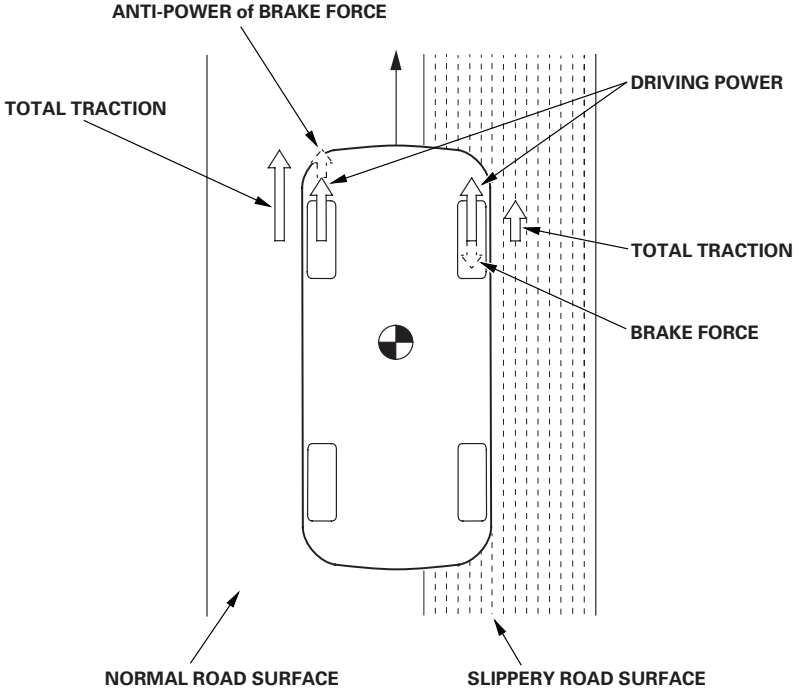
EBD Features

The electronic brake distribution (EBD) feature helps control vehicle braking by adjusting the rear brake force in accordance with the rear wheel load before the ABS operates. Based on the wheel speed sensor signals, the control unit uses the modulator to control the rear brakes individually. When the rear wheel speed is less than the front wheel speed, the VSA modulator-control unit retains the current rear brake fluid pressure by closing the inlet valve in the modulator. As the rear wheel speed increases, and approaches the front wheel speed, the VSA modulator-control unit increases the rear brake fluid pressure by momentarily opening the inlet valve. This whole process is repeated very rapidly. While this is happening, kickback may be felt at the brake pedal.



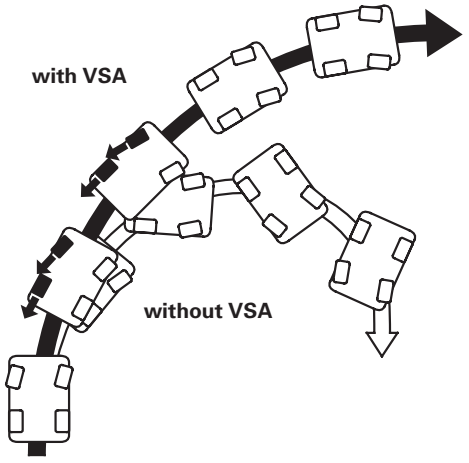
TCS Features

When a drive wheel loses traction on a slippery road surface and starts to spin, the VSA modulator-control unit applies brake pressure to the spinning wheel, and sends an engine torque control request to the ECM/PCM to slow the spinning wheel and keep traction.



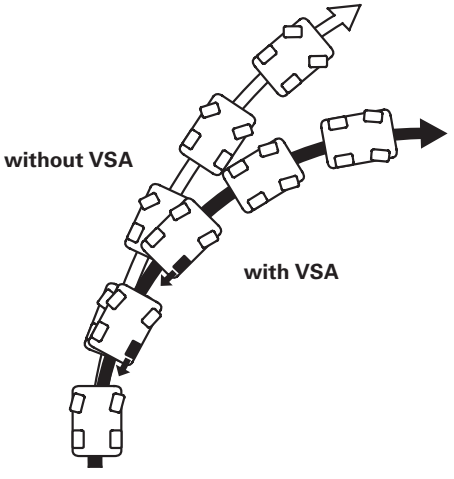
VSA System Features

Oversteer control
Applies the brake to the front and rear outside wheels



The brake makes the yaw rate opposite to the turning direction

Understeer control
- Applies the brake to the rear inside wheel
- Controls the engine torque when accelerating



The brake increases the yaw rate toward the turning direction

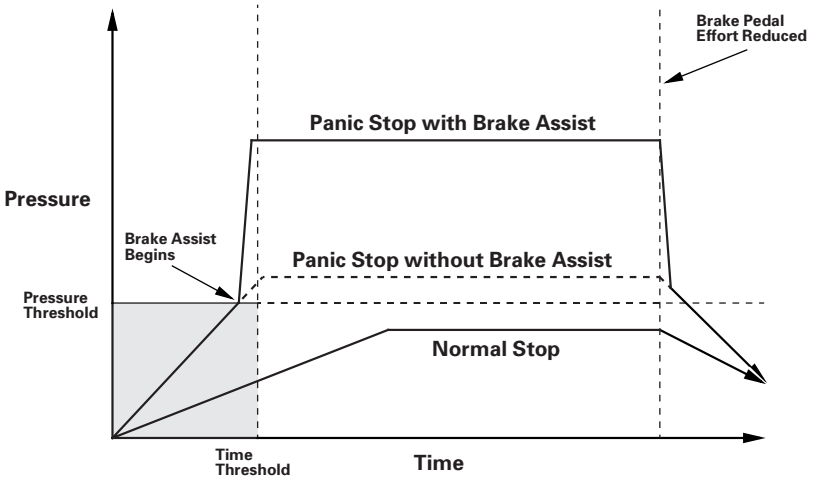
The throttle control effect;
• reduces vehicle speed
• increases cornering force

(cont'd)

System Description (cont'd)

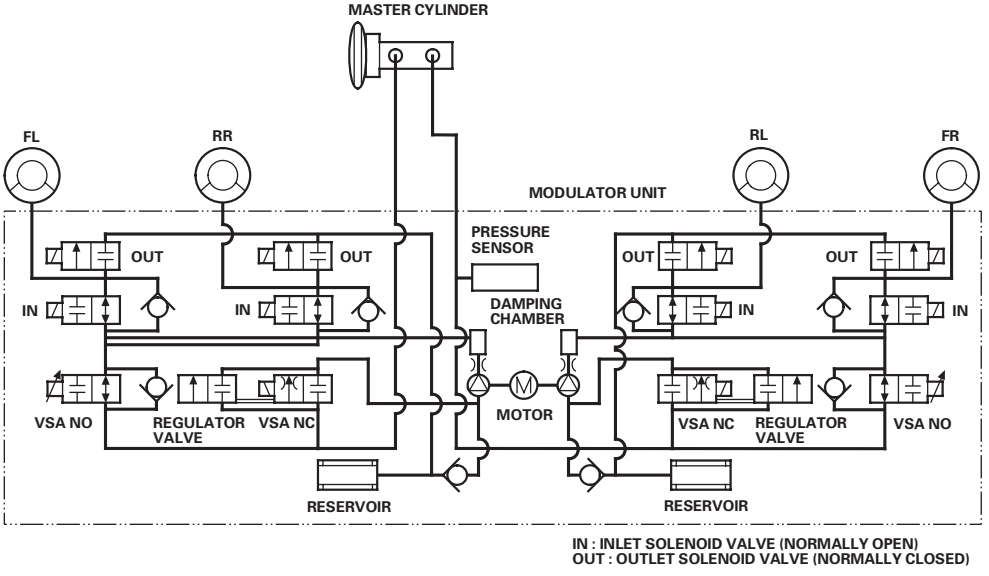
Brake Assist Features

Brake assist helps ensure that any driver can achieve the full braking potential of the vehicle by increasing brake system pressure in a panic situation, bringing the vehicle into a full ABS stop.
If during a panic stop the VSA modulator-control unit determines that the brake system pressure increases above a threshold in less than a certain amount of time, the VSA modulator-control unit engages brake assist.
Because the brake system pressure crossed the pressure threshold before the time threshold had expired, the VSA modulator-control unit goes into brake assist mode.



Modulator Unit

The modulator unit consists of the inlet solenoid valve, the outlet solenoid valve, the VSA NO (normally open) solenoid valve, the VSA NC (normally closed) solenoid valve, the reservoir, the pump, the pump motor, and the damping chamber.
The hydraulic control has three modes at ABS action; pressure intensifying, pressure retaining, and pressure reducing. Pressure adding mode is combined the TCS, VSA, and brake assist action.
The hydraulic circuit is an independent four channel type; one channel for each wheel.

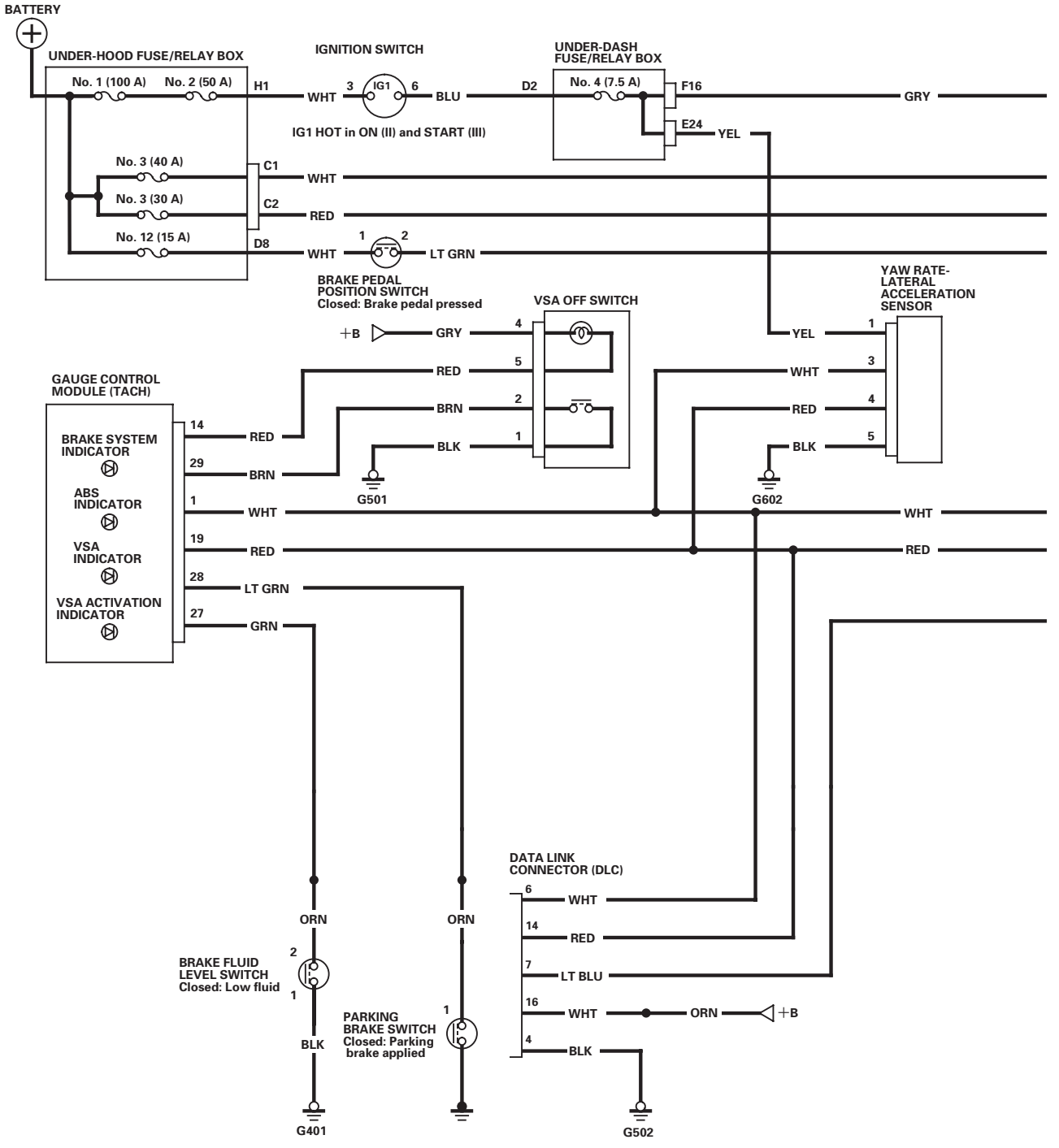


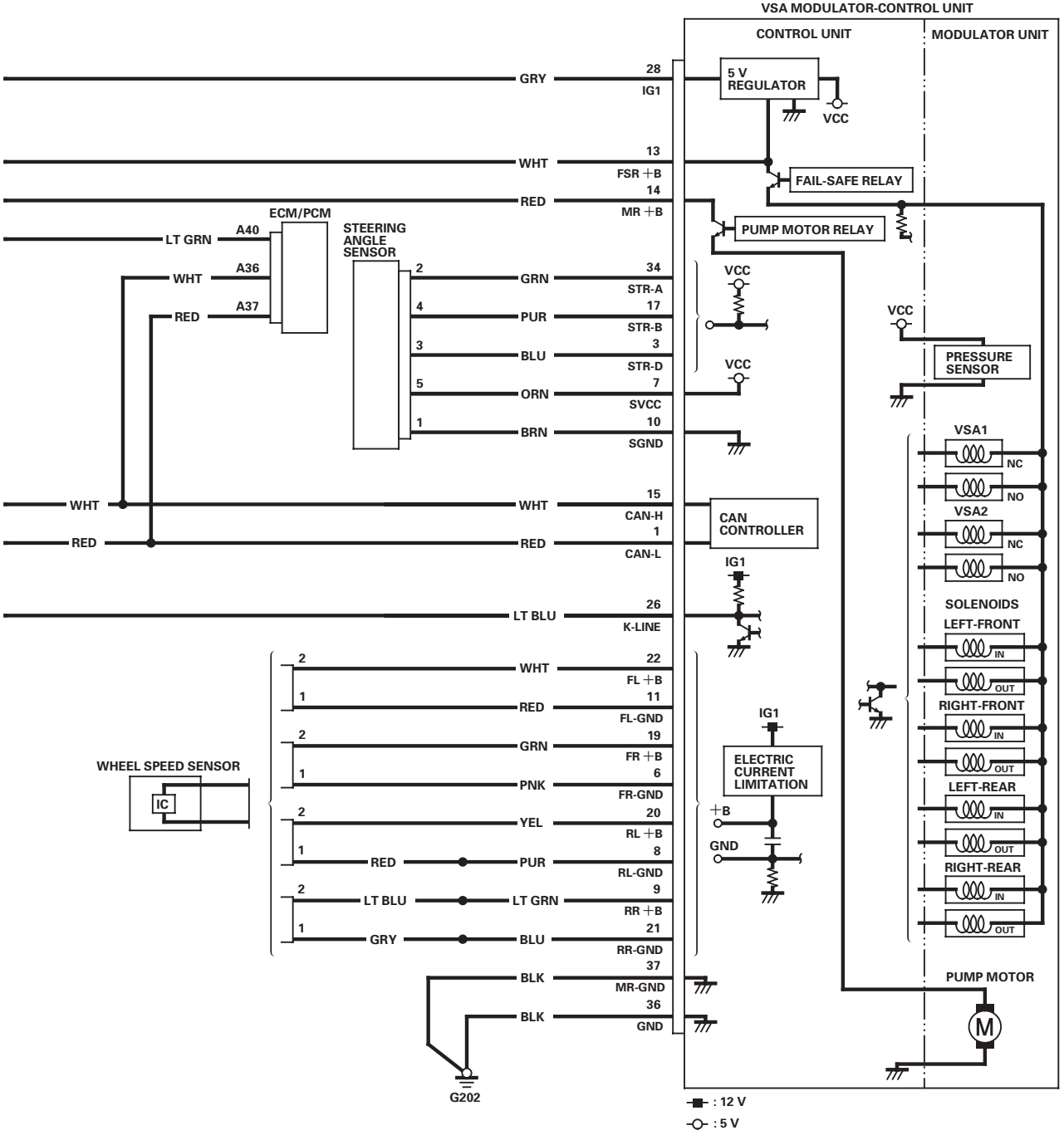
Mode	VSA NO Valve	VSA NC Valve	Inlet Solenoid Valve	Outlet Solenoid Valve	Brake Fluid
Pressure intensifying mode	open	closed	open	closed	Master cylinder fluid is pumped out to the caliper.
Pressure retaining mode	open	closed	closed	closed	Caliper fluid is retained by the inlet and outlet valves.
Pressure reducing mode	open	closed	closed	open	• Caliper fluid flows through the outlet valve to the reservoir. • The motor pumps the reservoir fluid through the damping chamber to the master cylinder*.
Pressure adding mode	closed	open	open	closed	• Master cylinder fluid is pumped out by pump with motor through VSA NC valve to the caliper. • Caliper fluid pressure exceeds master cylinder pressure.

*: The motor will keep running until the operation of the one anti-lock brake control is finished with the first pressure reducing mode.

VSA System Components

Circuit Diagram

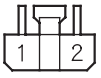



VSA MODULATOR-CONTROL UNIT
CONTROL UNIT
MODULATOR UNIT
GRY
28
IG1
5 V REGULATOR
VCC
WHT
13
FSR +B
FAIL-SAFE RELAY
RED
14
MR +B
PUMP MOTOR RELAY
ECM/PCM
LT GRN
A40
WHT
A36
RED
A37
STEERING ANGLE SENSOR
2
GRN
34
STR-A
4
PUR
17
STR-B
3
BLU
3
STR-D
5
ORN
7
SVCC
1
BRN
10
SGND
VCC
VCC
VCC
PRESSURE SENSOR
VSA1
NC
NO
VSA2
NC
NO
SOLENOIDS
LEFT-FRONT
IN
OUT
RIGHT-FRONT
IN
OUT
LEFT-REAR
IN
OUT
RIGHT-REAR
IN
OUT
WHT
WHT
15
CAN-H
RED
RED
1
CAN-L
CAN CONTROLLER
IG1
LT BLU
26
K-LINE
2
WHT
22
FL +B
1
RED
11
FL-GND
2
GRN
19
FR +B
1
PNK
6
FR-GND
2
YEL
20
RL +B
1
RED
PUR
8
RL-GND
2
LT BLU
LT GRN
9
RR +B
1
GRY
BLU
21
RR-GND
WHEEL SPEED SENSOR
IC
IG1
ELECTRIC CURRENT LIMITATION
+B
GND
37
BLK
MR-GND
36
BLK
GND
PUMP MOTOR
M
G202
: 12 V
: 5 V

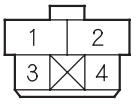
(cont'd)

Circuit Diagram (cont'd)

UNDER-HOOD FUSE/RELAY BOX CONNECTOR C (2P)



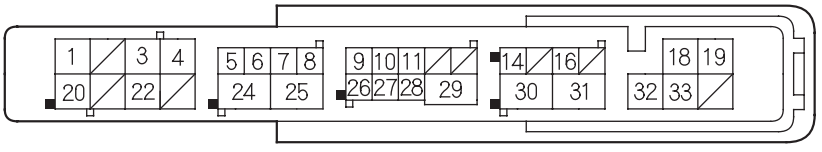
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



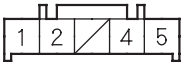
BRAKE FLUID LEVEL SWITCH 2P CONNECTOR

PARKING BRAKE SWITCH 1P CONNECTOR

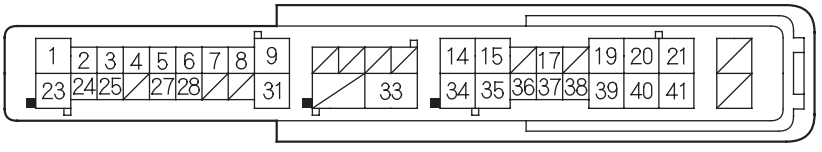
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



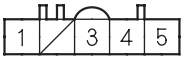
VSA OFF SWITCH 5P CONNECTOR



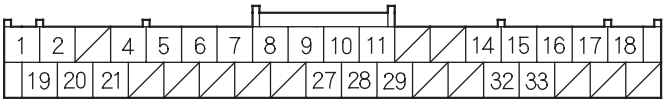
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



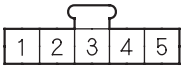
YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR



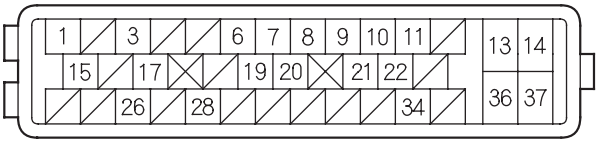
GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



STEERING ANGLE SENSOR 5P CONNECTOR



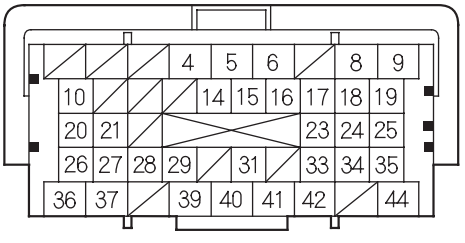
VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



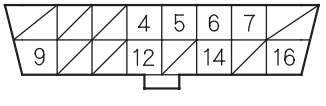
WHEEL SPEED SENSOR 2P CONNECTOR

Wire side of female terminals

ECM/PCM CONNECTOR A (44P)



DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

DTC Troubleshooting

DTC 11-13: Right-front Wheel Speed Sensor Circuit Malfunction

DTC 13-13: Left-front Wheel Speed Sensor Circuit Malfunction

DTC 15-13: Right-rear Wheel Speed Sensor Circuit Malfunction

DTC 17-13: Left-rear Wheel Speed Sensor Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

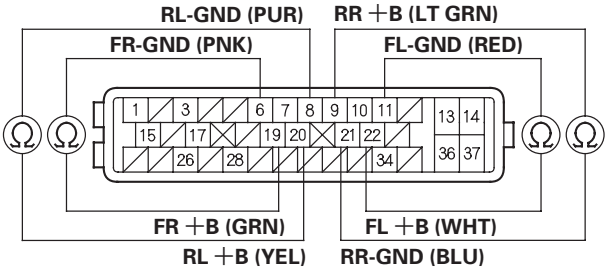
   Is DTC 11-13, 13-13, 15-13, and/or 17-13 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
7. Disconnect the appropriate wheel speed sensor 2P connector.
8. Check for continuity between the appropriate VSA modulator-control unit 37P connector wheel speed sensor +B and GND terminals (see table).

DTC	VSA Modulator-control Unit 37P Connector Terminal	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the appropriate wheel speed sensor and the VSA modulator-control unit. ■

NO—Go to step 9.

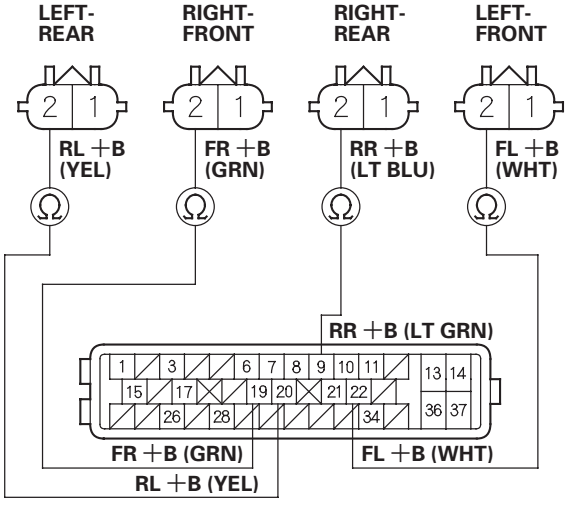
(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between the appropriate VSA modulator-control unit 37P connector terminal and the wheel speed sensor 2P connector terminal (see table).

DTC	VSA Modulator-control Unit 37P Connector Terminal	Appropriate Wheel Speed Sensor 2P Connector Terminal
11-13	No. 9	Right-front
13-13	No. 22	Left-front
15-13	No. 9	Right-rear
17-13	No. 20	Left-rear

WHEEL SPEED SENSOR 2P CONNECTOR
Terminal side of female terminals



VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals

Is there continuity?

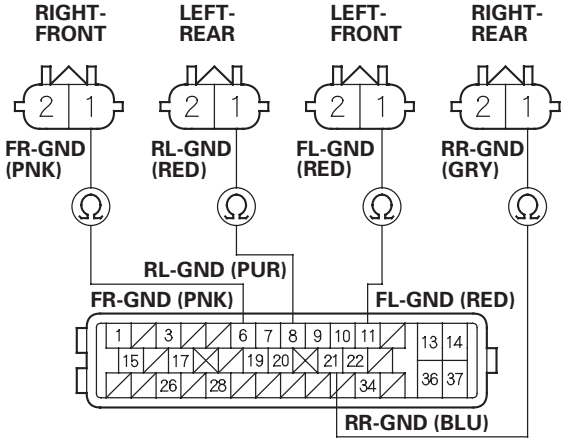
YES—Go to step 10.

NO—Repair open in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit. ■

10. Check for continuity between the appropriate VSA modulator-control unit 37P connector terminal and the wheel speed sensor 2P connector terminal (see table).

DTC	VSA Modulator-control Unit 37P Connector Terminal	Appropriate Wheel Speed Sensor 2P Connector Terminal
11-13	No. 6	Right-front
13-13	No. 11	Left-front
15-13	No. 21	Right-rear
17-13	No. 8	Left-rear

WHEEL SPEED SENSOR 2P CONNECTOR
Terminal side of female terminals



VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals

Is there continuity?

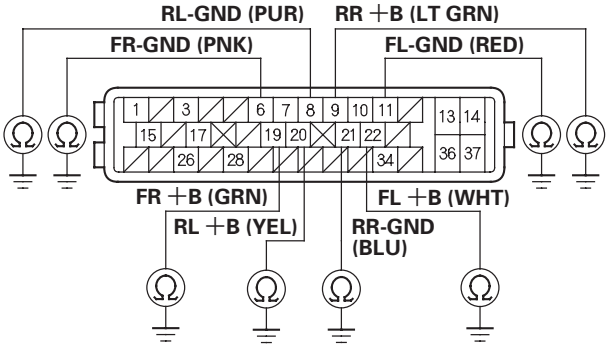
YES—Go to step 11.

NO—Repair open in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit. ■

11. Check for continuity between body ground and the appropriate VSA modulator-control unit 37P connector terminals (see table).

DTC	VSA Modulator-control Unit 37P Connector Terminal	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit. ■

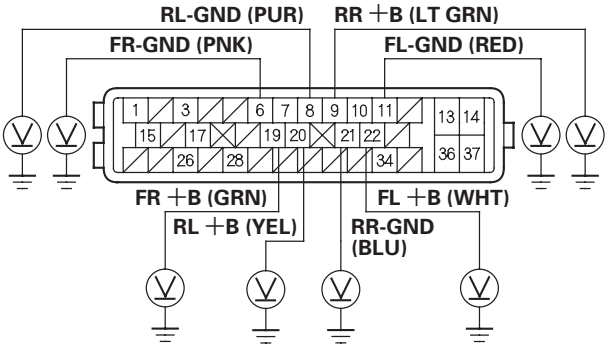
NO—Go to step 12.

12. Turn the ignition switch to ON (II).

13. Measure the voltage between body ground and the appropriate VSA modulator-control unit 37P connector terminals (see table).

DTC	VSA Modulator-control Unit 37P Connector Terminal	
11-13	No. 19	No. 6
13-13	No. 22	No. 11
15-13	No. 9	No. 21
17-13	No. 20	No. 8

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit. ■

NO—Go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0).
15. Substitute the appropriate wheel speed sensor with opposite wheel speed sensor, or with a known-good wheel speed sensor.
16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
20. Check for DTCs with the HDS.

    Is DTC indicated that is indicated in step 4?

    YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

    NO—Replace the original wheel speed sensor (see page 19-173). ■

DTC 12-11: Right-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 14-11: Left-front Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 16-11: Right-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption

DTC 18-11: Left-rear Wheel Speed Sensor Electrical Noise or Intermittent Interruption

NOTE: These DTCs may be caused by electrical interference. Check for aftermarket devices installed in the vehicle when these DTCs are indicated.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 12-11, 14-11, 16-11, and/or 18-11 indicated?

   YES—If DTC 12-12, 14-12, 16-12, or 18-12 is indicated at the same time, do the DTC 12-12, 14-12, 16-12, or 18-12 troubleshooting first (see page 19-121). If DTC 12-12, 14-12, 16-12, or 18-12 is not indicated, go to step 5.

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there is an intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

5. Turn the ignition switch to LOCK (0).

6. Check that the appropriate wheel speed sensor is properly mounted (see page 19-173).

DTC	Appropriate Wheel Speed Sensor
12-11	Right-front
14-11	Left-front
16-11	Right-rear
18-11	Left-rear

Is the wheel speed sensor installation OK?

YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-173). ■

DTC 12-12: Right-front Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 14-12: Left-front Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 16-12: Right-rear Wheel Speed Sensor Short to the Other Sensor Circuit

DTC 18-12: Left-rear Wheel Speed Sensor Short to the Other Sensor Circuit

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Test-drive the vehicle. Drive the vehicle at 20 km/h (13 mph) or more, and go a distance of 100 m (328 ft) or more.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 12-12, 14-12, 16-12, and/or 18-12 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).

(cont'd)

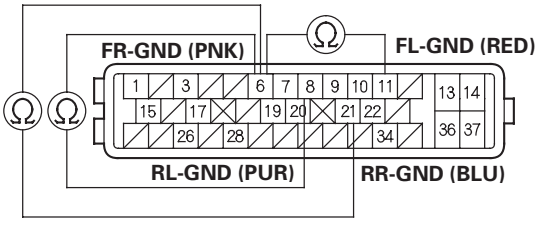
DTC Troubleshooting (cont'd)

7. Check for continuity between the appropriate VSA modulator-control unit 37P connector wheel speed sensor GND terminals (see table).

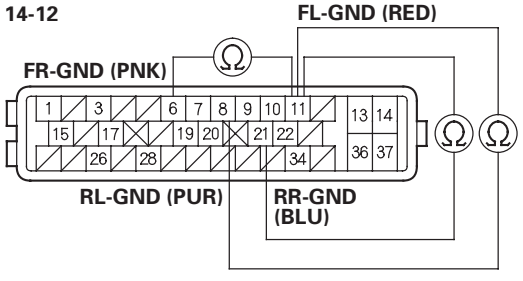
DTC	VSA Modulator-control Unit 37P Connector Terminal			
	Appropriate Terminal	Other Terminals		
12-12	No. 6	No. 11	No. 21	No. 8
14-12	No. 11	No. 6	No. 21	No. 8
16-12	No. 21	No. 6	No. 11	No. 8
18-12	No. 8	No. 6	No. 11	No. 21

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR

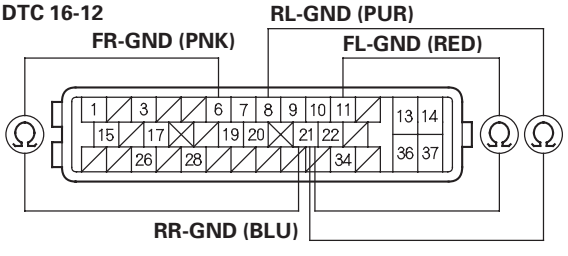
DTC 12-12



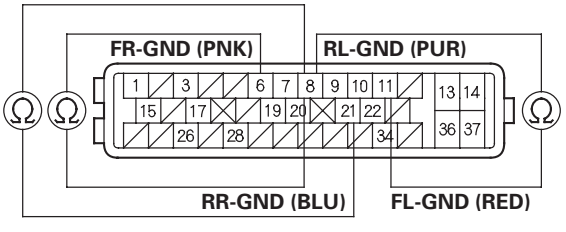
DTC 14-12



DTC 16-12



DTC 18-12



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the appropriate wheel speed sensor and the VSA modulator-control unit. ■

NO—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

DTC 12-21: Right-front Wheel Speed Sensor Installation Error

DTC 14-21: Left-front Wheel Speed Sensor Installation Error

DTC 16-21: Right-rear Wheel Speed Sensor Installation Error

DTC 18-21: Left-rear Wheel Speed Sensor Installation Error

1. Test-drive the vehicle at 10 km/h (7 mph).

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RF, LF, RR, LR WHEEL SPEED in the VSA DATA LIST with the HDS.

   Are all four values the same?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-173).

DTC	Appropriate Wheel Speed Sensor
12-21	Right-front
14-21	Left-front
16-21	Right-rear
18-21	Left-rear

   Is the wheel speed sensor installation OK?

   YES—Replace the appropriate wheel speed sensor (see page 19-173). ■

   NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-173). ■

DTC Troubleshooting (cont'd)

DTC 12-22: Right-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

DTC 14-22: Left-front Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

DTC 16-22: Right-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

DTC 18-22: Left-rear Wheel Speed Sensor Installation Error (30 km/h (19 mph) or More)

1. Test-drive the vehicle between 30 km/h (19 mph) and 50 km/h (31 mph) for 70 seconds or more.

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RF, LF, RR, LR WHEEL SPEED in the VSA DATA LIST with the HDS.

   Are all four values the same?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-173).

DTC	Appropriate Wheel Speed Sensor
12-22	Right-front
14-22	Left-front
16-22	Right-rear
18-22	Left-rear

   Is the wheel speed sensor installation OK?

   YES—Replace the appropriate wheel speed sensor (see page 19-173). ■

   NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-173). ■

DTC 12-23: Right-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

DTC 14-23: Left-front Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

DTC 16-23: Right-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

DTC 18-23: Left-rear Wheel Speed Sensor Installation Error (0 to 15 km/h (0 to 9 mph))

1. Test-drive the vehicle between 1 km/h (1 mph) and 15 km/h (9 mph).

   NOTE: Drive the vehicle on the road, not on a lift.

2. Check the RF, LF, RR, LR WHEEL SPEED in the VSA DATA LIST with the HDS.

   Are all four values the same?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check that the appropriate wheel speed sensor is properly mounted (see page 19-173).

DTC	Appropriate Wheel Speed Sensor
12-23	Right-front
14-23	Left-front
16-23	Right-rear
18-23	Left-rear

   Is the wheel speed sensor installation OK?

   YES—Replace the appropriate wheel speed sensor (see page 19-173). ■

   NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-173). ■

DTC 21-11: Right-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 22-11: Left-front Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 23-11: Right-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

DTC 24-11: Left-rear Magnetic Encoder (Wheel Bearing) Malfunction (Pulse Missing)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 20 km/h (13 mph) or more, and go a distance of 100 m (328 ft) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 21-11, 22-11, 23-11, and/or 24-11 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the wheel speed sensor 2P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0).
6. Inspect the appropriate magnetic encoder for damage, debris, and correct installation.

DTC	Appropriate Magnetic Encoder	Note
21-11	Right-front	Remove the driveshaft outboard joint from the appropriate wheel hub (see page 18-15).
22-11	Left-front	
23-11	Right-rear	Remove the hub bearing unit (see page 18-32).
24-11	Left-rear	

Is the magnetic encoder surface OK?

YES—Remove the debris from the magnetic encoder, or replace the wheel bearing (front) or the hub bearing unit (rear): ■

- Front: Replace the front wheel bearing (see page 18-18).
- Rear: Replace the rear hub bearing unit (see page 18-32).

NO—Clean off debris from the appropriate magnetic encoder surface on the wheel bearing or the hub bearing unit, then go to step 1, and recheck. If the DTC is still present, replace the appropriate wheel bearing or hub bearing unit. ■

DTC Troubleshooting (cont'd)

DTC 25-11: Yaw Rate Sensor Internal Circuit Malfunction (Initial)

DTC 25-12: Yaw Rate Sensor Internal Circuit Malfunction (Open, Short)

DTC 25-13: Yaw Rate Sensor Communication Error

DTC 25-16: Yaw Rate/Lateral Acceleration Sensor Internal Circuit Malfunction (Keep Alive Memory (KAM) Error)

DTC 25-18: Yaw Rate/Lateral Acceleration Sensor Internal Circuit Malfunction

DTC 25-21: Yaw Rate Sensor Neutral Position Malfunction

DTC 26-11: Lateral Acceleration Sensor Internal Circuit Malfunction (Initial)

DTC 26-12: Lateral Acceleration Sensor Internal Circuit Malfunction (Open, Short)

DTC 26-13: Lateral Acceleration Sensor Communication Error

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 25-11, 25-12, 25-13, 25-16, 25-18, 25-21, 26-11, 26-12, or 26-13 indicated?

   YES—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 25-14: Yaw Rate/Lateral Acceleration Sensor Circuit High Voltage

DTC 25-15: Yaw Rate/Lateral Acceleration Sensor Circuit Low Voltage

DTC 25-17: Yaw Rate/Lateral Acceleration Sensor Power Source Voltage Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 25-14, 25-15, or 25-17 indicated?

   YES—If DTC 61-01, 61-21, 61-22, 61-23, and/or 62-21 is indicated at the same time, check the battery performance (see page 22-67), and do the alternator and regulator circuit troubleshooting first (see page 4-28). If DTC 61-01, 61-21, 61-22, 61-23, and/or 62-21 is not indicated at the same time, replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 25-19: Yaw Rate/Lateral Acceleration Sensor Startup Time Malfunction

DTC 25-23: Yaw Rate Sensor Circuit Intermittent Interruption

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Wait 60 seconds or more.
5. Check for DTCs with the HDS.

   Is DTC 25-19 or 25-23 indicated?

   YES—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 25-22: Yaw Rate Sensor Stuck

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 10 km/h (7 mph) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 25-22 indicated?

   YES—Go to step 5.

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there was an intermittent failure, the system is OK at this time. ■
5. Test-drive the vehicle. Check the YAW RATE S in the VSA DATA LIST with the HDS while driving in corners.

   Does the indicated value change?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

DTC 25-24: Yaw Rate Sensor Gain Low

DTC 25-25: Yaw Rate Sensor Gain High

DTC 26-24: Lateral Acceleration Sensor Gain Low

DTC 26-25: Lateral Acceleration Sensor Gain High

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 15 km/h (10 mph) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 25-24, 25-25, 26-24, or 26-25 indicated?

   YES—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 26-21: Lateral Acceleration Sensor Neutral Position Malfunction

DTC 26-23: Lateral Acceleration Sensor Circuit Intermittent Interruption

NOTE: While doing this troubleshooting, avoid vibrations or shaking the vehicle.

1. Park the vehicle on a flat and level surface.
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
5. Wait 60 seconds or more.
6. Check for DTCs with the HDS.

   Is DTC 26-21 or 26-23 indicated?

   YES—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 26-22: Lateral Acceleration Sensor Stuck

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 10 km/h (7 mph) or more.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 26-22 indicated?

   YES—Go to step 5.

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there was an intermittent failure, the system is OK at this time. ■

5. Test-drive the vehicle. Check the LATERAL ACCELERATION SENSOR in the VSA DATA LIST with the HDS while driving in corners.

   Does the indicated value change?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

DTC Troubleshooting (cont'd)

DTC 27-11: Steering Angle Sensor DIAG Signal Error (Initial)

DTC 27-26: Steering Angle Sensor DIAG Signal Error (Main)

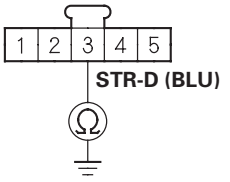
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 27-11 or 27-26 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
8. Check for continuity between steering angle sensor 5P connector terminal No. 3 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

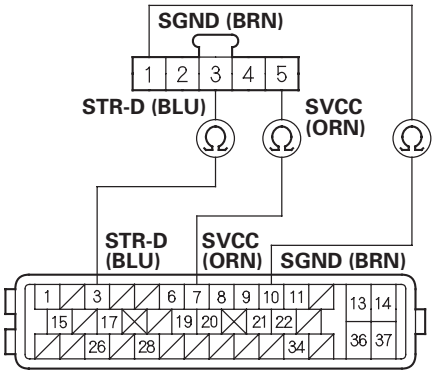
YES—Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit. ■

NO—Go to step 9.

9. Check for continuity between the VSA modulator-control unit 37P connector terminal and the steering angle sensor 5P connector terminal individually (see table).

Sign	VSA Modulator-control Unit 37P Connector Terminal	Steering Angle Sensor 5P Connector Terminal
STR-D	No. 3	No. 3
SVCC	No. 7	No. 5
SGND	No. 10	No. 1

STEERING ANGLE SENSOR 5P CONNECTOR
Wire side of female terminals



VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals

Is there continuity?

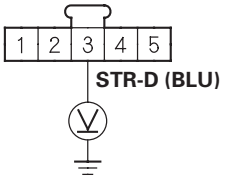
YES—Go to step 10.

NO—Repair open in the wire between the steering angle sensor and the VSA modulator-control unit. ■

10. Turn the ignition switch to ON (II).

11. Measure the voltage between steering angle sensor 5P connector terminal No. 3 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit. ■

NO—Replace the steering angle sensor (see page 19-168). ■

DTC Troubleshooting (cont'd)

DTC 27-21: Steering Angle Sensor Stuck Neutral Position

DTC 27-22: Steering Angle Sensor Stuck Offset Position

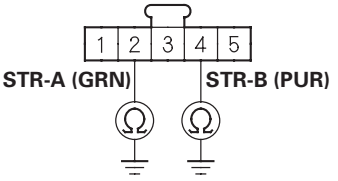
1. Turn the ignition switch to ON (II).
2. Turn the steering wheel left and right 90 degrees or more. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

   Is there +90° or more, and −90° or less?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Disconnect the steering angle sensor 5P connector.
5. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
6. Check for continuity between body ground and steering angle sensor 5P connector terminals No. 2 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

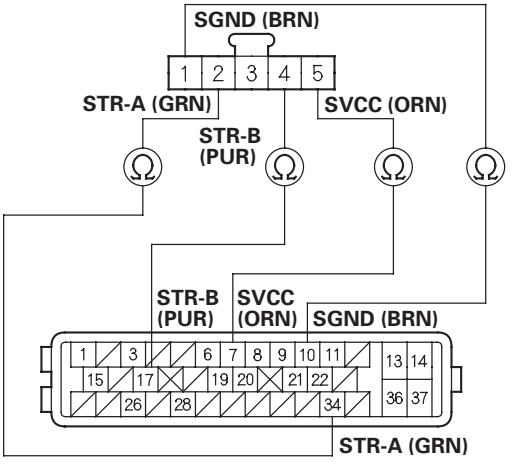
YES—Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit. ■

NO—Go to step 7.

7. Check for continuity between the VSA modulator-control unit 37P connector terminal and the steering angle sensor 5P connector terminal individually.

Sign	VSA Modulator-control Unit 37P Connector Terminal	Steering Angle Sensor 5P Connector Terminal
STR-A	No. 34	No. 2
STR-B	No. 17	No. 4
SVCC	No. 7	No. 5
SGND	No. 10	No. 1

STEERING ANGLE SENSOR 5P CONNECTOR
Wire side of female terminals



VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals

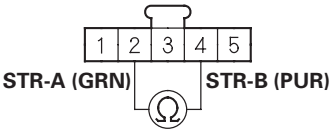
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the steering angle sensor and the VSA modulator-control unit.■

8. Check for continuity between steering angle sensor 5P connector terminals No. 2 and No. 4.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

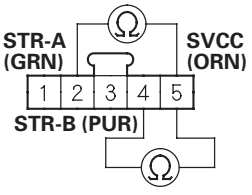
Is there continuity?

YES—Repair short in the wires between the steering angle sensor and the VSA modulator-control unit.■

NO—Go to step 9.

9. Check for continuity between steering angle sensor 5P connector terminals No. 5 and No. 2, and between No. 5 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the steering angle sensor and the VSA modulator-control unit.■

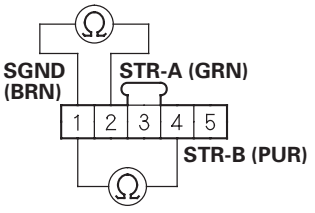
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between steering angle sensor 5P connector terminals No. 1 and No. 2, and between No. 1 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

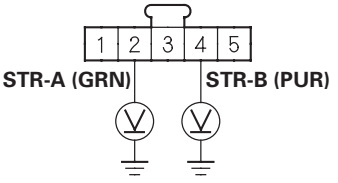
YES—Repair short in the wires between the steering angle sensor and the VSA modulator-control unit. ■

NO—Go to step 11.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between body ground and steering angle sensor 5P connector terminals No. 2 and No. 4 individually.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit. ■

NO—Replace the steering angle sensor (see page 19-168). ■

DTC 27-23: Steering Angle Sensor Counter Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Turn the steering wheel from lock to lock.
5. Check for DTCs with the HDS.

   Is DTC 27-23 indicated?

   YES—Replace the steering angle sensor (see page 19-168). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 27-24: Steering Angle Sensor Exchange Malfunction

1. Turn the ignition switch to ON (II), and set the front wheels to the straight ahead position.
2. Turn the steering wheel one turn to the left. Check the STEERING ANGLE in the VSA DATA LIST with the HDS.

   Is there about 288 degrees to 432 degrees positive?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the steering angle sensor (see page 19-168). ■

DTC Troubleshooting (cont'd)

DTC 31-xx*: ABS Right-front Inlet Solenoid Valve Malfunction

DTC 32-xx*: ABS Right-front Outlet Solenoid Valve Malfunction

DTC 33-xx*: ABS Left-front Inlet Solenoid Valve Malfunction

DTC 34-xx*: ABS Left-front Outlet Solenoid Valve Malfunction

DTC 35-xx*: ABS Right-rear Inlet Solenoid Valve Malfunction

DTC 36-xx*: ABS Right-rear Outlet Solenoid Valve Malfunction

DTC 37-xx*: ABS Left-rear Inlet Solenoid Valve Malfunction

DTC 38-xx*: ABS Left-rear Outlet Solenoid Valve Malfunction

*: Any two-character subcode (see table)

Subcode	Malfunction	Note (DTC)
01	Solenoid Initial Pulse	31-01, 32-01, 33-01, 34-01, 35-01, 36-01, 37-01, 38-01
21	Solenoid Pulse	31-21, 32-21, 33-21, 34-21, 35-21, 36-21, 37-21, 38-21
22	Solenoid Speculative	31-22, 32-22, 33-22, 34-22, 35-22, 36-22, 37-22, 38-22
23	Solenoid Stuck ON	31-23, 32-23, 33-23, 34-23, 35-23, 36-23, 37-23, 38-23

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 31-xx, 32-xx, 33-xx, 34-xx, 35-xx, 36-xx, 37-xx, or 38-xx indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 41-21: Right-front Wheel Lock

DTC 42-21: Left-front Wheel Lock

DTC 43-21: Right-rear Wheel Lock

DTC 44-21: Left-rear Wheel Lock

The DTCs may be indicated under these conditions:

- The vehicle goes into a spin.
- The ABS or VSA continues to operate for a long time.
- Snow, dirt, or debris build-up on the wheel speed sensor or magnetic encoder.
- Misadjusted brake pedal position switch.
- Contaminated brake fluid.

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11).

2. Turn the appropriate wheel by hand.

DTC	Appropriate Wheel
41-21	Right-front
42-21	Left-front
43-21	Right-rear
44-21	Left-rear

Is there brake drag?

YES—Repair the brake drag. ■

NO—Go to step 3.

3. Check that the appropriate wheel speed sensor is properly mounted (see page 19-173).

Is the wheel speed sensor installation OK?

YES—Go to step 4.

NO—Reinstall the wheel speed sensor, and check the mounting position (see page 19-173). ■

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle at 10 km/h (7 mph) for 20 seconds or more.

NOTE: Drive the vehicle on a straight section of road, not on a lift.

7. Check for DTCs with the HDS.

Is DTC 41-21, 42-21, 43-21, and/or 44-21 indicated?

YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 51-11: Motor Lock

DTC 51-13: Motor Relay OFF Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Wait 5 seconds.
5. Operate any one of the four solenoids, as listed, in the VSA FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

6. Check for DTCs with the HDS.

   Is DTC 51-11 or 51-13 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171).■

   NO—Intermittent failure, the system is OK at this time.■

DTC 51-12: Motor Lock Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 51-12 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98).■

5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 (30 A) fuse in the under-hood fuse/relay box.

   Is the fuse blown?

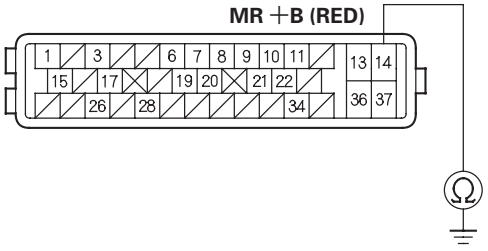
   YES—Go to step 7.

   NO—Reinstall the checked fuse, then go to step 14.

7. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).

8. Check for continuity between VSA modulator-control unit 37P connector terminal No. 14 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the No. 3 (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit. ■

NO—Install a new No. 3 (30 A) fuse in the under-hood fuse/relay box, then go to step 9.

9. Reconnect the VSA modulator-control unit 37P connector.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
13. Check for DTCs with the HDS.

Is DTC 51-12 indicated?

YES—Replace the VSA modulator-control unit (see page 19-171). ■

NO—Troubleshooting is complete. ■

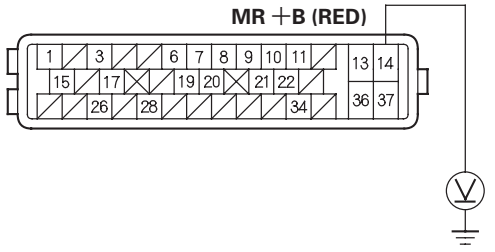
(cont'd)

DTC Troubleshooting (cont'd)

14. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).

15. Measure the voltage between VSA modulator-control unit 37P connector terminal No. 14 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

NO—Repair open in the wire between the No. 3 (30 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit. ■

DTC 52-12: Motor Stuck OFF

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

4. Operate any one of the four solenoids, as listed, in the VSA FUNCTION TEST five times with the HDS.

-LFT FT SOLENOID
-RT FT SOLENOID
-LFT REAR SOLENOID
-RT REAR SOLENOID

5. Check for DTCs with the HDS.

Is DTC 52-12 indicated?

YES—Replace the VSA modulator-control unit (see page 19-171). ■

NO—Intermittent failure, the system is OK at this time. ■

DTC 53-01: Motor Relay Stuck ON 1

DTC 53-12: Motor Relay Stuck ON 2

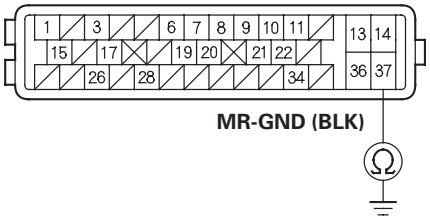
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 53-01 or 53-12 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
7. Check for continuity between VSA modulator-control unit 37P connector terminal No. 37 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G202). ■

DTC Troubleshooting (cont'd)

DTC 54-03: Fail-safe Relay 1 Stuck ON

DTC 54-04: Fail-safe Relay 1 Stuck OFF (Initial)

DTC 54-21: Fail-safe Relay 1 Stuck OFF (Main)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 54-03, 54-04, or 54-21 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171).■

   NO—Intermittent failure, the system is OK at this time.■

DTC 56-01: Initial VIG FET Stuck OFF

DTC 56-02: Initial VIG FET Stuck ON

DTC 56-11: VIG FET Stuck OFF

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 56-01, 56-02, or 56-11 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171).■

   NO—Intermittent failure, the system is OK at this time.■

DTC 61-01: VSA Modulator-control Unit Initial IG Low Voltage

DTC 61-21: VSA Modulator-control Unit Power Source Low Voltage 1

DTC 61-22: VSA Modulator-control Unit Power Source Low Voltage 2

DTC 61-23: VSA Modulator-control Unit Power Source Low Voltage 3

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

   Is DTC 61-01, 61-21, 61-22, or 61-23 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Check and note BATTERY voltage in the VSA DATA LIST with the HDS.
6. Using a voltmeter, measure and note the voltage between the battery terminals.

   NOTE: If the battery voltage is below 9.5 V, check the battery (see page 22-67), and troubleshoot the alternator regulator circuit (see page 4-28).
7. Compare the data list voltage noted in step 5 to the battery voltage in step 6.

   Is the difference between the two voltage readings less than 3 V?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). If the code resets after clearing, replace the VSA modulator-control unit (see page 19-171). ■

   NO—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

DTC Troubleshooting (cont'd)

DTC 62-21: VSA Modulator-control Unit IG High Voltage

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then start the engine.
4. Check for DTCs with the HDS.

   Is DTC 62-21 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Check and note BATTERY voltage in the VSA DATA LIST with the HDS.
6. Using a voltmeter, measure and note the voltage between the battery terminals.

   NOTE: If the voltage is above 15.1 V, troubleshoot the alternator regulator circuit (see page 4-28).
7. Compare the data list voltage noted in step 5 to the battery voltage in step 6.

   Is the difference between the two voltage readings less than 3 V?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals at the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). If the code resets after clearing, replace the VSA modulator-control unit (see page 19-171). ■

   NO—Replace the VSA modulator-control unit (see page 19-171), and retest. ■

DTC 64-11: Steering Angle Sensor Power Circuit Short

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

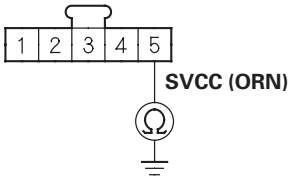
   Is DTC 64-11 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).

8. Check for continuity between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the steering angle sensor and the VSA modulator-control unit. ■

NO—Replace the VSA modulator-control unit (see page 19-171). ■

DTC 64-12: Steering Angle Sensor Power Circuit Open

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 64-12 indicated?

   YES—Go to step 5.

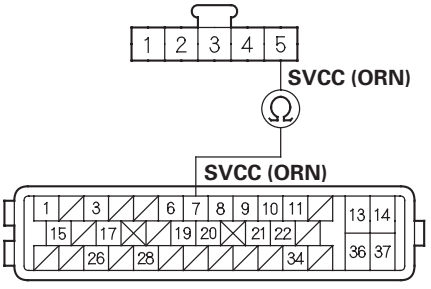
   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the steering angle sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the steering angle sensor 5P connector.
7. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between VSA modulator-control unit 37P connector terminal No. 7 and steering angle sensor 5P connector terminal No. 5.

STEERING ANGLE SENSOR 5P CONNECTOR
Wire side of female terminals



VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals

Is there continuity?

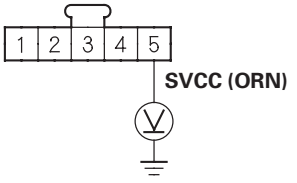
YES—Go to step 9.

NO—Repair open in the wire between the steering angle sensor and the VSA modulator-control unit. ■

9. Turn the ignition switch to ON (II).

10. Measure the voltage between steering angle sensor 5P connector terminal No. 5 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the steering angle sensor and the VSA modulator-control unit. ■

NO—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

DTC 65-21: Brake Fluid Level Stuck ON

NOTE: Bleeding the brake system while the ignition switch is ON can cause this DTC.

1. Check the brake fluid level in the master cylinder reservoir.

   Is the brake fluid level OK?

   YES—Go to step 2.

   NO—Do the brake pad inspection: Front (except Type S model) (see page 19-12), front (Type S model) (see page 19-15), rear (see page 19-29), check for brake fluid leaks or replace worn brake pads, then go to step 2, and recheck.

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

5. Check for DTCs with the HDS.

   Is DTC 65-21 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the system is OK at this time. ■

6. Release the parking brake.

7. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

8. Check the brake system indicator in the gauge control module (tach).

   Does the indicator come on then go off?

   YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

   NO—Go to step 9.

9. Check the BRAKE FLUID LEVEL SWITCH in the VSA DATA LIST with the HDS.

   Does the HDS indicate the BRAKE FLUID LEVEL SWITCH as OFF?

   YES—Substitute a known-good gauge control module (tach), then go to step 1, and recheck. If no DTCs are indicated, replace the original gauge control module (tach) (see page 22-277).

   NO—Go to step 10.

10. Disconnect the brake fluid level switch 2P connector, then check the BRAKE FLUID LEVEL SWITCH in the VSA DATA LIST.

    Does the HDS indicate OFF?

    YES— Replace the brake master cylinder (the brake fluid level switch is included) (see page 19-24).

    NO—Go to step 11.

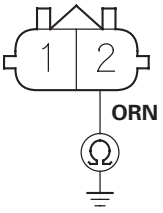
11. Disconnect the gauge control module (tach) 36P connector.

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between brake fluid level switch 2P connector terminal No. 2 and body ground.

BRAKE FLUID LEVEL SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the gauge control module (tach) and the brake fluid level switch. ■

NO—Substitute a known-good gauge control module (tach), then go to step 1, and recheck. If no DTCs are indicated, replace the original gauge control module (tach) (see page 22-277).

DTC 66-11: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-12: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-13: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-14: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

DTC 66-16: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 66-11, 66-12, 66-13, 66-14, or 66-16 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 66-15: Pressure Sensor (Inside of VSA Modulator-control Unit) Malfunction

1. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

2. Turn the ignition switch to LOCK (0).

3. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-11).

4. Turn all four wheels by hand.

   Is there brake drag?

   YES—Repair the brake drag. ■

   NO—Go to step 5.

5. Turn the ignition switch to ON (II).

6. Check the BRAKE PRESS in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does the indicated value change?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the VSA modulator-control unit (see page 19-171). ■

DTC 68-21: Brake Pedal Position Switch Stuck OFF

1. Start the engine.

2. Check the BRAKE PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

   Is there 10 MPa or less?

   YES—Go to step 3.

   NO—Check for brake drag or a misadjusted brake pedal position switch. If they are normal, replace the VSA modulator-control unit (see page 19-171). ■

3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does it indicate ON when the pedal is pressed, and OFF when the pedal is released?

   YES—Intermittent failure, the system is OK at this time. Check for loose terminals between the brake pedal position switch 4P connector, ECM/PCM connector A (44P), and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

   NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

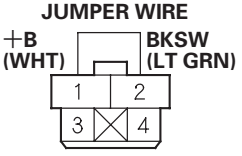
5. Disconnect the brake pedal position switch 4P connector.

(cont'd)

DTC Troubleshooting (cont'd)

6. On the harness side, connect the brake pedal position switch 4P connector terminals No. 1 and No. 2 with a jumper wire.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

7. Turn the ignition switch to ON (II).

8. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS.

Does it indicate ON?

YES—Check the brake pedal position switch adjustment (see page 19-6), If it is OK, replace the brake pedal position switch. ■

NO—Go to step 9.

9. Disconnect the jumper wire.

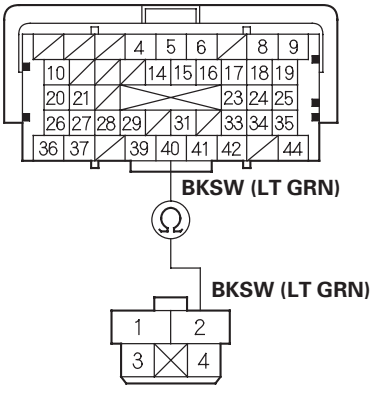
10. Turn the ignition switch to LOCK (0).

11. Short the SCS line with the HDS.

12. Disconnect ECM/PCM connector A (44P).

13. Check for continuity between brake pedal position switch 4P connector terminal No. 2 and ECM/PCM connector A (44P) terminal No. 40.

ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals



BRAKE PEDAL POSITION SWITCH 4P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then go to step 1, and recheck. If the ECM/PCM was updated and DTCs are not indicated, troubleshooting is complete. If the ECM/PCM was substituted and DTCs are not indicated, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the ECM/PCM and the brake pedal position switch. ■

DTC 68-22: Brake Pedal Position Switch Stuck ON

1. Turn the ignition switch to ON (II).
2. Check the BRAKE PRESS in the VSA DATA LIST with the HDS. Do not press the brake pedal.

   Is it 10 MPa or more?

   YES—Check the brake pedal height and the brake pedal position switch adjustment (see page 19-6). If the brake pedal height is OK, replace the VSA modulator-control unit and the brake pedal position switch adjustment (see page 19-171).■

   NO—Go to step 3.
3. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS while moving the brake pedal.

   Does it indicate ON when the pedal is pressed, and OFF when the pedal is released?

   YES—Intermittent failure, the system is OK at this time.■

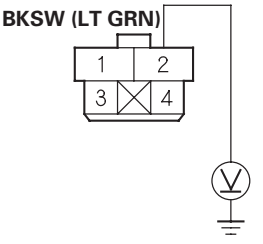
   NO—Go to step 4.
4. Check the BRAKE SWITCH in the VSA DATA LIST with the HDS, and disconnect the brake pedal position switch 4P connector.

   Does the indicator change from ON to OFF?

   YES—Inspect the brake pedal switch and adjustment (see page 19-6). If the switch and adjustment are OK, replace the brake pedal position switch (see page 19-6).■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between brake pedal position switch 4P connector terminal No. 2 and body ground.

BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the ECM/PCM and the brake pedal position switch.■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then go to step 1, and recheck. If the ECM/PCM was updated and DTCs are not indicated, troubleshooting is complete. If the ECM/PCM was substituted and DTCs are not indicated, replace the original ECM/PCM (see page 11-228).■

DTC Troubleshooting (cont'd)

DTC 71-21: Right-front or Left-rear Different Diameter Tire Malfunction

DTC 71-22: Left-front or Right-rear Different Diameter Tire Malfunction

DTC 71-23: Right-front and Right-rear Different Diameter Tire Malfunction

DTC 71-24: Left-front and Left-rear Different Diameter Tire Malfunction

DTC 71-25: Right-front and Left-front Different Diameter Tire Malfunction

DTC 71-26: Right-rear and Left-rear Different Diameter Tire Malfunction

DTC 71-27: Right-front or Left-rear Different Diameter Tire Malfunction

DTC 71-28: Left-front or Right-rear Different Diameter Tire Malfunction

DTC 71-29: Right-front and Right-rear Different Diameter Tire Malfunction

DTC 71-2A: Left-front and Left-rear Different Diameter Tire Malfunction

DTC 71-2B: Right-front and Left-front Different Diameter Tire Malfunction

DTC 71-2C: Right-rear and Left-rear Different Diameter Tire Malfunction

NOTE: The DTC is indicated when the vehicle has a different diameter tire(s) compared to the other tire(s).

DTC	Sectional
71-21	Right-front or left-rear
71-22	Left-front or right-rear
71-23	Right-front and right-rear
71-24	Left-front and left-rear
71-25	Right-front and left-front
71-26	Right-rear and left-rear
71-27	Right-front or left-rear
71-28	Left-front or right-rear
71-29	Right-front and right-rear
71-2A	Left-front and left-rear
71-2B	Right-front and left-front
71-2C	Right-rear and left-rear

1. Check the tires for proper inflation and the correct size (see page 18-5).
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
5. Check for DTCs with the HDS.

   Is DTC 71-21, 71-22, 71-23, 71-24, 71-25, 71-26, 71-27, 71-28, 71-29, 71-2A, 71-2B, or 71-2C indicated?

   YES—Replace tires as needed until all their diameters match (see page 18-5). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 81-xx*: Central Processing Unit (CPU) Internal Circuit Malfunction

*: Any two-character subcode (Except these combinations: DTC 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, and 81-59)

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 81-xx indicated?

   YES—If DTC 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, or 81-59 is indicated at the same time, do the appropriate troubleshooting first.
   If DTC 81-11, 81-3D, 81-3E, 81-51, 81-52, 81-53, 81-54, 81-55, 81-56, 81-57, 81-58, or 81-59 is not indicated. Replace the VSA modulator-control unit (see page 19-171).■

   NO—Intermittent failure, the system is OK at this time.■

DTC 81-11: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-52: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-54: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-56: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-58: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 81-11, 81-52, 81-54, 81-56, or 81-58 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171).■

   NO—Intermittent failure, the system is OK at this time.■

DTC Troubleshooting (cont'd)

DTC 81-51: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-53: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-55: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-57: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

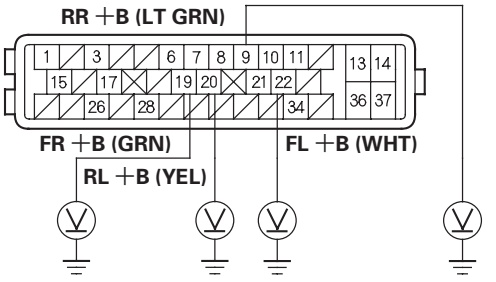
   Is DTC 81-51, 81-53, 81-55, or 81-57 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
7. Turn the ignition switch to ON (II).
8. Measure the voltage between body ground and the appropriate VSA modulator-control unit 37P connector terminals (see table).

DTC	VSA Modulator-control Unit 37P Connector Terminals
81-51	No. 19
81-53	No. 22
81-55	No. 9
81-57	No. 20

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there 0.1 V or more?

YES—Repair short to power in the wire between the appropriate wheel speed sensor and the VSA modulator-control unit. ■

NO—Replace the VSA modulator-control unit (see page 19-171). ■

DTC 81-3D: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-3E: Central Processing Unit (CPU) Internal Circuit Malfunction

DTC 81-59: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Turn the steering wheel from lock to lock several times.
5. Check for DTCs with the HDS.

   Is DTC 81-3D, 81-3E, or 81-59 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 83-13: ECM/PCM Communication Error

DTC 83-14: ECM/PCM Communication Error

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 83-13 or 83-14 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between the ECM/PCM connector A (44P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

5. Turn the ignition switch to LOCK (0).
6. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

10. Check for DTCs with the HDS.

    Is DTC 83-13 or 83-14 indicated?

    YES—Replace the VSA modulator-control unit (see page 19-171). ■

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). ■

DTC Troubleshooting (cont'd)

DTC 84-21: VSA Sensor Neutral Position not Writing

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Do the VSA sensor neutral position memorization (see page 19-169).
4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
5. Check for DTCs with the HDS.

   Is DTC 84-21 indicated?

   YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

   NO—The system is OK at this time. ■

DTC 86-01: F-CAN Bus-off Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 86-01 indicated?

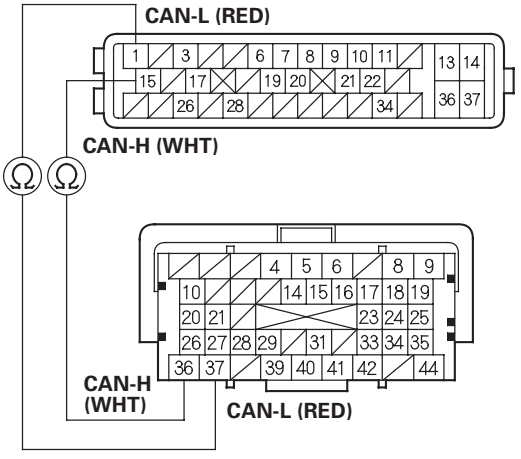
   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (44P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).

9. Check for continuity between the VSA modulator-control unit 37P connector terminal and ECM/PCM connector A (44P) terminal (see table).

Sign	VSA Modulator-control Unit 37P Connector Terminal	ECM/PCM Connector A (44P) Terminal
CAN-L	No. 1	No. 37
CAN-H	No. 15	No. 36

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Terminal side of female terminals

Is there continuity?

YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

NO—Repair open in the wire between the ECM/PCM and the VSA modulator-control unit. ■

DTC 86-11: F-CAN Communication with ECM/PCM Malfunction

DTC 86-21: F-CAN Communication with Engine Malfunction

DTC 86-22: F-CAN Communication with Engine Malfunction

DTC 86-23: F-CAN Communication with Engine Malfunction

DTC 86-24: F-CAN Communication with Engine Malfunction

DTC 86-25: F-CAN Communication with Engine Malfunction

DTC 86-41: F-CAN Communication with EAT Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle at 10 km/h (7 mph) or more.

   NOTE: Drive the vehicle on the road, not on a lift.
4. Check for DTCs with the HDS.

   Is DTC 86-11, 86-21, 86-22, 86-23, 86-24, 86-25, and/or 86-41 indicated?

   YES—If DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting first (see page 19-156). If DTC 86-01 is not indicated, go to step 5.

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there was an intermittent failure, the system is OK at this time. Check for loose terminals between ECM/PCM connector A (44P) and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■

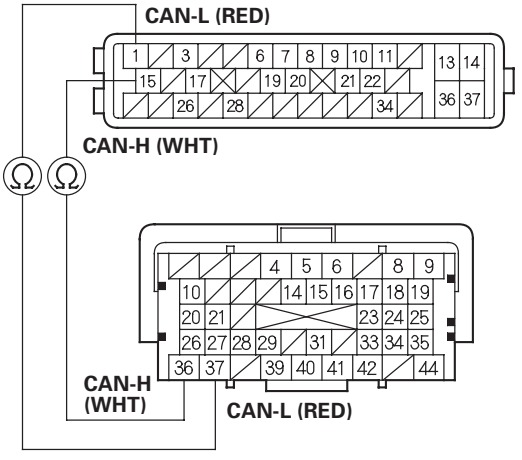
(cont'd)

DTC Troubleshooting (cont'd)

5. Turn the ignition switch to LOCK (0).
6. Short the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (44P).
8. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
9. Check for continuity between the VSA modulator-control unit 37P connector terminal and ECM/PCM connector A (44P) terminal (see table).

Sign	VSA Modulator-control Unit 37P Connector Terminal	ECM/PCM Connector A (44P) Terminal
CAN-L	No. 1	No. 37
CAN-H	No. 15	No. 36

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals



ECM/PCM CONNECTOR A (44P)
Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the ECM/PCM and the VSA modulator-control unit. ■

10. Reconnect all connectors.
11. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle at 10 km/h (7 mph) or more.

    NOTE: Drive the vehicle on the road, not on a lift.

14. Check for DTCs with the HDS.

    Is DTC 86-11, 86-21, 86-22, 86-23, 86-24, 86-25, and/or 86-41 indicated?

    YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). ■

DTC 86-31: F-CAN Communication with Gauge Control Module Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 86-31 indicated?

   YES—If DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting first (see page 19-156). If DTC 86-01 is not indicated, go to step 5.

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there was an intermittent failure, the system is OK at this time. Check for loose terminals between the gauge control module (tach) 36P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.

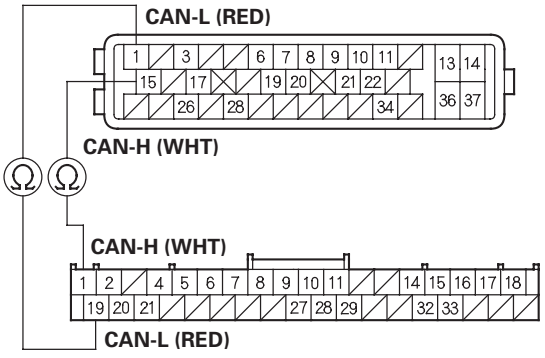
   Does the gauge indicators come on?

   YES—Go to step 6.

   NO—Do the gauge control module troubleshooting (see page 22-241). ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the gauge control module (tach) 36P connector.
8. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
9. Check for continuity between the VSA modulator-control unit 37P connector terminal and gauge control module (tach) 36P connector terminal (see table).

Sign	VSA Modulator-control Unit 37P Connector Terminal	Gauge Control Module (Tach) 36P Connector Terminal
CAN-L	No. 1	No. 19
CAN-H	No. 15	No. 1

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose terminals in the gauge control module (tach) 36P connector. If necessary, substitute a known-good gauge control module (tach), then go to step 1, and recheck. If no DTCs are indicated, replace the original gauge control module (tach) (see page 22-277). If DTC 86-31 resets, replace the VSA modulator-control unit (see page 19-171).

NO—Repair open in the wire between the gauge control module (tach) and the VSA modulator-control unit. ■

DTC Troubleshooting (cont'd)

DTC 86-71: F-CAN Communication with Yaw Rate-Lateral Acceleration Sensor Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

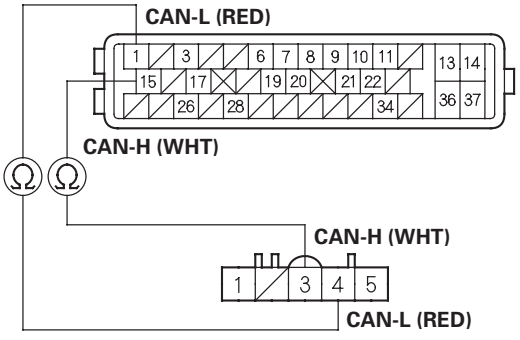
   Is DTC 86-71 indicated?

   YES—If DTC 86-01 is indicated at the same time, do the DTC 86-01 troubleshooting first (see page 19-156). If DTC 86-01 is not indicated, go to step 5.

   NO—If any other DTCs are indicated, go to the indicated DTCs troubleshooting. If DTCs are not indicated, there was an intermittent failure, the system is OK at this time. Check for loose terminals at the yaw rate-lateral acceleration sensor 5P connector and the VSA modulator-control unit 37P connector. Refer to intermittent failures troubleshooting (see page 19-98). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the yaw rate-lateral acceleration sensor 5P connector (see page 19-169).
7. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
8. Check for continuity between the VSA modulator-control unit 37P connector terminal and the yaw rate-lateral acceleration sensor 5P connector terminal (see table).

Sign	VSA Modulator-control Unit 37P Connector Terminal	Yaw Rate-lateral Acceleration Sensor 5P Connector Terminal
CAN-L	No. 1	No. 4
CAN-H	No. 15	No. 3

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals



YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR
Wire side of female terminals

Is there continuity?

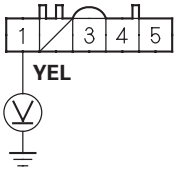
YES—Go to step 9.

NO—Repair open in the wire between the yaw rate-lateral acceleration sensor and the VSA modulator-control unit. ■

9. Turn the ignition switch to ON (II).

10. Measure the voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 1 and body ground.

YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 11.

NO—Check the No. 4 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 4 (7.5 A) fuse and yaw rate-lateral acceleration sensor. ■

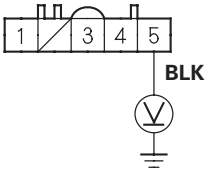
11. Turn the ignition switch to LOCK (0).

12. Reconnect the yaw rate-lateral acceleration sensor 5P connector.

13. Turn the ignition switch to ON (II).

14. Measure the voltage between yaw rate-lateral acceleration sensor 5P connector terminal No. 5 and body ground.

YAW RATE-LATERAL ACCELERATION SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 0.1 V or less?

YES—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

NO—Repair open in the wire between the yaw rate-lateral acceleration sensor and body ground (G602). ■

DTC Troubleshooting (cont'd)

DTC 107-22: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to LOCK (0) to cool the VSA modulator-control unit, and wait 1 hour or more.
2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
5. Check for DTCs with the HDS.

   Is DTC 107-22 indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171). ■

   NO—The system is OK at this time. ■

DTC 108-21: Steering Angle Sensor Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

4. Check for DTCs with the HDS.

   Is DTC 108-21 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■

5. Turn the ignition switch to LOCK (0).
6. Substitute a known-good steering angle sensor (see page 19-168).
7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle.

   NOTE: Drive the vehicle on the road, not on a lift.

10. Check for DTCs with the HDS.

    Is DTC 108-21 indicated?

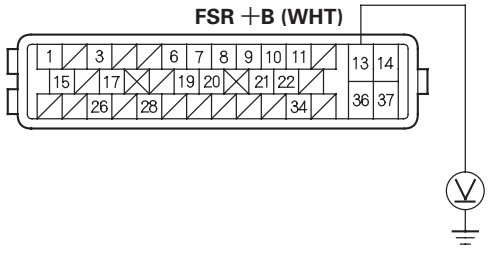
    YES—Replace the VSA modulator-control unit (see page 19-171). ■

    NO—Replace the original steering angle sensor (see page 19-168). ■

DTC 112-01: Central Processing Unit (CPU) Internal Circuit Malfunction

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
5. Measure the voltage between VSA modulator-control unit 37P connector terminal No. 13 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

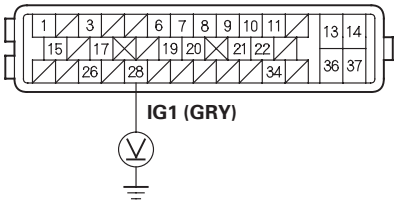
Is there battery voltage?

YES—Go to step 6.

NO—Check the battery performance (see page 22-67), and troubleshoot the alternator and regulator circuit (see page 4-28). ■

6. Measure the voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

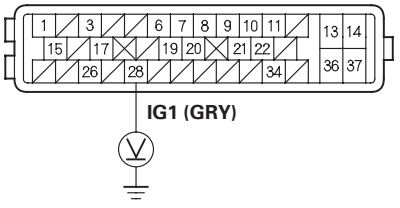
Is there 0 V?

YES—Go to step 7.

NO—Repair short to power in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. ■

7. Turn the ignition switch to ON (II).
8. Measure the voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

NO—Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. ■

DTC Troubleshooting (cont'd)

DTC 121-xx*: VSA Solenoid Valve Malfunction

DTC 122-xx*: VSA Solenoid Valve Malfunction

DTC 123-xx*: VSA Solenoid Valve Malfunction

DTC 124-xx*: VSA Solenoid Valve Malfunction

*: Any two-character subcode (see table)

DTC		Sectional	Valve
121	-01	Right-front and left-rear	Regulator
	-02		
	-11		
	-21		
	-24		
122	-01		Suction
	-21		
	-22		
	-23		
123	-01	Left-front and right-rear	Regulator
	-02		
	-11		
	-21		
	-24		
124	-01		Suction
	-21		
	-22		
	-23		

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II) again.
4. Check for DTCs with the HDS.

   Is DTC 121-xx, 122-xx, 123-xx, or 124-xx indicated?

   YES—Replace the VSA modulator-control unit (see page 19-171). ■

   NO—Intermittent failure, the system is OK at this time. ■

Symptom Troubleshooting

VSA activation indicator does not go off, and no DTCs are stored

1. Turn the ignition switch to ON (II).
2. Check the VSA activation indicator for several seconds when the ignition switch is turned to ON (II).

   Does the indicator come on then go off?

   YES—The system is OK at this time. ■

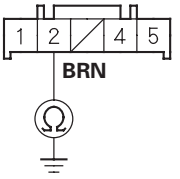
   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Disconnect the VSA OFF switch 5P connector (see page 19-170).
5. Check the VSA OFF switch (see page 19-170).

   Is the VSA OFF switch OK?

   YES—Go to step 6.

   NO—Replace the VSA OFF switch (see page 19-170). ■
6. Disconnect the gauge control module (tach) 36P connector.
7. Check for continuity between VSA OFF switch 5P connector terminal No. 2 and body ground.

VSA OFF SWITCH 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the gauge control module (tach) and the VSA OFF switch. ■

NO—Substitute a known-good gauge control module (tach) (see page 22-277), then go to step 1, and recheck. If it is OK, replace the original gauge control module (tach) (see page 22-277).

Symptom Troubleshooting (cont'd)

ABS indicator, brake system indicator, and VSA indicator do not go off

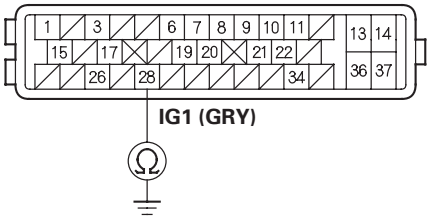
1. Turn the ignition switch to LOCK (0).
2. Check the No. 4 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse blown?

   YES—Go to step 3.

   NO—Reinstall the checked fuse, then go to step 9.
3. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
4. Disconnect the yaw rate-lateral acceleration sensor 5P connector (see page 19-169).
5. Check for continuity between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit or the yaw rate-lateral acceleration sensor. ■

NO—Install a new No. 4 (7.5 A) fuse in the under-dash fuse/relay box, then go to step 6.

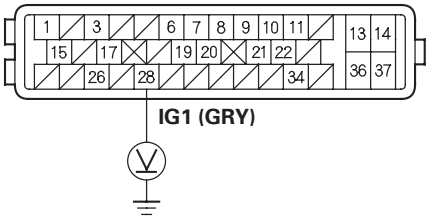
6. Reconnect all connectors.
7. Turn the ignition switch to ON (II).
8. Check the ABS indicator, the brake system indicator and the VSA indicator for several seconds when the ignition switch is tuned to ON (II).

   Does the indicators come on then go off?

   YES—Troubleshooting is complete. ■

   NO—Replace the VSA modulator-control unit (see page 19-171). ■
9. Disconnect the VSA modulator-control unit 37P connector (see step 2 on page 19-171).
10. Turn the ignition switch to ON (II).
11. Measure the voltage between VSA modulator-control unit 37P connector terminal No. 28 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there battery voltage?

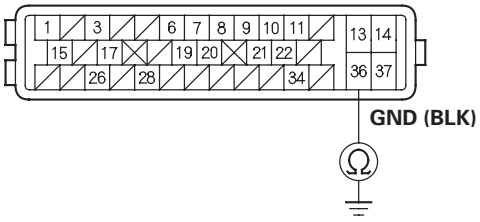
YES—Go to step 12.

NO—Repair open in the wire between the No. 4 (7.5 A) fuse in the under-dash fuse/relay box and the VSA modulator-control unit. ■

12. Turn the ignition switch to LOCK (0).

13. Check for continuity between VSA modulator-control unit 37P connector terminal No. 36 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

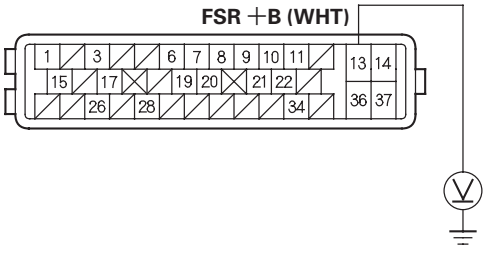
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G202). ■

14. Measure the voltage between VSA modulator-control unit 37P connector terminal No. 13 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 15.

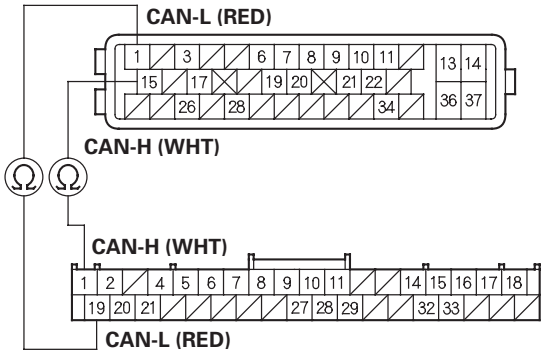
NO—Repair open in the wire between the No. 3 (40 A) fuse in the under-hood fuse/relay box and the VSA modulator-control unit. ■

15. Disconnect the gauge control module (tach) 36P connector.

16. Check for continuity between VSA modulator-control unit 37P connector terminal and gauge control module (tach) 36P connector terminal (see table).

Sign	VSA Modulator-control Unit 37P Connector Terminal	Gauge Control Module (Tach) 36P Connector Terminal
CAN-L	No. 1	No. 19
CAN-H	No. 15	No. 1

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

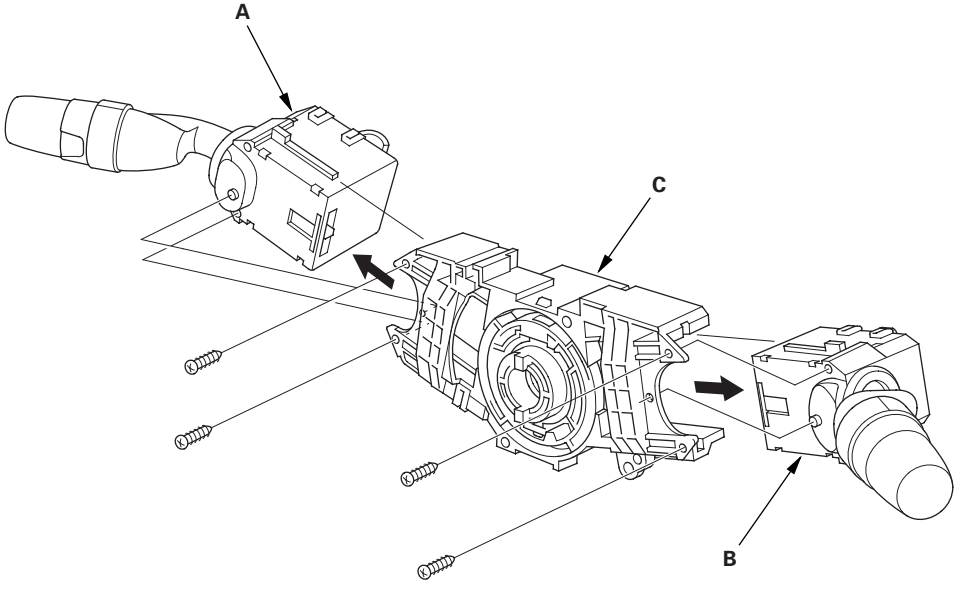
YES—Check for loose terminals in the VSA modulator-control unit 37P connector. If necessary, substitute a known-good VSA modulator-control unit (see page 19-171), and retest. ■

NO—Repair open in the wire between the gauge control module (tach) and the VSA modulator-control unit. ■

Steering Angle Sensor Replacement

NOTE: Do not damage or drop the combination switch as the steering angle sensor is sensitive to shock and vibration.

1. With the wheels in the straight-ahead position and the steering wheel centered, remove the steering wheel (see page 17-6).
2. Remove the steering column covers (see page 17-9) and the cable reel (see page 24-200).
3. Remove the combination switch assembly (see step 11 on page 17-11).
4. Remove the combination light switch (A) and the wiper/washer switch (B) from the combination switch body assembly (C).



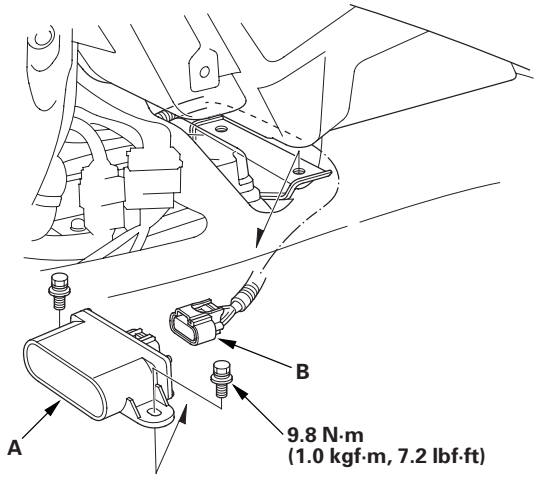
5. Install the combination switch body assembly in the reverse order of removal.

   NOTE:
   - Do not remove the steering angle sensor from the combination switch body.
   - When installing the cable reel, set the turn signal canceling sleeve position so that the arrow points straight up (see page 24-201).
   - When installing the combination switch, tighten the mounting screws to the specified torque and sequence shown (see page 17-12).

Yaw Rate-Lateral Acceleration Sensor Replacement

NOTE:
- Do not damage or drop the sensor as it is sensitive.
- Do not use power tools when replacing the sensor.

1. Turn the ignition switch to LOCK (0).
2. Remove the center console (see page 20-92).
3. Remove the yaw rate-lateral acceleration sensor (A) mounting bolts.

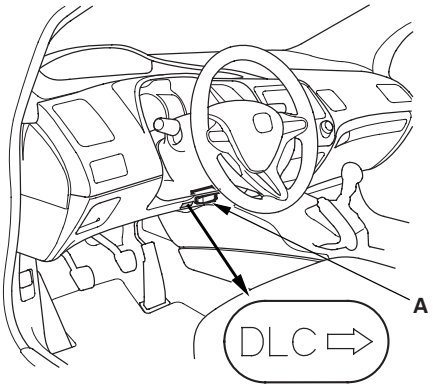


4. Pull out the yaw rate-lateral acceleration sensor, then disconnect the sensor connector (B).
5. Install the yaw rate-lateral acceleration sensor in the reverse order of removal.
6. Do the VSA sensor neutral position memorization (see page 19-169).

VSA Sensor Neutral Position Memorization

NOTE: Do not press the brake pedal during this procedure.

1. Park the vehicle on a flat and level surface, with the steering wheel in the straight ahead position.
2. With the ignition switch in LOCK (0), connect the HDS to the data link connector (DLC) (A) under the driver's side of the dashboard.

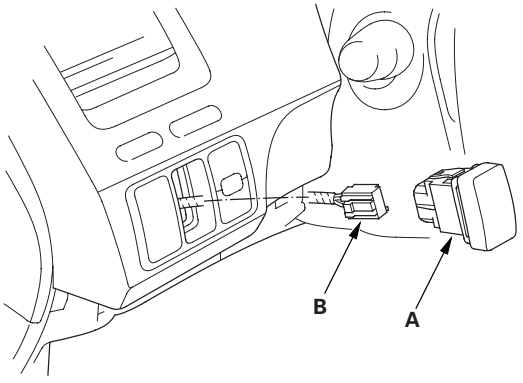


3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the VSA modulator-control unit. If it doesn't troubleshoot the DLC circuit (see page 11-204).
5. Select VSA ADJUSTMENT with the HDS, and follow the screen prompts.

   NOTE: See the HDS Help menu for specific instructions.
6. Turn the ignition switch to LOCK (0).

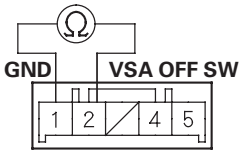
VSA OFF Switch Test

1. Turn the ignition switch to LOCK (0).
2. Remove the driver's dashboard lower cover (see page 20-102).
3. Push out the VSA OFF switch (A) from the back of the instrument panel.



4. Disconnect the VSA OFF switch 5P connector (B).
5. Check for continuity between the VSA OFF switch 5P connector terminals No. 1 and No. 2 . There should be continuity when the button is pressed, and no continuity when the button is released.

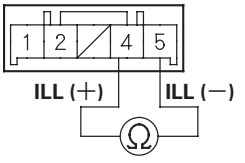
VSA OFF SWITCH 5P CONNECTOR



Terminal side of male terminals

6. Check for continuity between VSA OFF switch 5P connector terminals No. 4 and No. 5. There should be continuity at all times.

VSA OFF SWITCH 5P CONNECTOR



Terminal side of male terminals

7. Install the VSA OFF switch in the reverse order of removal.

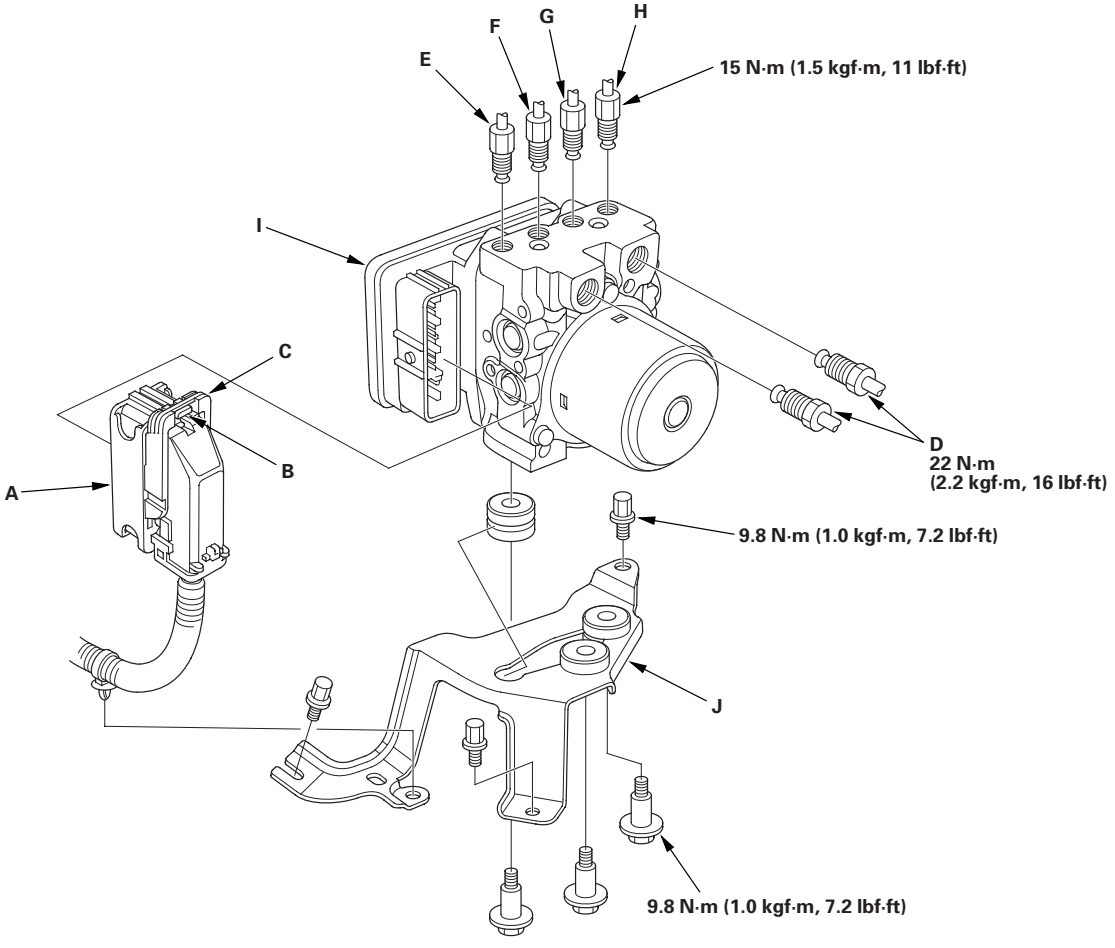
VSA Modulator-Control Unit Removal and Installation

NOTE:
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- Plug the ends of the hoses and the joints to prevent spilling brake fluid.

Removal

1. Turn the ignition switch to LOCK (0).

2. Disconnect the VSA modulator-control unit 37P connector (A) by pushing the lock (B) and pulling down the lever (C); the connector disconnects itself.



3. Disconnect the six brake lines from the VSA modulator-control unit.

   NOTE: Brake lines are connected to the master cylinder (D) and to the right-front (E), the left-rear (F), the right-rear (G), and the left-front (H) brake systems.

4. Remove the VSA modulator-control unit (I) with the bracket (J) from the body.

5. Remove the VSA modulator-control unit from the bracket.

(cont'd)

VSA Modulator-Control Unit Removal and Installation (cont'd)

Installation

1. Install the VSA modulator-control unit onto the bracket.
2. Install the bracket with the VSA modulator-control unit to the body.
3. Reconnect the six brake lines, then tighten the flare nuts to the specified torque.
4. Align the connecting surface of the VSA modulator-control unit 37P connector to the VSA modulator-control unit.
5. Pull up the lever of the VSA modulator-control unit 37P connector, then confirm the connector is fully seated.
6. Bleed the brake system (see page 19-9).
7. Do the VSA sensor neutral position memorization (see page 19-169).
8. Start the engine, and make sure the ABS and the VSA indicators go off.
9. Test-drive the vehicle, and make sure the ABS, and the VSA indicators do not come on.

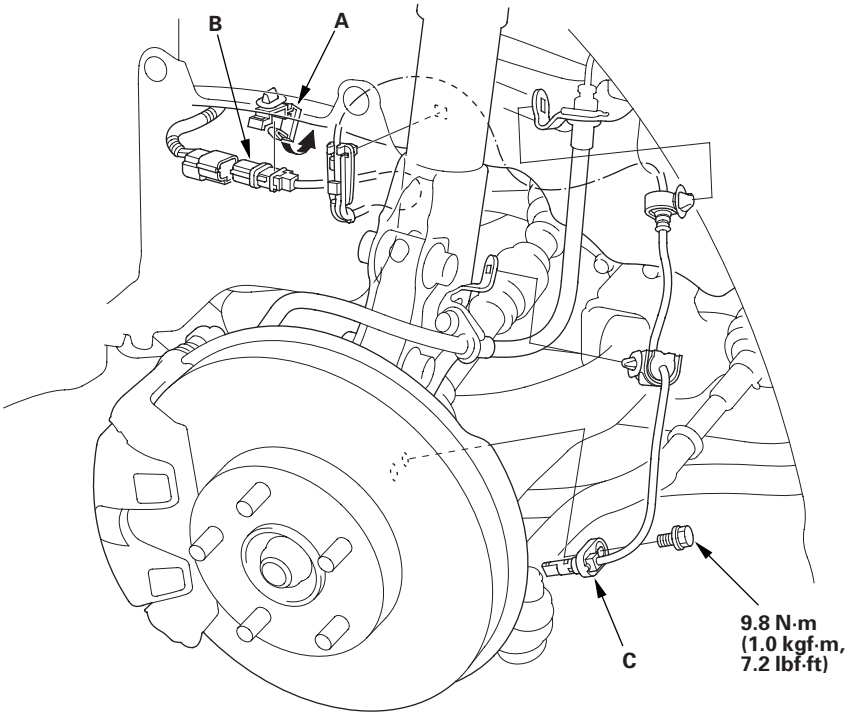
   NOTE: If the brake pedal is spongy, there may be air trapped in the modulator which could then be induced into the normal brake system during modulation. Bleed the brake system again (see page 19-9).

Wheel Speed Sensor Replacement

Special Tools Required
Guide pin tool 07AAG-SVBA100

Front

1. Turn the ignition switch to LOCK (0).
2. Release the clamp (A), then disconnect the wheel speed sensor connector (B).



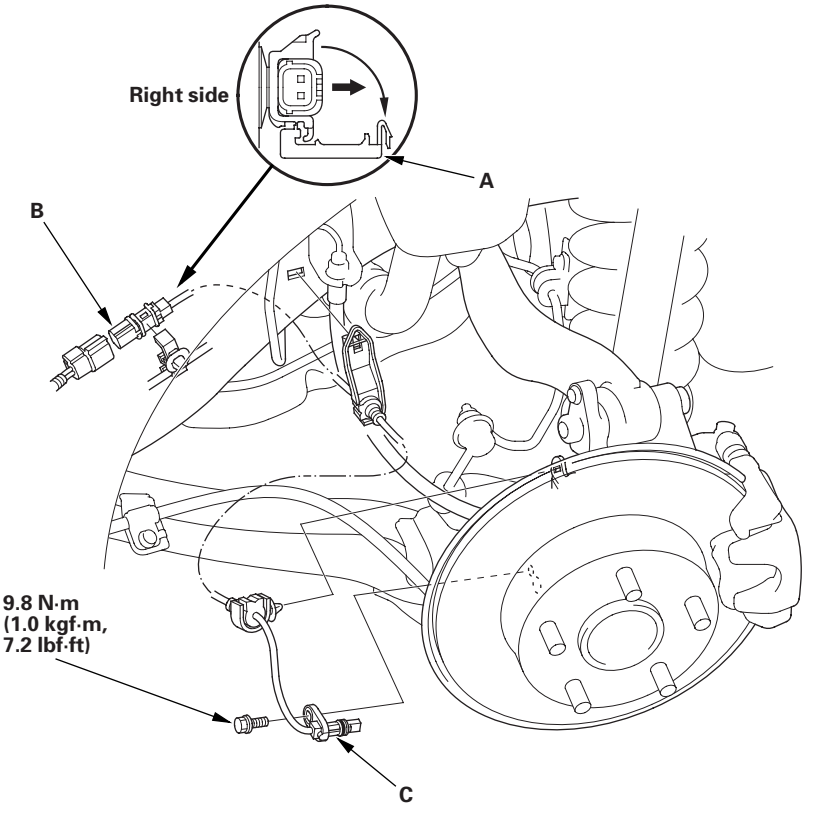
3. Remove the clips, the bolt, and the wheel speed sensor (C).
4. Install the wheel speed sensor in the reverse order of removal, and note these items:
   - Install the sensor carefully to avoid twisting the wires.
   - If the wheel speed sensor comes in contact with the wheel bearing, it is faulty, investigate the cause before replacing the sensor.
5. Start the engine, and make sure the ABS and the VSA indicators go off.
6. Test-drive the vehicle, and make sure the ABS and the VSA indicators do not come on.

(cont'd)

Wheel Speed Sensor Replacement (cont'd)

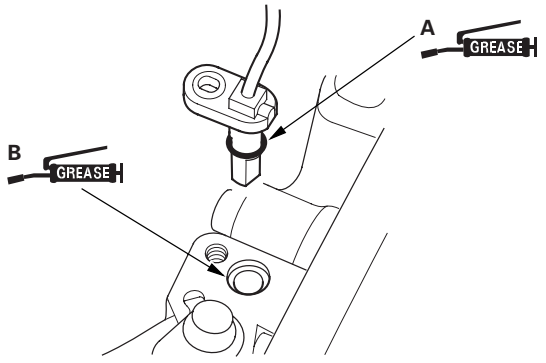
Rear

1. Turn the ignition switch to LOCK (0).
2. Release the clamp (A), then disconnect the wheel speed sensor connector (B).



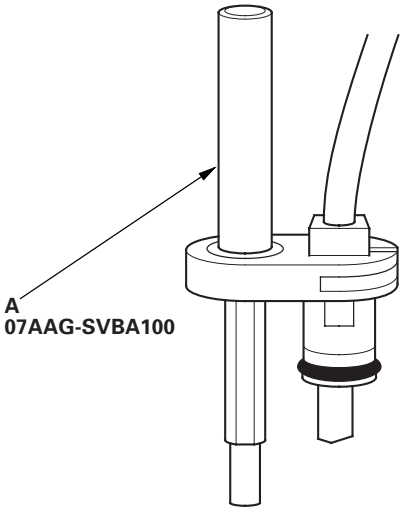
3. Remove the clips, the bolt, and the wheel speed sensor (C).

4. Apply multi-purpose grease to the wheel speed sensor O-ring (A) and the sensor hole in the knuckle (B).



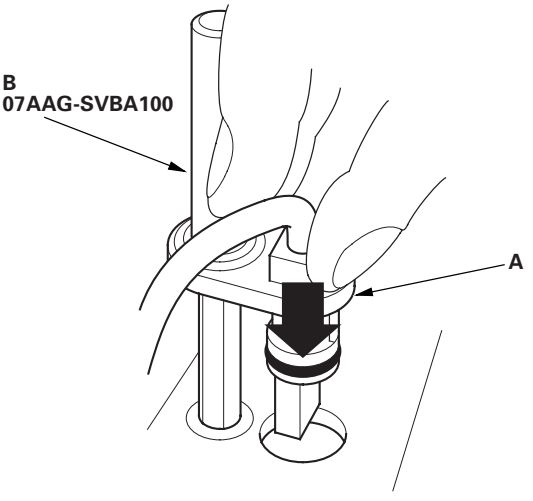
5. Insert the guide pin tool (A) into the wheel speed sensor bolt hole until the shoulder of the tool contacts the wheel speed sensor bracket.

   NOTE: To prevent O-ring damage, the wheel speed sensor must be installed with the guide pin tool.



6. Insert the wheel speed sensor (A) and the guide pin tool (B) into the bolt hole on the knuckle.

   NOTE: To ensure proper alignment when pushing the wheel speed sensor into the knuckle housing, do not hold the sensor bracket during installation, hold the sensor wire.



7. Gently push and pull the wheel speed sensor in and out to make sure the O-ring is sliding properly in its housing. While you are doing this, make sure the sensor doesn't come out of the knuckle assembly. If the sliding effort is too high, remove the wheel speed sensor, inspect the O-ring for damage, and start the installation process again.

8. Remove the guide pin tool, then install the bolt, and tighten it to specified torque.

9. Clean the mating surfaces between the brake disc and the inside of the wheel, then install the front wheel.

10. Start the engine, and make sure the ABS and the VSA indicators go off.

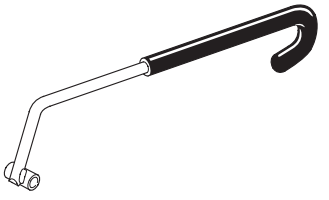
11. Test-drive the vehicle, and make sure the ABS and the VSA indicators do not come on.

DYNOMITE -2009-

Body

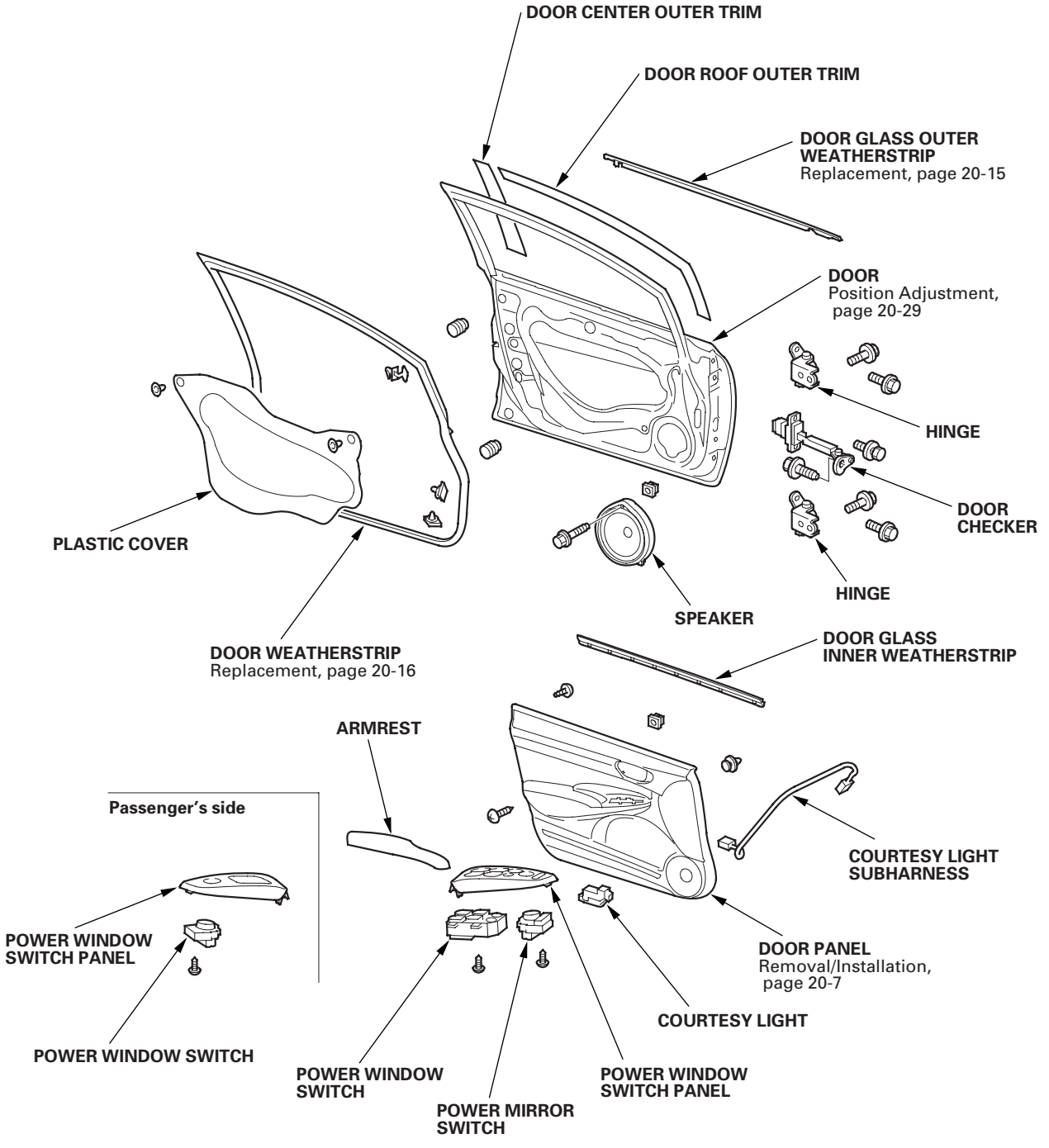
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAF-SNAA100	Torsion Bar Assembly Tool	1



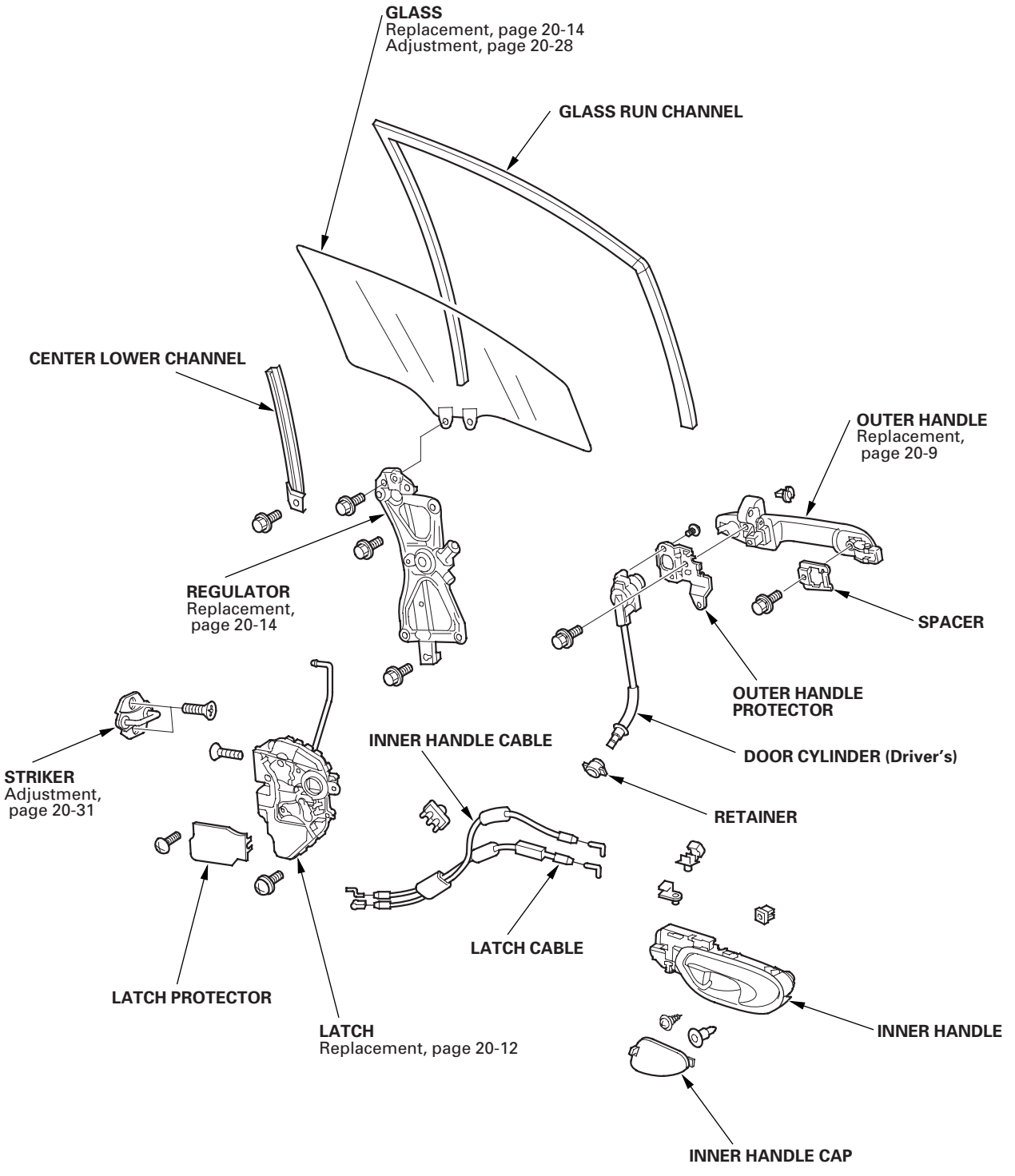
①

Component Location Index - Front Door

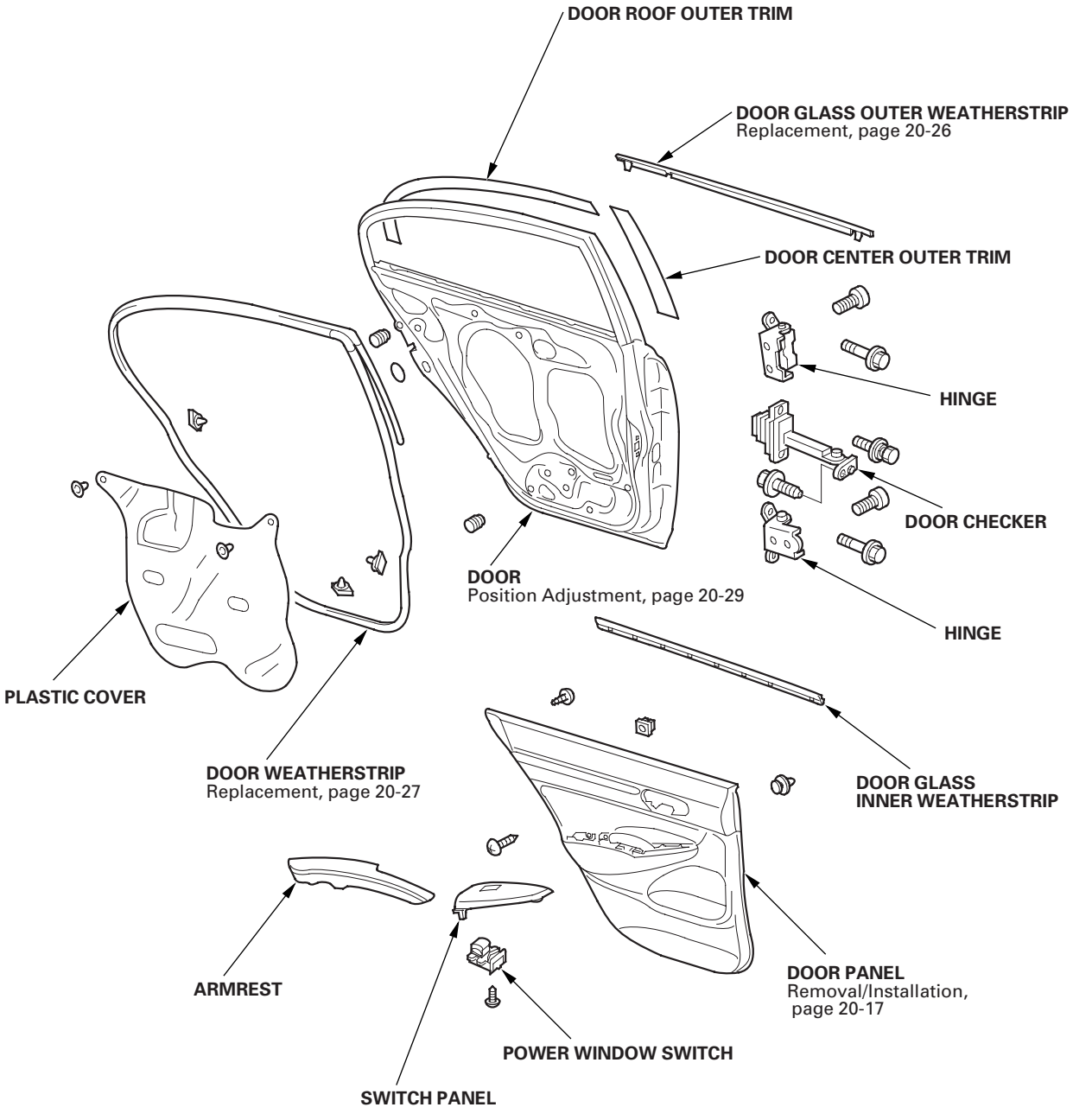


(cont'd)

Component Location Index - Front Door (cont'd)

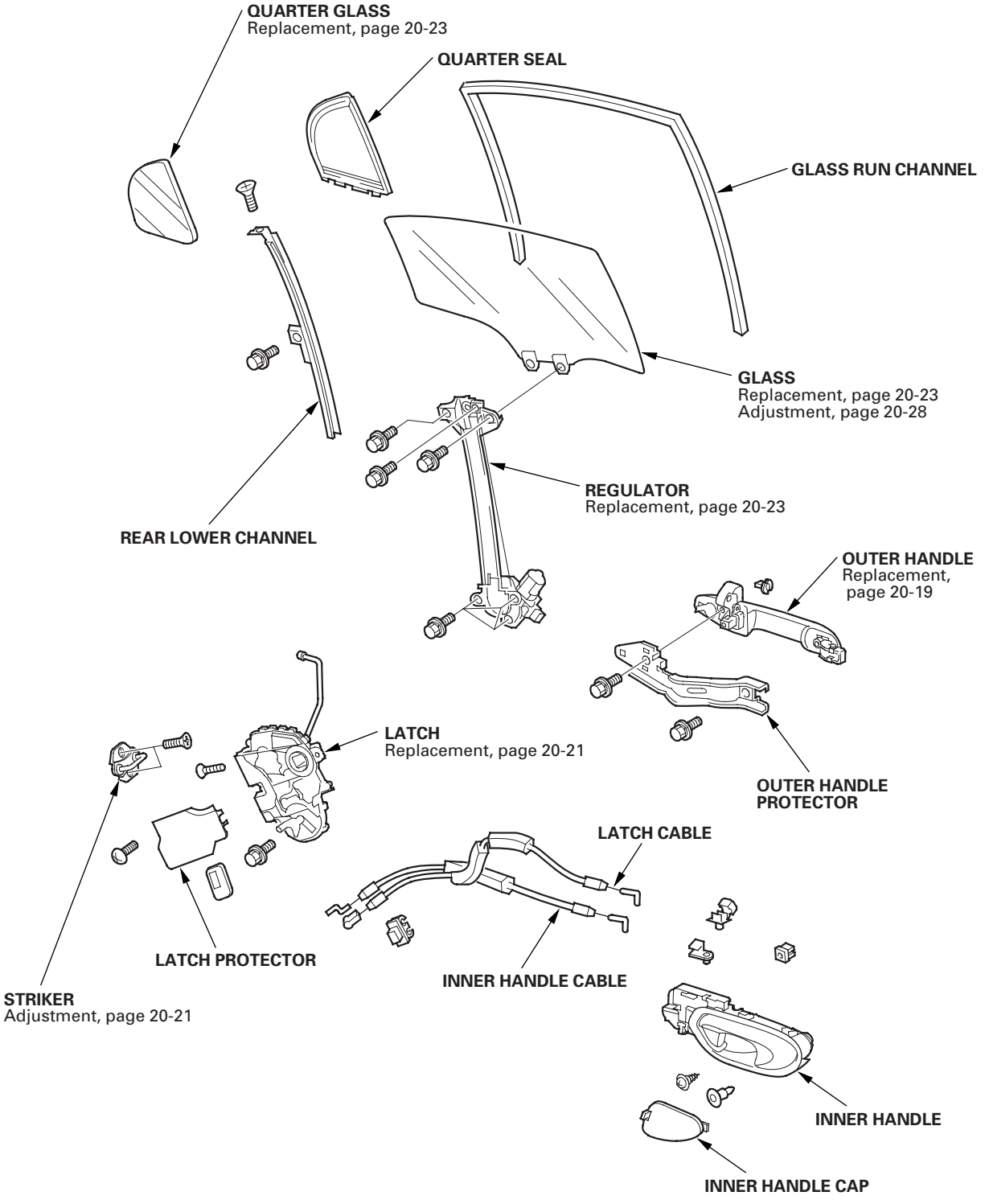


Component Location Index - Rear Door



(cont'd)

Component Location Index - Rear Door (cont'd)



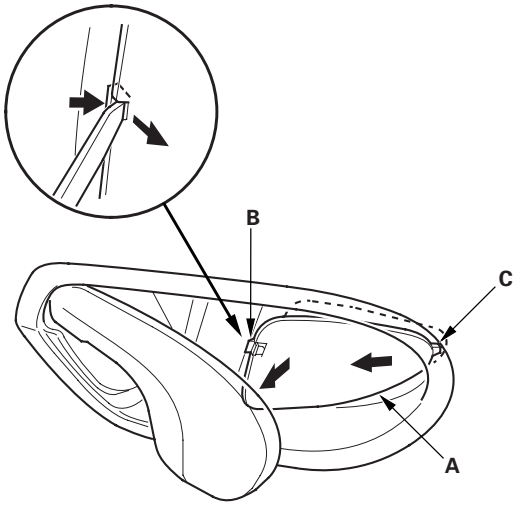
Front Door Panel Removal/Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

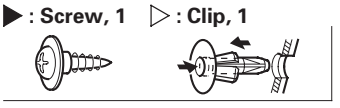
1. Raise the glass fully.

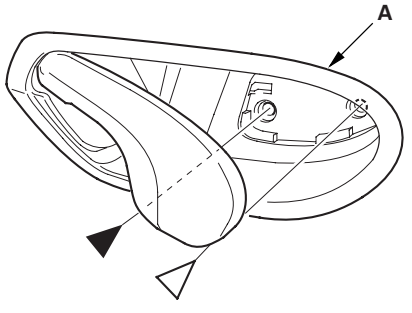
2. Pry out on the rear portion of the inner handle cap (A) with the appropriate trim tool, then release the hooks (B, C).



3. Remove the screw and the clip securing the inner handle (A).

Fastener Locations
▶ : Screw, 1 ▷ : Clip, 1

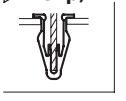


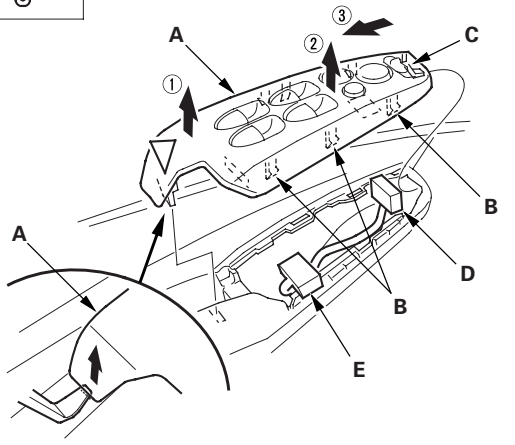


4. Remove the power window switch panel (A).

–1 Pry up on the rear edge of the switch panel with the appropriate trim tool, then release the rear clip.
–2 Pull out along the edge of the panel to release all of the hooks (B).
–3 Pull the switch panel rearward to release the front hook (C).
–4 Disconnect the power mirror switch connector (D) (driver's) and the power window switch connector (E).

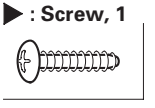
Fastener Location
▷ : Clip, 1

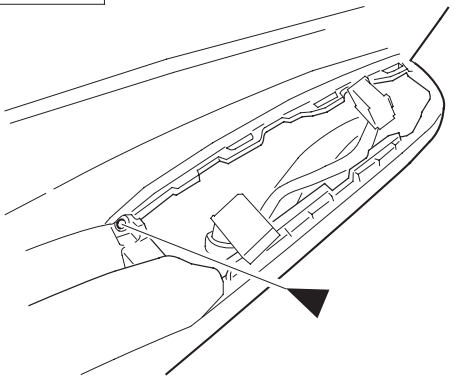




5. Remove the screw.

Fastener Location
▶ : Screw, 1





(cont'd)

Front Door Panel Removal/Installation (cont'd)

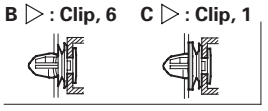
6. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.

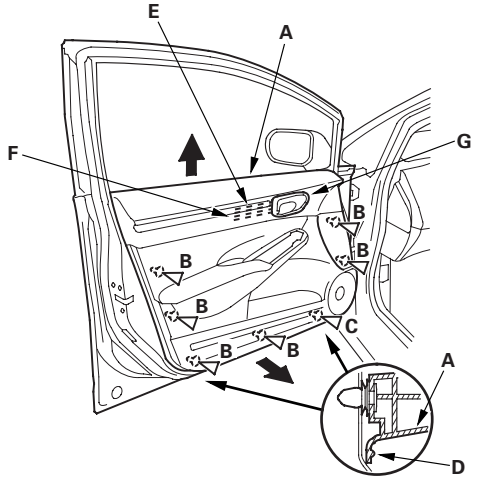
   1 Start at the bottom edge of the door panel, release the clips (B, C) that are just above the marks (D) on the edge of the panel with a commercially available trim pad remover.
   2 Detach the upper clips.
   3 Starting at the rear, pull the door panel upward.

   NOTE: The inner handle cable (E) and the latch cable (F) are connected to the inner handle (G). Do not pull the door panel up too far, or these cables will be damaged.

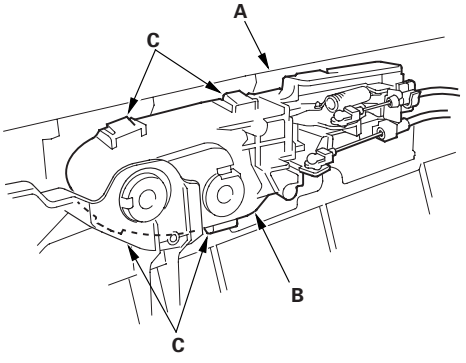
Fastener Locations

B ▷ : Clip, 6 C ▷ : Clip, 1

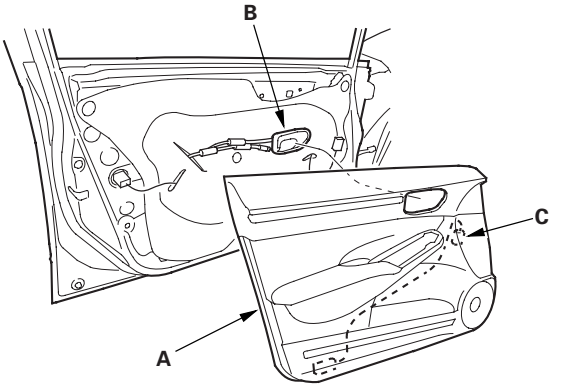




7. While holding the door panel (A) away from the door remove the inner handle (B) from the door panel by releasing the hooks (C).



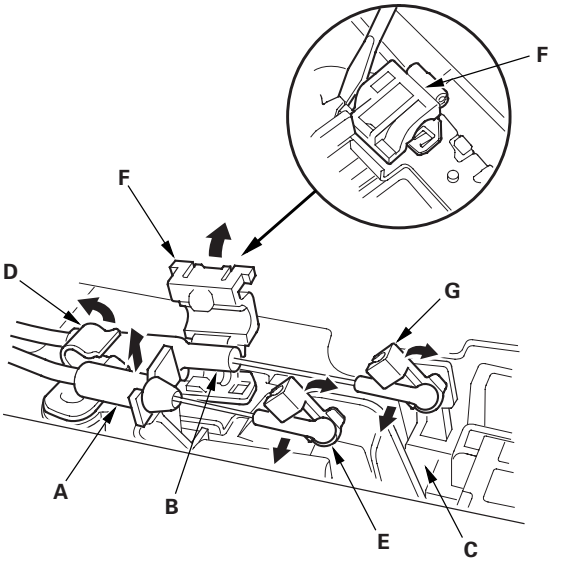
8. Remove the door panel (A) while pulling the inner handle (B) out through the hole in the door panel, and disconnect the courtesy light subharness connector (C).



9. If necessary, disconnect the inner handle cable (A) and the latch cable (B) from the inner handle (C), then remove the handle.

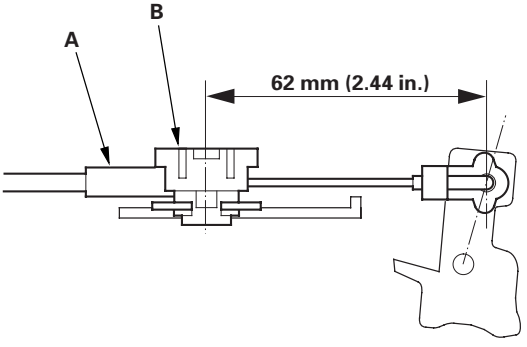
   1 Detach the inner handle cable fastener (D), then disconnect the inner handle cable from the cable fastener (E).
   2 Detach the latch cable fastener (F) with a flat-tip screwdriver, then disconnect the latch cable from the cable fastener (G).

   NOTE: If the cable fasteners are damaged or stress-whitened, replace them with new ones.



10. Install the door panel in the reverse order of removal, and note these items:

    - If the clips are damaged or stress-whitened, replace them with new ones.
    - Replace any damaged cable fasteners with new ones.
    - The latch cable (A) should be fixed to the cable fastener (B) with the latch in lock position.
    - Make sure the connectors are plugged in properly, and the cables are connected securely.
    - Make sure the window and power door lock operate properly.



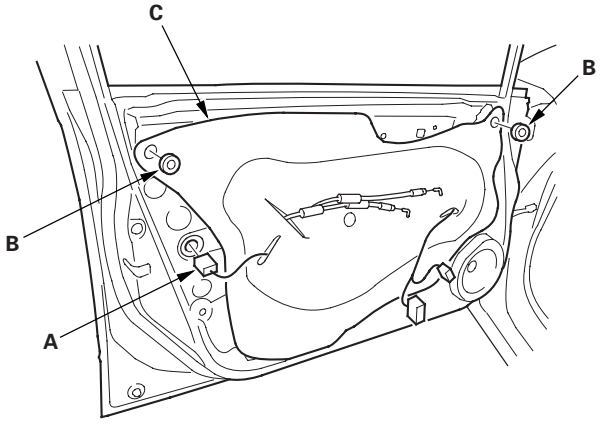
Front Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.

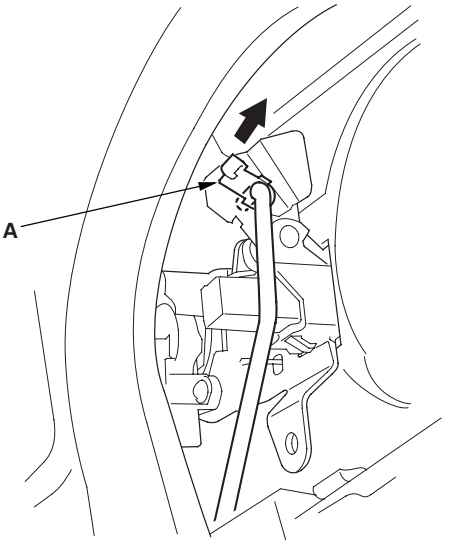
2. Remove the door panel and inner handle (see page 20-7).

3. Disconnect the power door lock actuator connector (A).



4. Remove the plug caps (B), then remove the plastic cover (C), as needed.

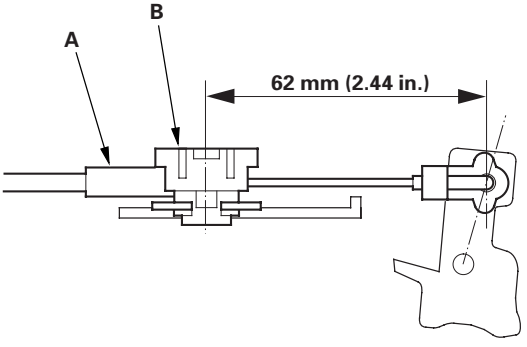
5. Detach the rod fastener (A).



(cont'd)

10. Install the door panel in the reverse order of removal, and note these items:

    - If the clips are damaged or stress-whitened, replace them with new ones.
    - Replace any damaged cable fasteners with new ones.
    - The latch cable (A) should be fixed to the cable fastener (B) with the latch in lock position.
    - Make sure the connectors are plugged in properly, and the cables are connected securely.
    - Make sure the window and power door lock operate properly.



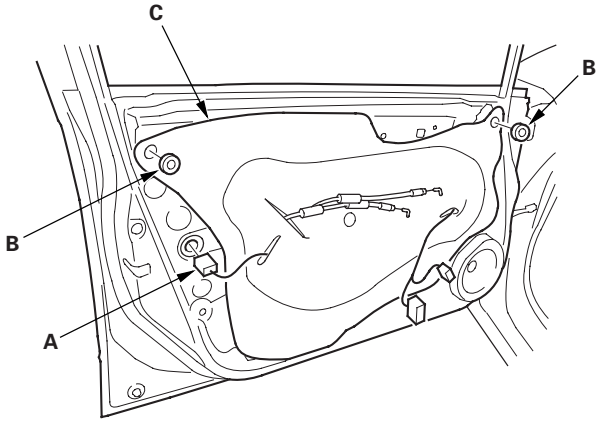
Front Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.

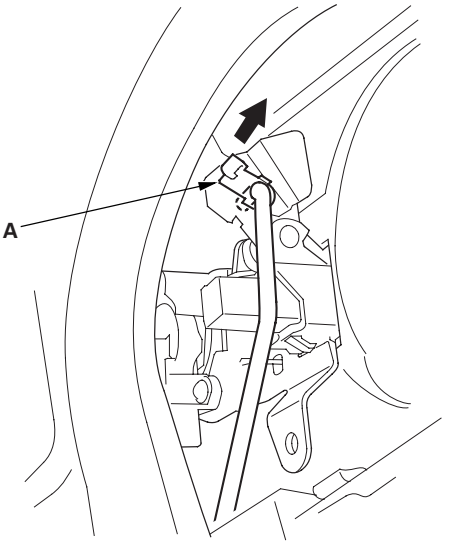
2. Remove the door panel and inner handle (see page 20-7).

3. Disconnect the power door lock actuator connector (A).



4. Remove the plug caps (B), then remove the plastic cover (C), as needed.

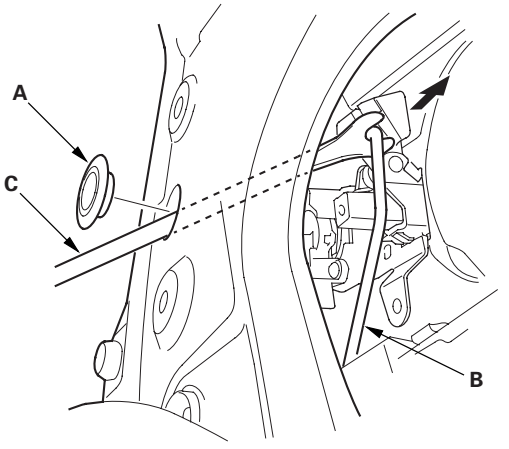
5. Detach the rod fastener (A).



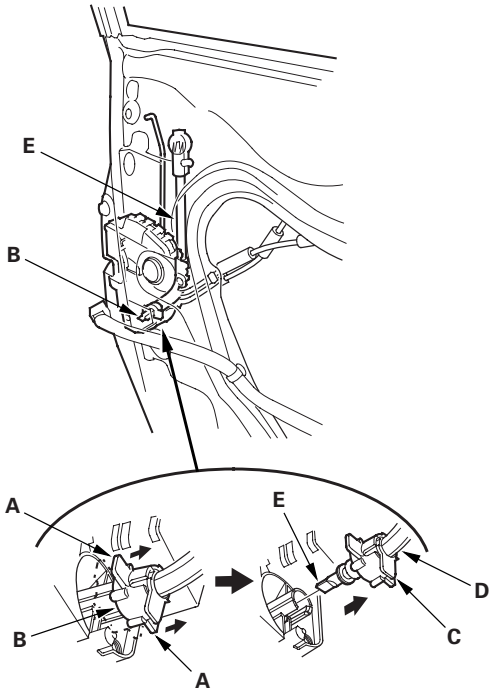
(cont'd)

Front Door Outer Handle Replacement (cont'd)

6. Remove the maintenance cap (A). Disconnect the outer handle rod (B) with a clip remover (C).



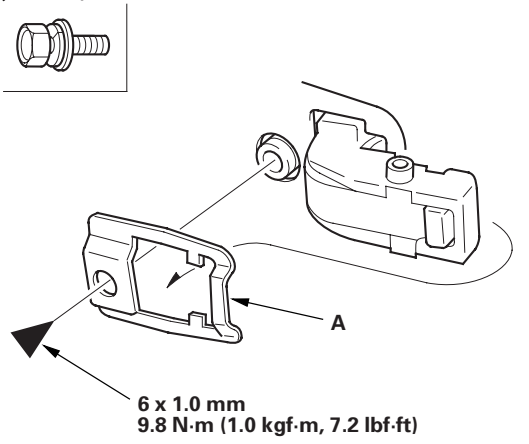
7. Driver's side: Pull both side flanges (A) of the retainer (B) outward, and pull the middle flange portion (C) of the outer casing cover (D) out, then disconnect the cylinder cable (E) from the latch.



8. Remove the bolt, then remove the spacer (A).

Fastener Location

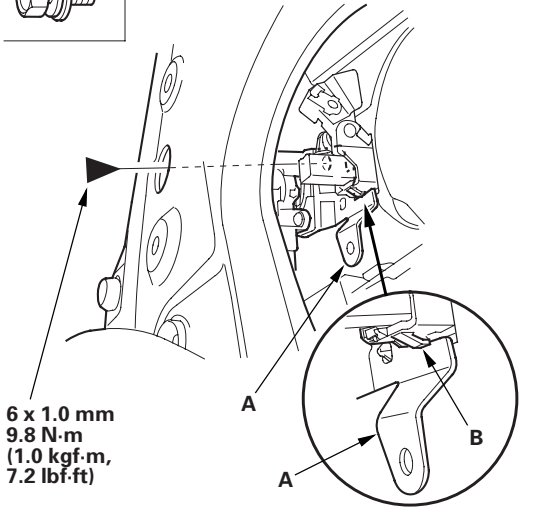
▶ : Bolt, 1



9. Remove the bolt securing the outer handle protector (A), then remove the protector by releasing the hook (B).

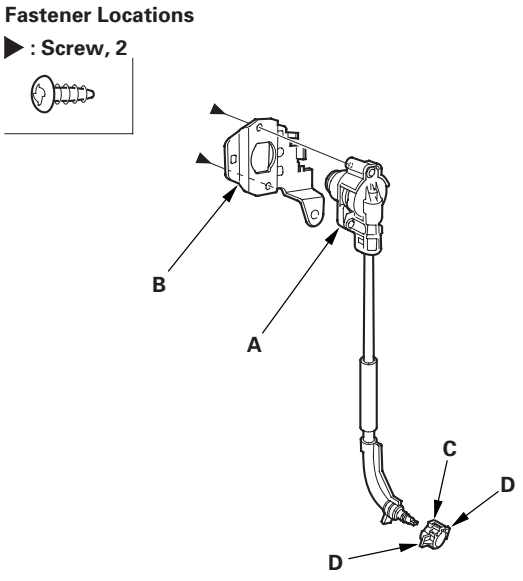
Fastener Location

▶ : Bolt, 1

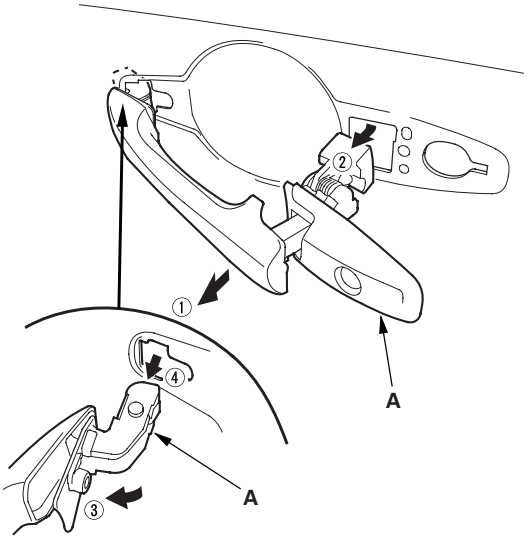


10. If necessary, remove the special screws, then separate the door cylinder (A) and the outer handle protector (B). If the retainer (C) is damaged, release the hooks (D), and replace it.

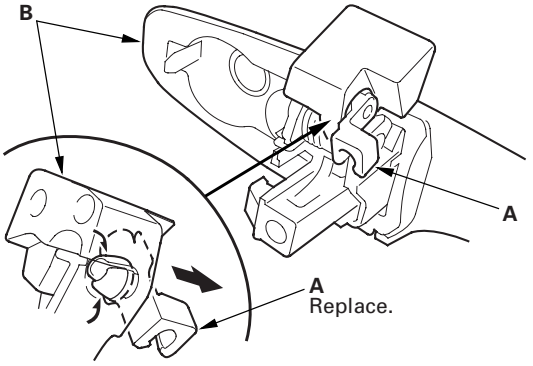
    NOTE: If removed, the special screws must be replaced.



11. While pulling the outer handle (A), remove the handle from the holes in the door panel. Take care not to scratch the door.



12. Remove the rod fastener (A) from the outer handle (B), then replace it with a new one.



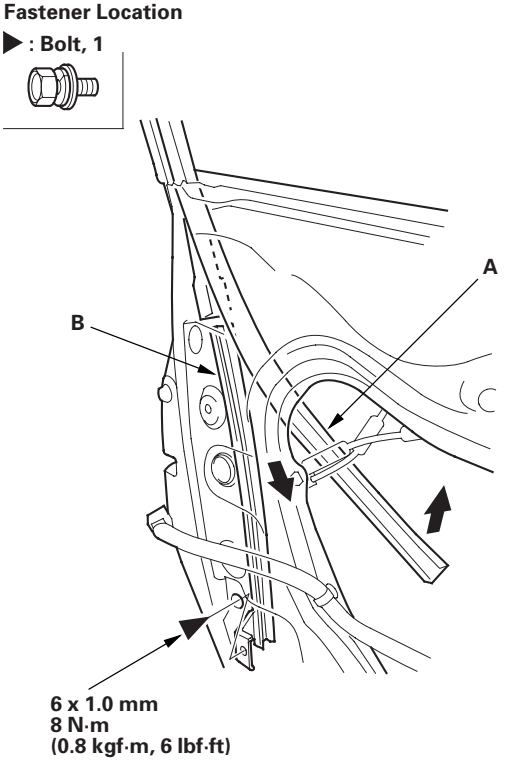
13. Install the handle in the reverse order of removal, and note these items:

    - Make sure the cylinder cable and each rod is connected securely.
    - Make sure the door key cylinder/door locks operate properly.
    - Make sure the door handle works properly.
    - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
    - Check for water leaks (see step 9 on page 20-29).

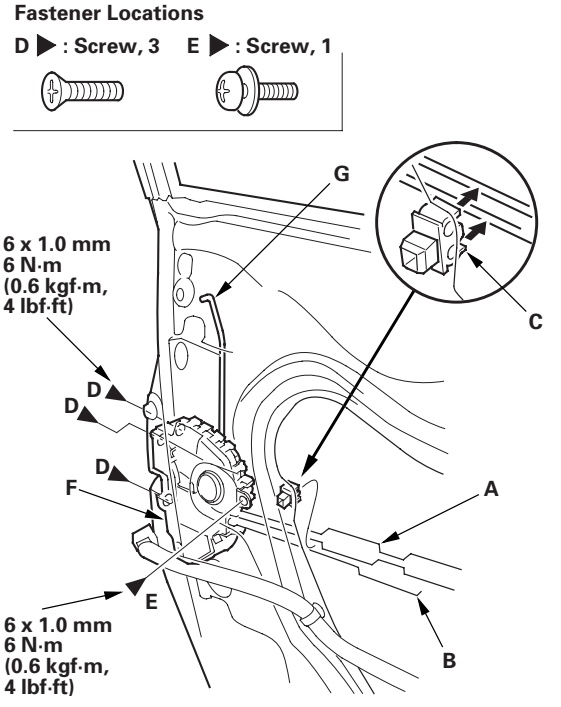
Front Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove the door panel and inner handle (see page 20-7).
3. Remove the plastic cover, as needed (see step 4 on page 20-9).
4. Detach the rod fastener (see step 5 on page 20-9).
5. Disconnect the outer handle rod from the outer handle (see step 6 on page 20-10).
6. Disconnect the cylinder cable from the latch (see step 7 on page 20-10).
7. Pull the glass run channel (A) away as needed, and remove the bolt, then remove the center lower channel (B) by pulling it downward.



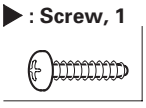
8. Detach the latch cable (A) and the inner handle cable (B) from the holder (C), then remove the screws (D, E) securing the latch (F), then remove the latch through the hole in the door. Take care not to bend the outer handle rod (G), the latch cable, or the inner handle cable.

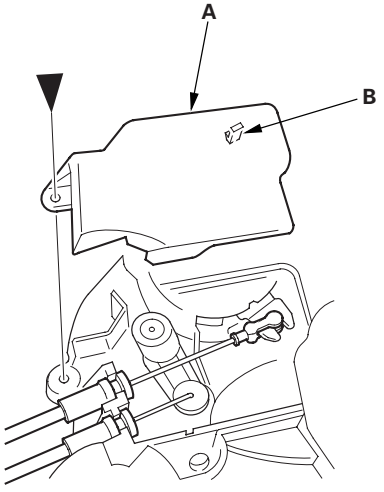


9. Remove the screw, then remove the latch protector (A) by releasing the hook (B).

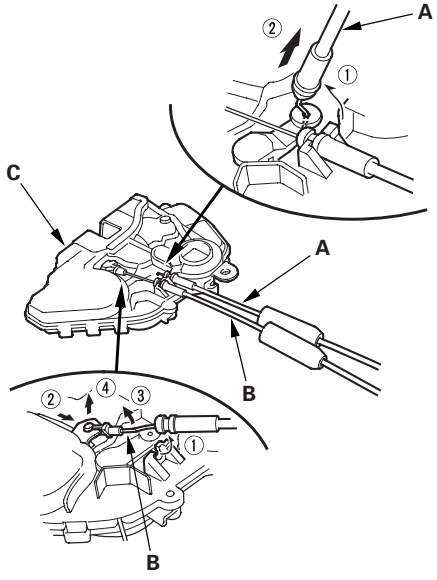
Fastener Location

▶ : Screw, 1





10. Disconnect the latch cable (A) and the inner handle cable (B) from the latch (C).



11. Install the latch in the reverse order of removal, and note these items:

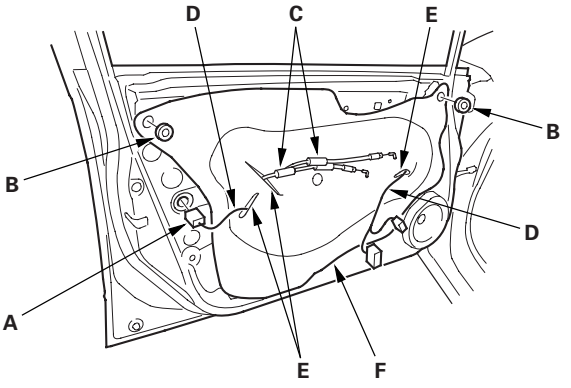
- Make sure the actuator connector is plugged in properly and each rod is connected securely.
- Make sure the door locks and opens properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks (see step 9 on page 20-29).

Front Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the door panel (see page 20-7).

2. Disconnect the power door lock actuator connector (A) and remove the plug caps (B).

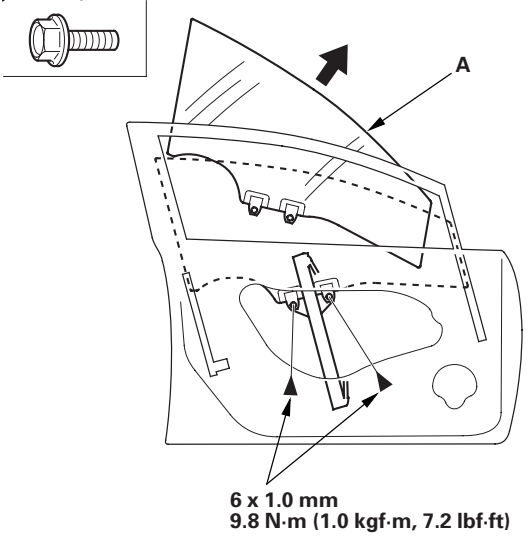


3. Pass the cables (C) and the harnesses (D) through the slits (E) in the plastic cover (F), then remove the plastic cover.

4. Carefully raise the glass (A) until you can see the bolts, then remove them. Carefully pull the glass out through the window slot. Take care not to drop the glass inside the door.

Fastener Locations

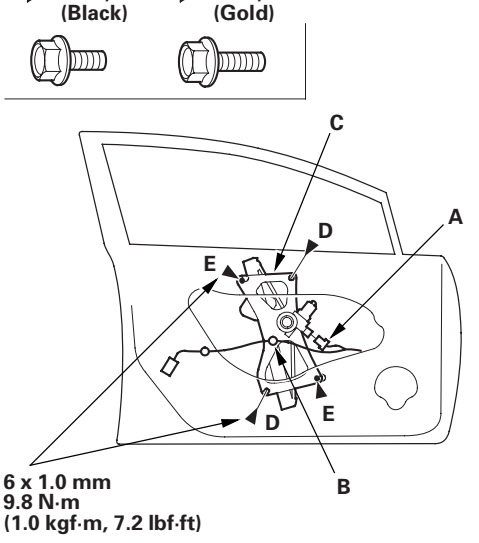
▶ : Bolt, 2



5. Disconnect the connector (A), and detach the harness clip (B) from the regulator (C).

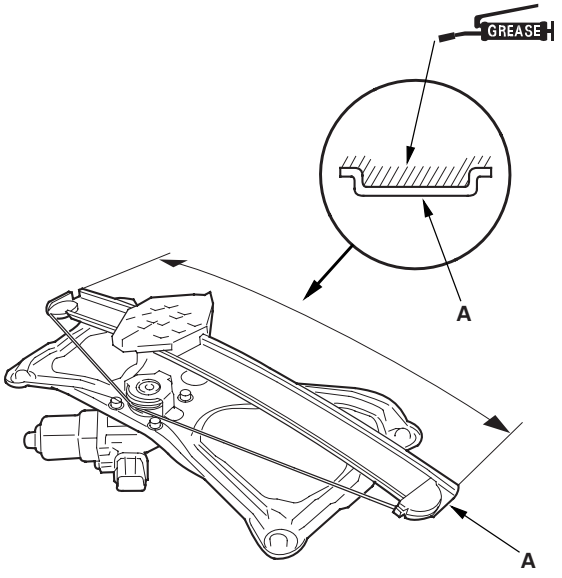
Fastener Locations

D ▶ : Bolt, 2 (Black) **E ▶ : Bolt, 2 (Gold)**



6. Remove the bolts (D), and loosen the bolts (E), then remove the regulator through the hole in the door.

7. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.



8. Install the glass and regulator in the reverse order of removal, and note these items:

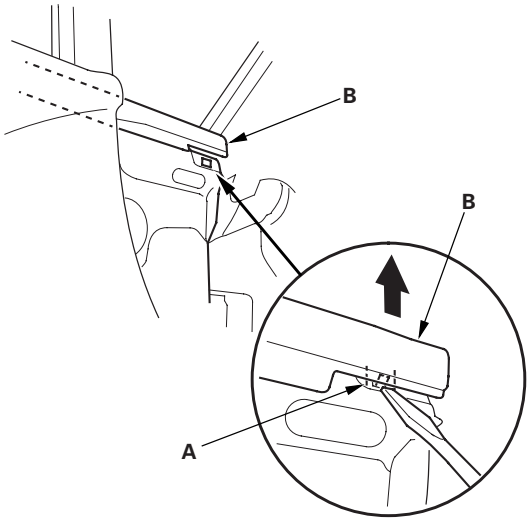
   - Roll the glass up and down to verify it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see page 20-28).
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
   - Check for water leaks (see step 9 on page 20-29).
   - Make sure the power door locks, the windows and the power mirror operate properly.
   - Test-drive and check for wind noise and rattles.

Front Door Glass Outer Weatherstrip Replacement

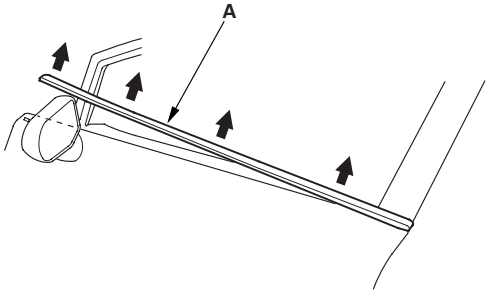
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. Lower the glass fully.

2. Release the front hook (A) from inside of the door, then pull up the front door glass outer weatherstrip (B).

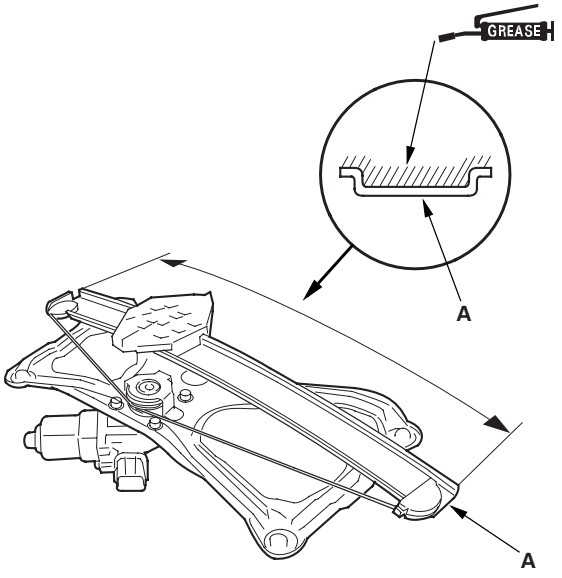


3. Starting at the front, slowly pull up the front door glass outer glass weatherstrip (A).



(cont'd)

7. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.



8. Install the glass and regulator in the reverse order of removal, and note these items:

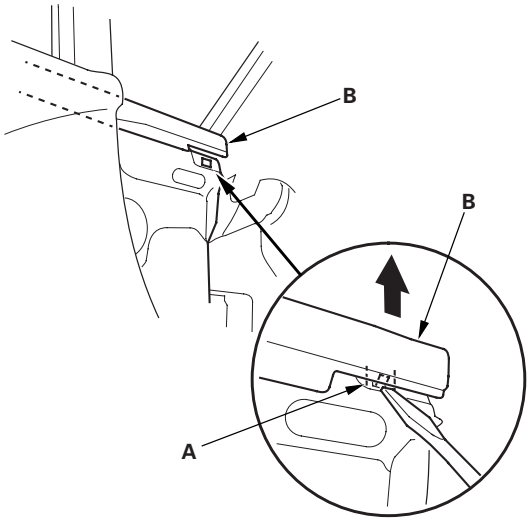
   - Roll the glass up and down to verify it moves freely without binding.
   - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
   - Adjust the position of the glass as necessary (see page 20-28).
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
   - Check for water leaks (see step 9 on page 20-29).
   - Make sure the power door locks, the windows and the power mirror operate properly.
   - Test-drive and check for wind noise and rattles.

Front Door Glass Outer Weatherstrip Replacement

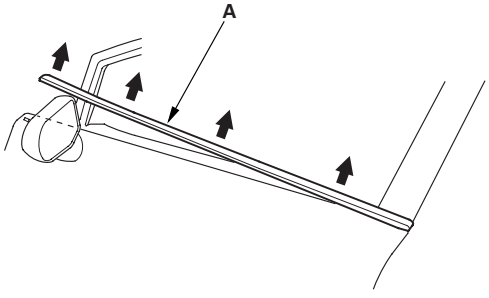
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. Lower the glass fully.

2. Release the front hook (A) from inside of the door, then pull up the front door glass outer weatherstrip (B).



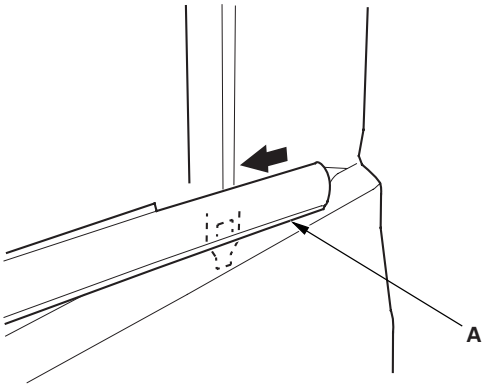
3. Starting at the front, slowly pull up the front door glass outer glass weatherstrip (A).



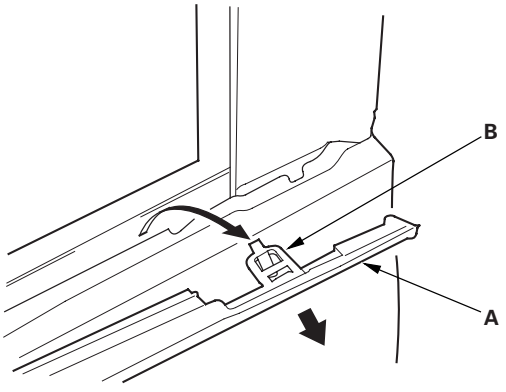
(cont'd)

Front Door Glass Outer Weatherstrip Replacement (cont'd)

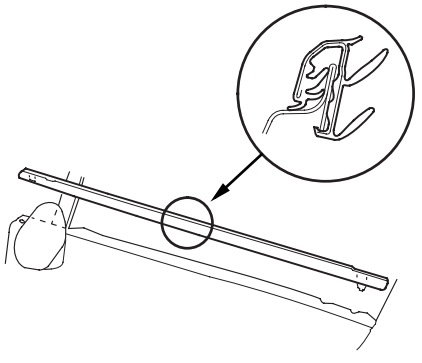
4. Slide the front door glass outer weatherstrip (A) forward.



5. Twist the front door glass outer weatherstrip (A) to pull the rear hook (B) out from the inside of the door, then remove the weatherstrip.



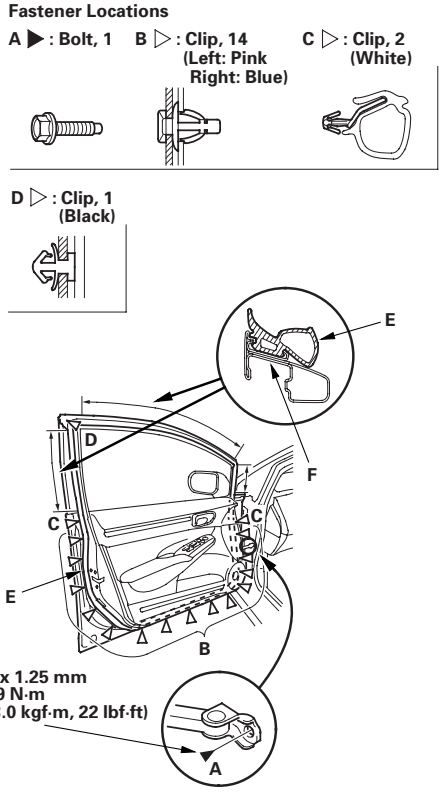
6. Push the clip portions of new front door glass outer weatherstrip into place securely.



Front Door Weatherstrip Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Remove the clips with a clip remover.

1. At the A-pillar, remove the door checker mounting bolt (A).



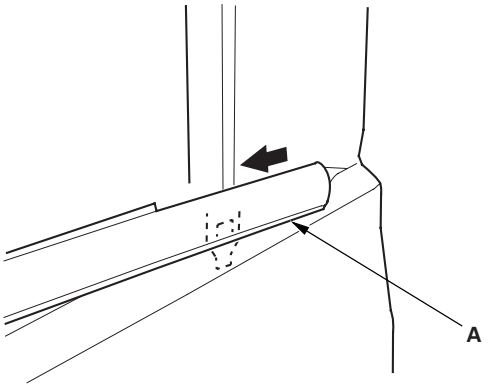
2. Detach the clips (B, C, D), then remove the door weatherstrip (E).

3. Install the weatherstrip in the reverse order of removal, and note these items:

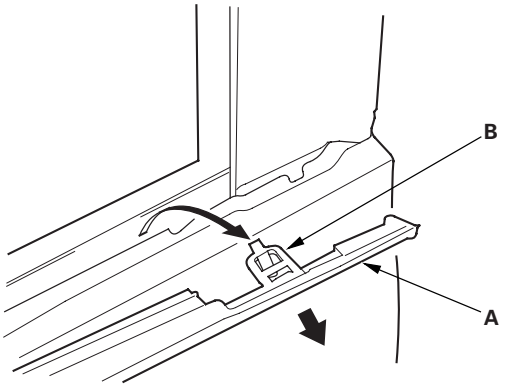
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Make sure the weatherstrip is installed in the holder (F) securely.
   - Apply medium strength liquid thread lock to door checker mounting bolt before installation.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
   - Check for water leaks (see step 9 on page 20-29).

Front Door Glass Outer Weatherstrip Replacement (cont'd)

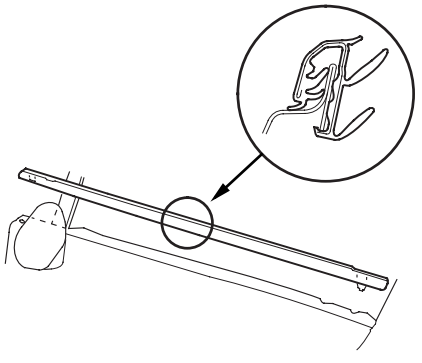
4. Slide the front door glass outer weatherstrip (A) forward.



5. Twist the front door glass outer weatherstrip (A) to pull the rear hook (B) out from the inside of the door, then remove the weatherstrip.



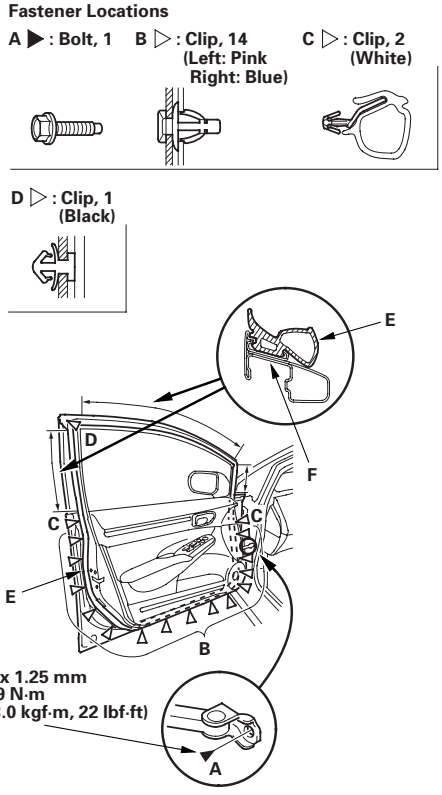
6. Push the clip portions of new front door glass outer weatherstrip into place securely.



Front Door Weatherstrip Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Remove the clips with a clip remover.

1. At the A-pillar, remove the door checker mounting bolt (A).



2. Detach the clips (B, C, D), then remove the door weatherstrip (E).

3. Install the weatherstrip in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Make sure the weatherstrip is installed in the holder (F) securely.
   - Apply medium strength liquid thread lock to door checker mounting bolt before installation.
   - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
   - Check for water leaks (see step 9 on page 20-29).

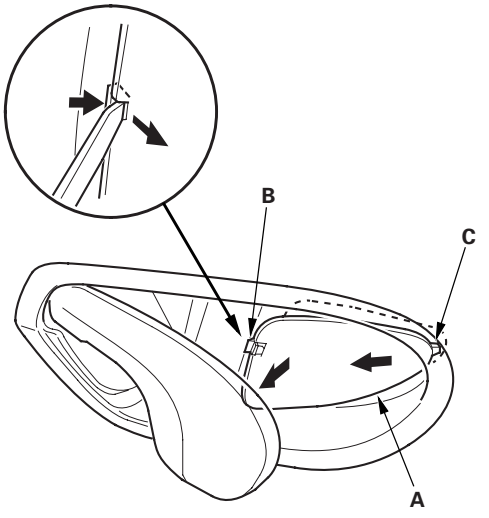
Rear Door Panel Removal/Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

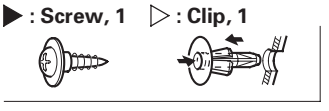
1. Raise the glass fully.

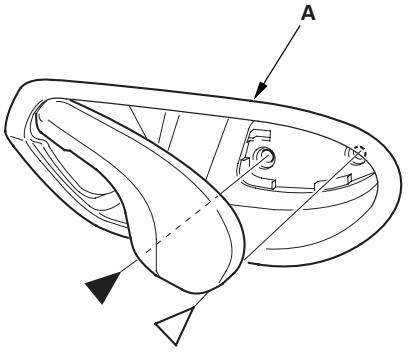
2. Pry out on the rear portion of the inner handle cap (A) with the appropriate trim tool, then release the hooks (B, C).



3. Remove the screw and clip securing the inner handle (A).

Fastener Locations
▶ : Screw, 1 ▷ : Clip, 1

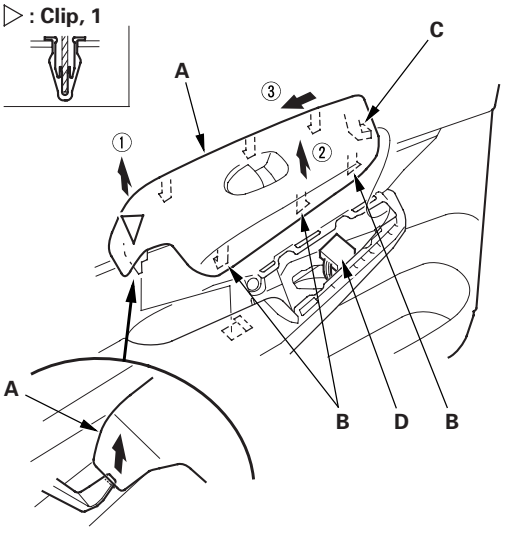




4. Remove the power window switch panel (A).

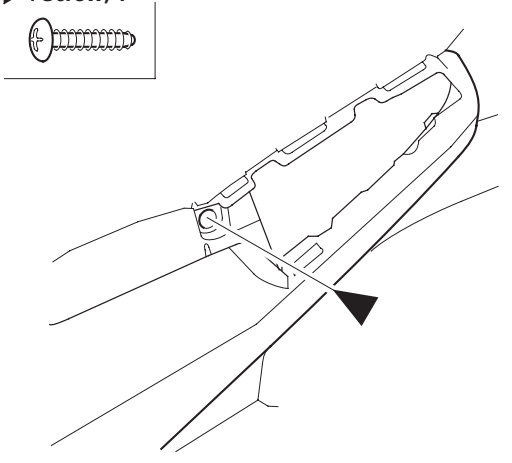
–1 Pry up on the rear edge of the switch panel with the appropriate trim tool, then release the rear clip.
–2 Pull out along the edge of the panel to release the hooks (B).
–3 Pull the switch panel rearward to release the front hook (C).
–4 Disconnect the power window switch connector (D).

Fastener Location
▷ : Clip, 1



5. Remove the screw.

Fastener Location
▶ : Screw, 1



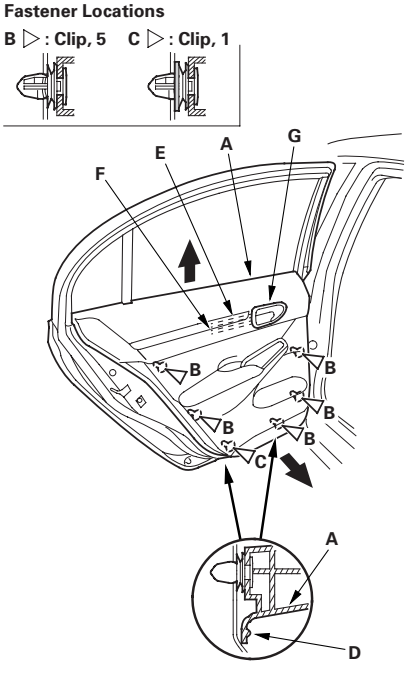
(cont'd)

Rear Door Panel Removal/Installation (cont'd)

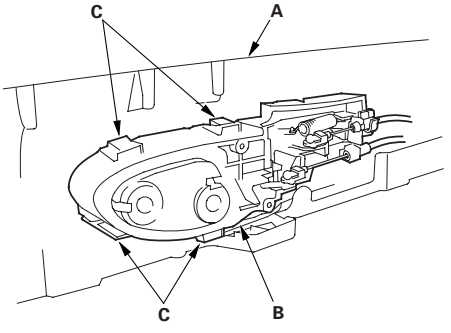
6. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.

   1 Start at the bottom edge of the door panel, release the clips (B, C) that are just above the marks (D) on the edge of the panel with a commercially available trim pad remover.
   2 Detach the upper clips.
   3 Starting at the rear, pull the door panel upward.

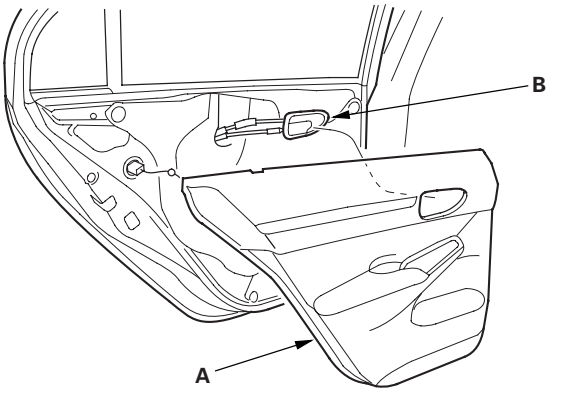
   NOTE: The inner handle cable (E) and the latch cable (F) are connected to the inner handle (G). Do not pull the door panel up too far, or these cables will be damaged.



7. While holding the door panel (A) away from the door, remove the inner handle (B) from the door panel by releasing the hooks (C).



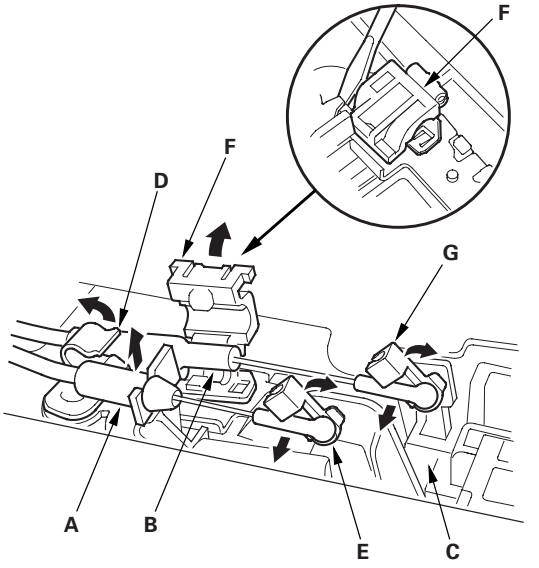
8. Remove the door panel (A) while pulling the inner handle (B) out through the hole in the door panel.



9. Disconnect the inner handle cable (A) and the latch cable (B) from the inner handle (C).

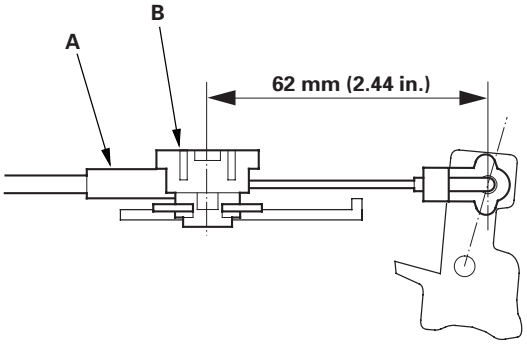
   1 Detach the inner handle cable fastener (D), then disconnect the inner handle cable from the cable fastener (E).
   2 Detach the latch cable fastener (F) with a flat-tip screwdriver, then disconnect the latch cable from the cable fastener (G).

   NOTE: If the cable fasteners are damaged or stress-whitened, replace them with new ones.



10. Install the door panel in the reverse order of removal, and note these items:

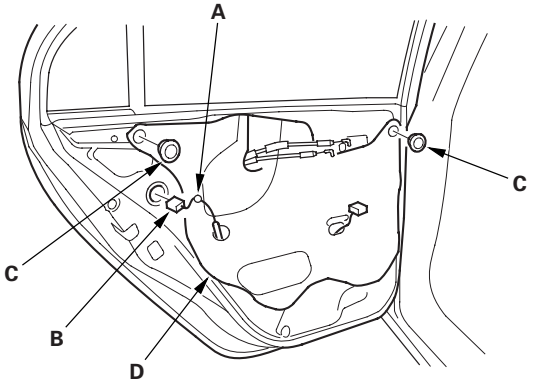
    - If the clips are damaged or stress-whitened, replace them with new ones.
    - Replace any damaged cable fasteners with new ones.
    - The latch cable (A) should be fixed to the cable fastener (B) with the latch in lock position.
    - Make sure the connector is plugged in properly, and the cables are connected securely.
    - Make sure the window and power door lock operate properly.



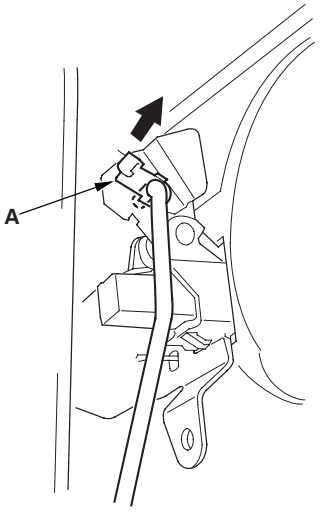
Rear Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove the door panel (see page 20-17).
3. Detach the harness clip (A), and disconnect the power door lock actuator connector (B).



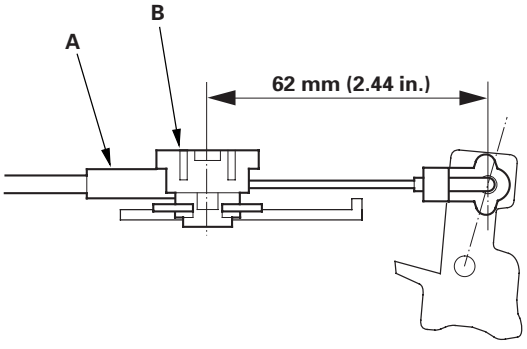
4. Remove the plug caps (C), then remove the plastic cover (D), as needed.
5. Remove the latch mounting screws, then lower the latch (see step 4 on page 20-21).
6. Detach the rod fastener (A).



(cont'd)

10. Install the door panel in the reverse order of removal, and note these items:

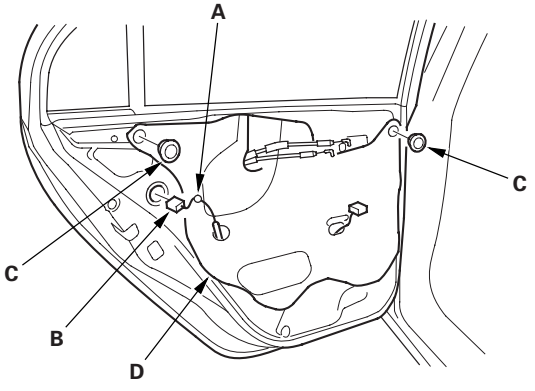
    - If the clips are damaged or stress-whitened, replace them with new ones.
    - Replace any damaged cable fasteners with new ones.
    - The latch cable (A) should be fixed to the cable fastener (B) with the latch in lock position.
    - Make sure the connector is plugged in properly, and the cables are connected securely.
    - Make sure the window and power door lock operate properly.



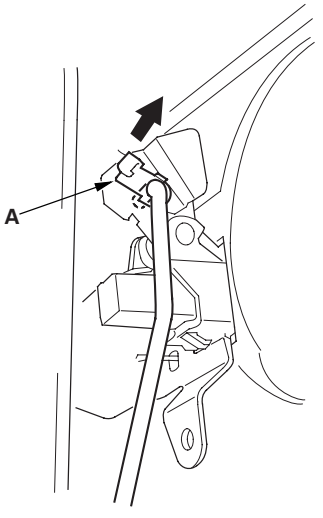
Rear Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove the door panel (see page 20-17).
3. Detach the harness clip (A), and disconnect the power door lock actuator connector (B).



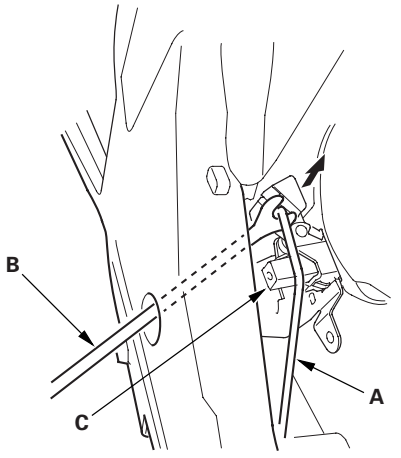
4. Remove the plug caps (C), then remove the plastic cover (D), as needed.
5. Remove the latch mounting screws, then lower the latch (see step 4 on page 20-21).
6. Detach the rod fastener (A).



(cont'd)

Rear Door Outer Handle Replacement (cont'd)

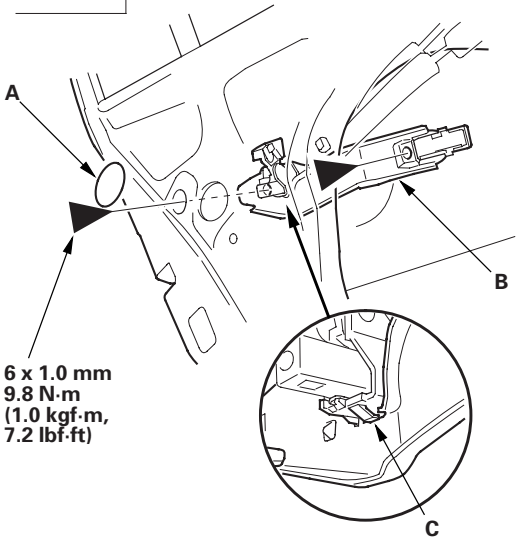
7. Disconnect the outer handle rod (A) with a clip remover (B) from the outer handle (C).



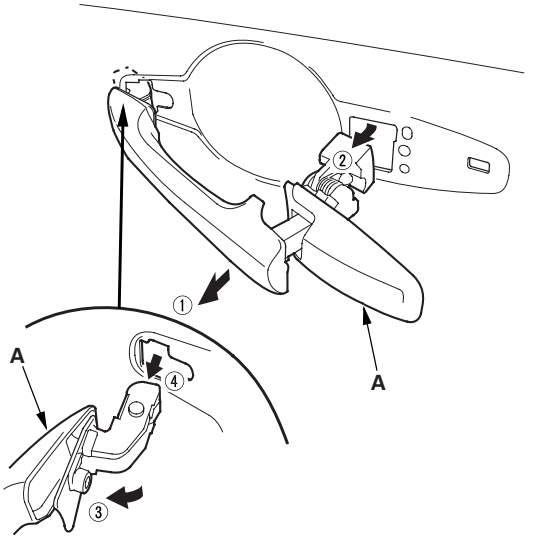
8. Remove the maintenance seal (A). Remove the bolts securing the outer handle protector (B), then remove the protector by releasing the hook (C).

Fastener Locations

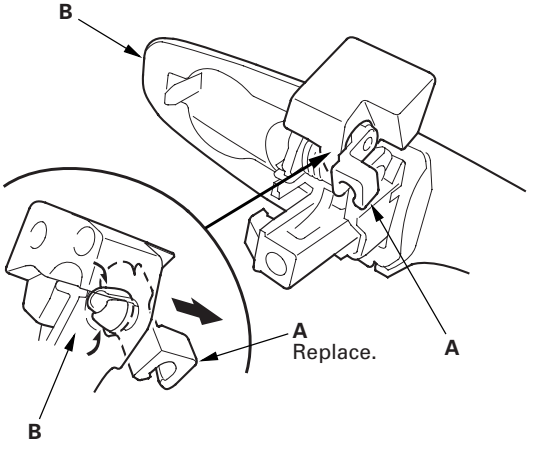
▶ : Bolt, 2



9. While pulling the outer handle (A), remove the handle from the holes in the door panel. Take care not to scratch the door.



10. Remove the rod fastener (A) from the outer handle (B), then replace it with a new one.



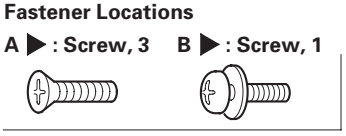
11. Install the handle in the reverse order of removal, and note these items:

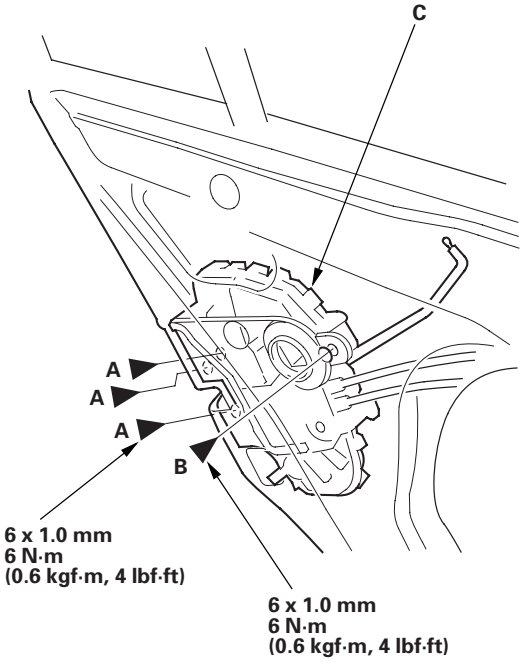
    - Make sure the door locks and opens properly.
    - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
    - Check for water leaks (see step 9 on page 20-29).

Rear Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove the door panel (see page 20-17).
3. Remove the plastic cover, as needed (see step 4 on page 20-19).
4. Remove the screws (A, B) securing the latch (C), then lower it.





5. Detach the rod fastener (see step 6 on page 20-19).
6. Disconnect the outer handle rod from the outer handle (see step 7 on page 20-20).

(cont'd)

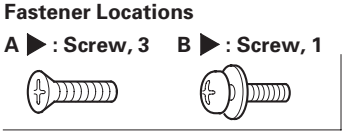
11. Install the handle in the reverse order of removal, and note these items:

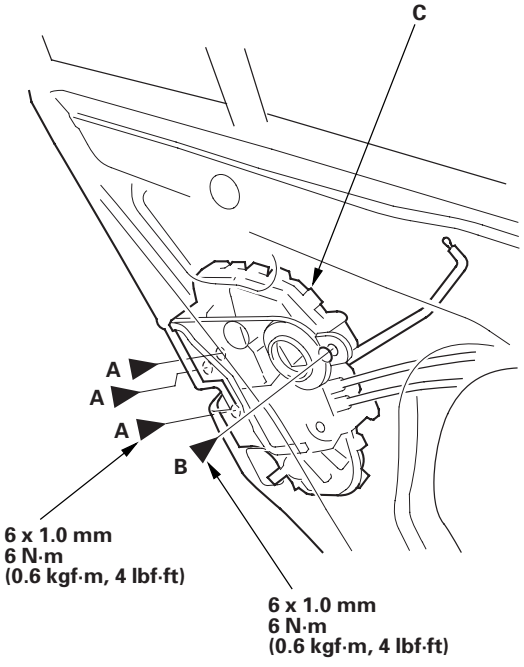
    - Make sure the door locks and opens properly.
    - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
    - Check for water leaks (see step 9 on page 20-29).

Rear Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove the door panel (see page 20-17).
3. Remove the plastic cover, as needed (see step 4 on page 20-19).
4. Remove the screws (A, B) securing the latch (C), then lower it.



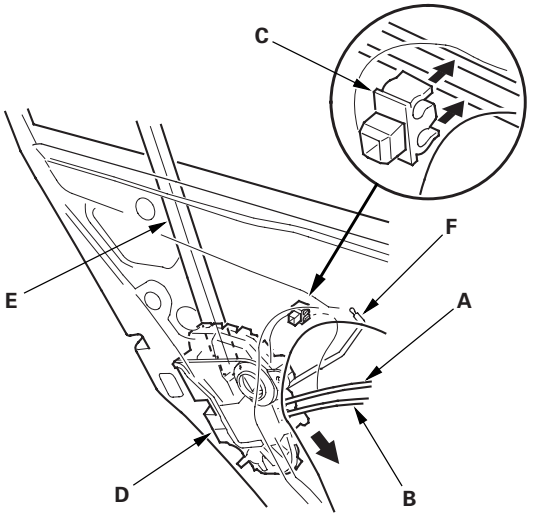


5. Detach the rod fastener (see step 6 on page 20-19).
6. Disconnect the outer handle rod from the outer handle (see step 7 on page 20-20).

(cont'd)

Rear Door Latch Replacement (cont'd)

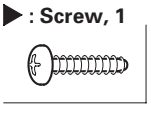
7. Detach the latch cable (A) and the inner handle cable (B) from the holder (C), then remove the latch (D) out from between the rear lower channel (E) and the door. Take care not to bend the outer handle rod (F), the latch cable, or the inner handle cable.

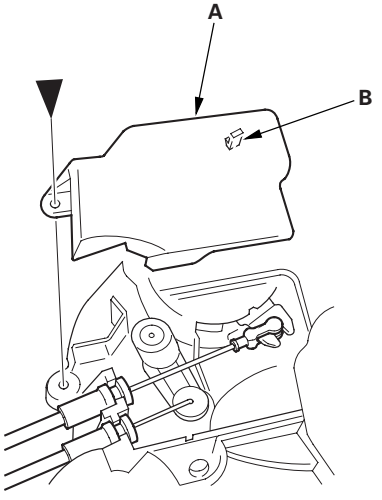


8. Remove the screw, then remove the latch protector (A) by releasing the hook (B).

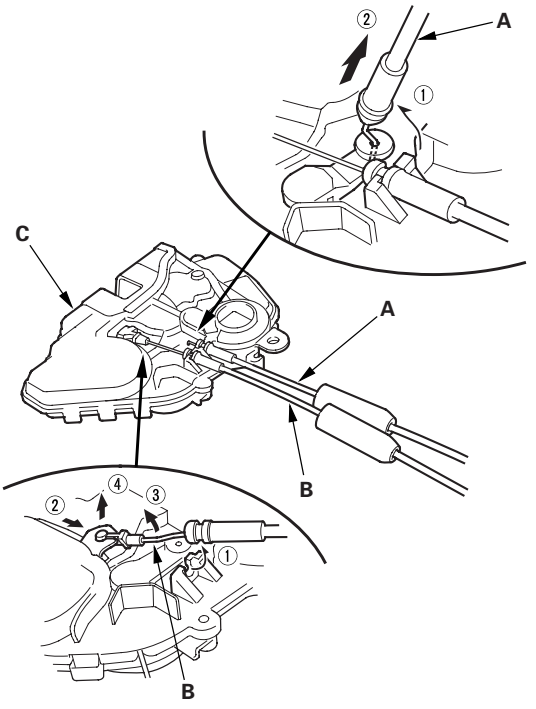
Fastener Location

▶ : Screw, 1





9. Detach the latch cable (A) and the inner handle cable (B) from the latch (C).



10. Install the latch in the reverse order of removal, and note these items:

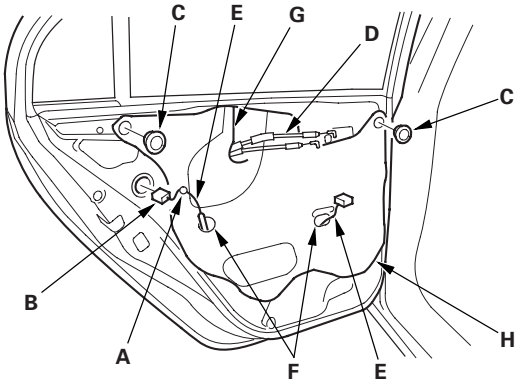
- Make sure the connector is plugged in properly, and each rod is connected securely.
- Make sure the door locks and opens properly.

Rear Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the door panel (see page 20-17).

2. Detach the harness clip (A), and disconnect the power door lock actuator connector (B). Remove the plug caps (C).

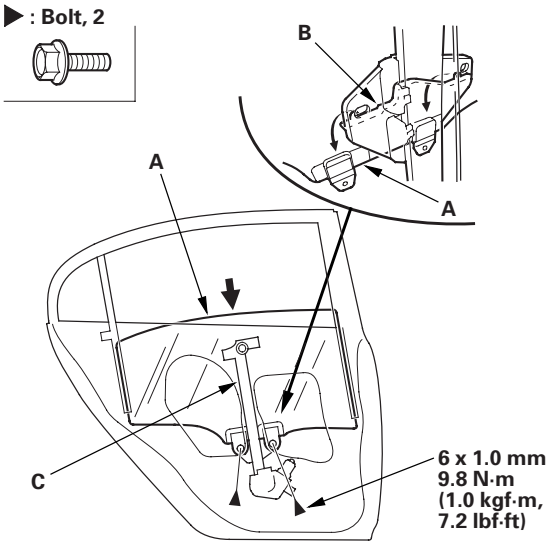


3. Pass the cable (D) and the harnesses (E) through the holes (F) and slit (G) in the plastic cover (H), then remove it.

4. Carefully move the glass (A) until you can see the bolts, then remove them. Release the glass from the holder (B), then remove it from the regulator (C), and carefully lower the glass. Take care not to drop the glass inside the door.

Fastener Locations

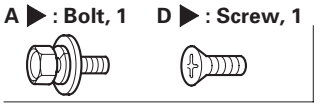
▶ : Bolt, 2

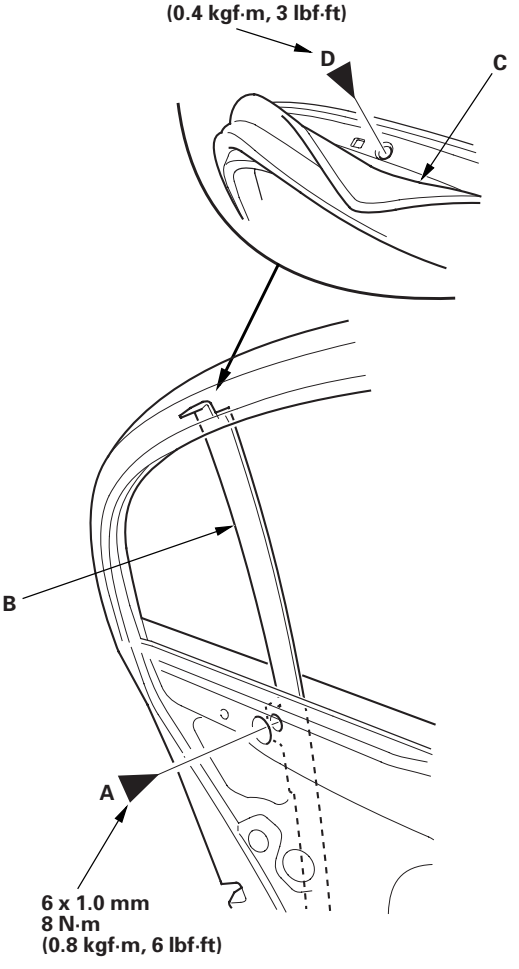


5. Remove the bolt (A) from the rear lower channel (B). Pull the glass run channel (C) away as needed, and remove the screw (D).

Fastener Locations

A ▶ : Bolt, 1 D ▶ : Screw, 1

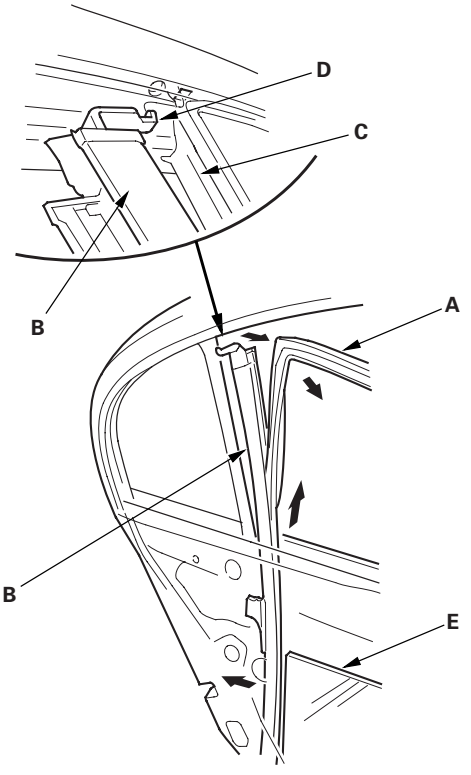




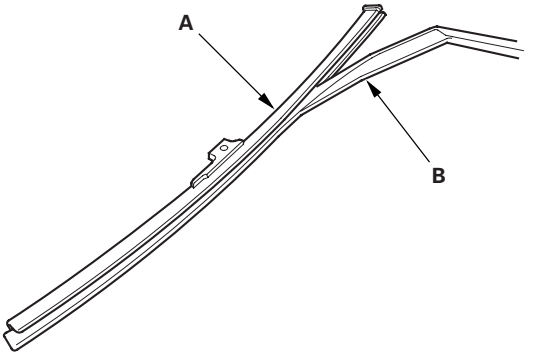
(cont'd)

Rear Door Glass and Regulator Replacement (cont'd)

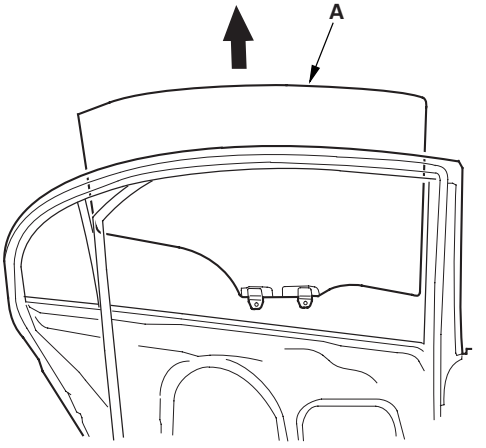
6. Pull the glass run channel (A) away as needed. Pull the rear lower channel (B) forward from the quarter glass seal (C) then release the upper hook (D) from the door. Remove the rear lower channel from the rear door glass (E), then pull the channel up to remove it.



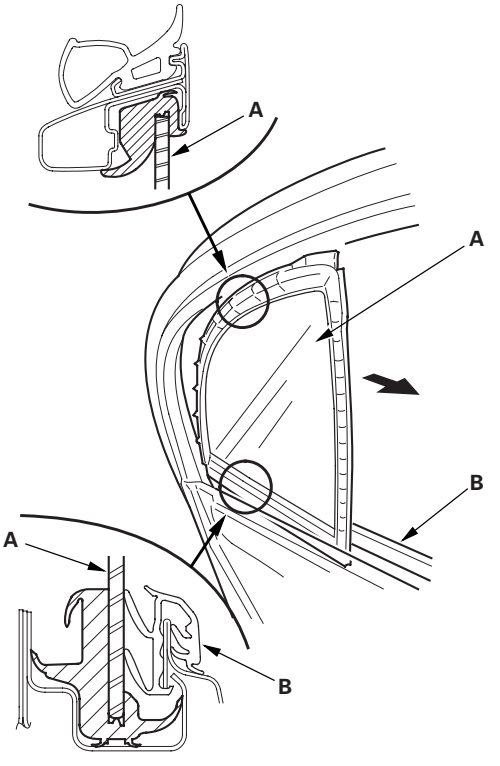
7. Remove the rear lower channel (A) from the glass run channel (B).



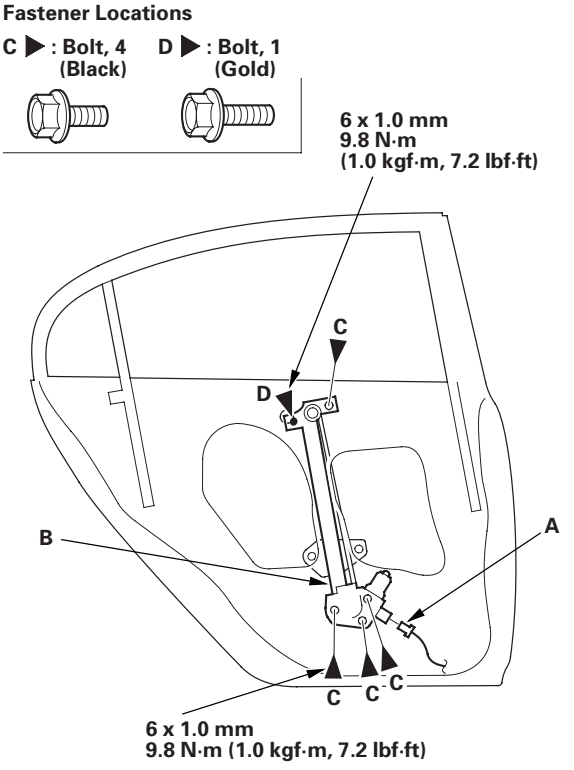
8. Carefully remove the glass (A) out through the window slot. Take care not to drop the glass inside the door.



9. Remove the quarter glass (A). Take care not to damage the outer weatherstrip (B).

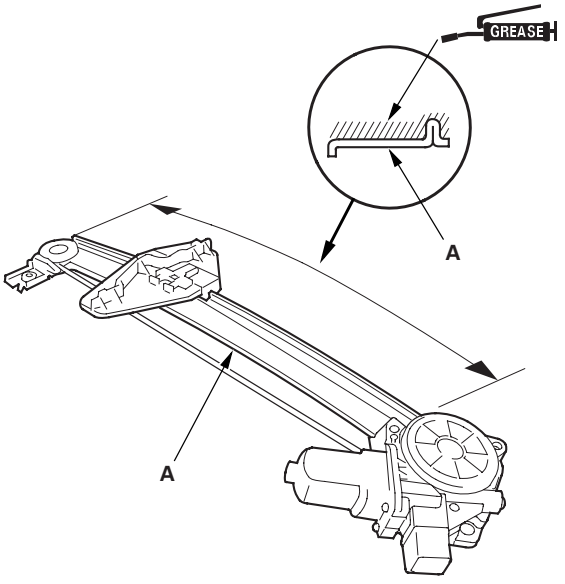


10. Disconnect the connector (A) from the regulator (B).



11. Remove the bolts (C), and loosen the bolt (D), then remove the regulator through the hole in the door.

12. Grease all the sliding surfaces of the regulator (A) where shown.



13. Install the glass and regulator in the reverse order of removal, and note these items:

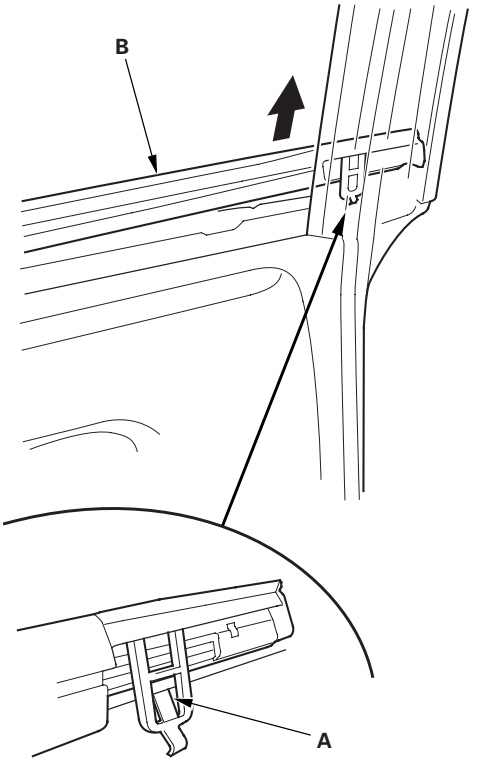
- Roll the glass up and down to verify if it moves freely without binding.
- Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
- Adjust the position of the glass as necessary (see page 20-28).
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks (see step 9 on page 20-29).

Rear Door Glass Outer Weatherstrip Replacement

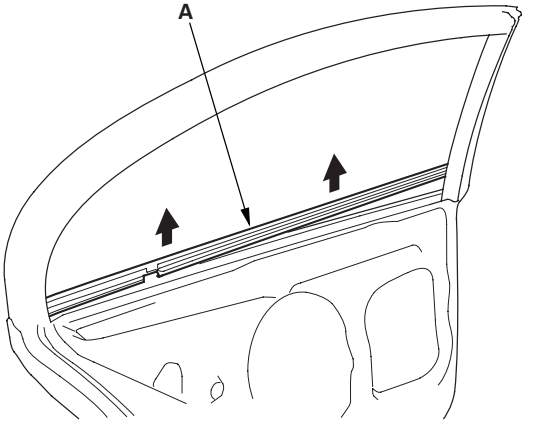
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.

1. Remove these items:
   - Door panel (see page 20-17)
   - Plastic cover (see step 4 on page 20-19)
   - Rear door glass (see page 20-23)
   - Quarter glass (see step 9 on page 20-24)

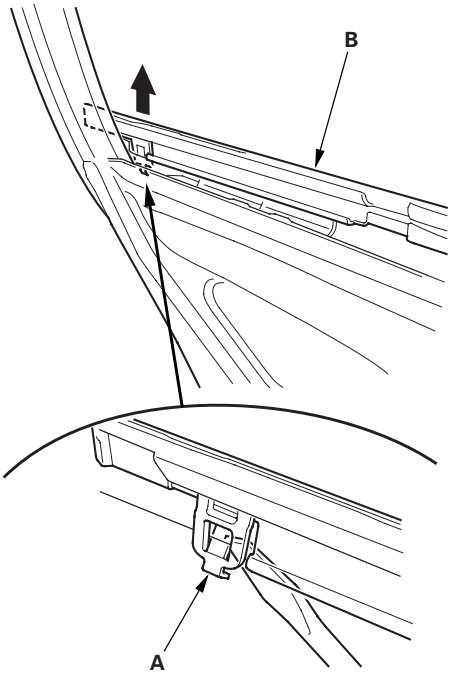
2. Release the front hook (A) from inside of the door, then pull up the front portion of the rear door glass outer weatherstrip (B).



3. Starting at the front, slowly pull up the rear door glass outer weatherstrip (A).



4. Push the rear hook (A) out from inside of the door, then remove the rear door glass outer weatherstrip (B).

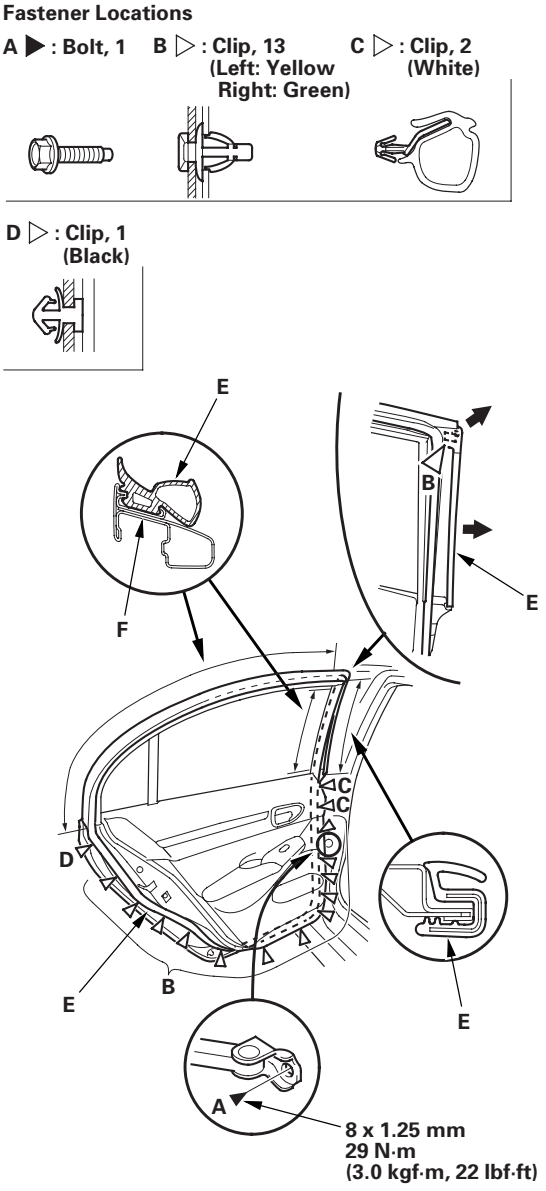


5. Push the clip portions of the rear door glass outer weatherstrip into place securely.

Rear Door Weatherstrip Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Remove the clips with a clip remover.

1. At the B-pillar, remove the door checker mounting bolt (A).



2. Detach the clips (B, C, D), then remove the door weatherstrip (E).

3. Install the weatherstrip in the reverse order of removal, and note these items:

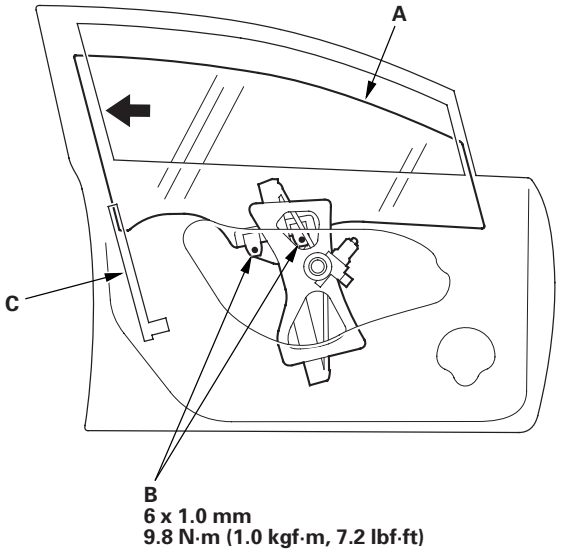
- If the clips are damaged or stress-whitened, replace them with new ones.
- Make sure the weatherstrip is installed in the holder (F) securely.
- Apply medium strength liquid thread lock to the door checker mounting bolt before installation.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Check for water leaks (see step 9 on page 20-29).

Front and Rear Door Glass Adjustment

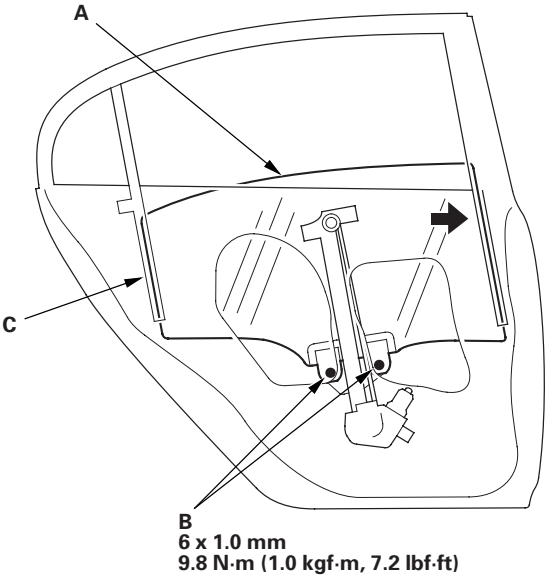
NOTE: Check the weatherstrip and glass run channel for damage or deterioration, and replace them if necessary.

1. Place the vehicle on a firm, level surface.
2. Remove these items:
   - Door panel:
     – Front door (see page 20-7)
     – Rear door (see page 20-17)
   - Plastic cover:
     – Front door (see step 4 on page 20-9)
     – Rear door (see step 4 on page 20-19)
3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.

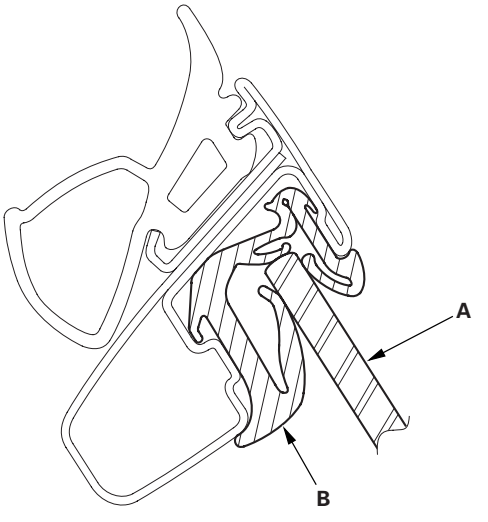
Front



Rear



4. Push the glass against the channel (C), then tighten the glass mounting bolts.
5. Check that the glass moves smoothly.
6. Raise the glass fully, and check for gaps. Also make sure that the glass (A) contacts the glass run channel (B) evenly.



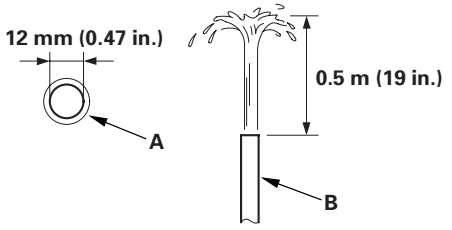
7. Attach the plastic cover making sure it its sealed around its outside perimeter to seal out water.

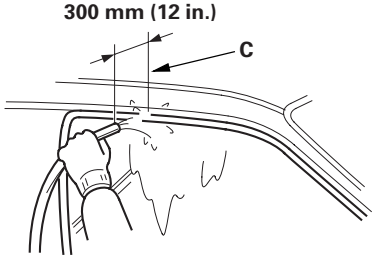
8. Reinstall the door panel:

   - Front door (see page 20-9)
   - Rear door (see page 20-19)

9. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:

   - Use a 12 mm (0.47 in.) diameter hose (A).
   - Adjust the rate of water flow as shown (B).
   - Do not use a nozzle.
   - Hold the hose about 300 mm (12 in.) away from the door (C).





Front and Rear Door Position Adjustment

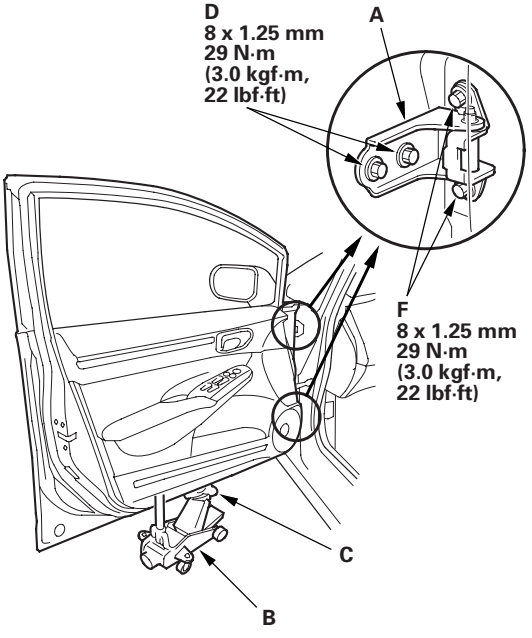
NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and the body edges are parallel. If necessary, replace the mounting bolts before adjusting the door position.

1. Place the vehicle on a firm, level surface when adjusting the doors.

2. Adjust at the hinges (A):

   - Pad a floor jack (B) with shop towels (C), then use the jack to support the door to prevent damage to the door while adjusting it.
   - On the front door: Remove the front inner fender (see page 20-171). Loosen the hinge mounting bolts (D) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.
   - On the rear door: Loosen the hinge mounting bolts (E) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.

Front door



(cont'd)

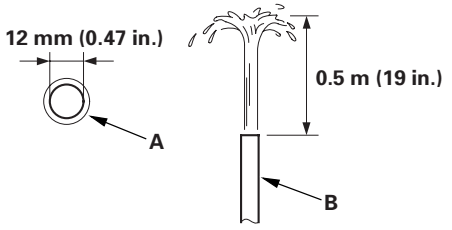
7. Attach the plastic cover making sure it its sealed around its outside perimeter to seal out water.

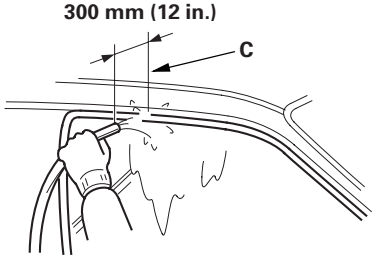
8. Reinstall the door panel:

   - Front door (see page 20-9)
   - Rear door (see page 20-19)

9. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:

   - Use a 12 mm (0.47 in.) diameter hose (A).
   - Adjust the rate of water flow as shown (B).
   - Do not use a nozzle.
   - Hold the hose about 300 mm (12 in.) away from the door (C).





Front and Rear Door Position Adjustment

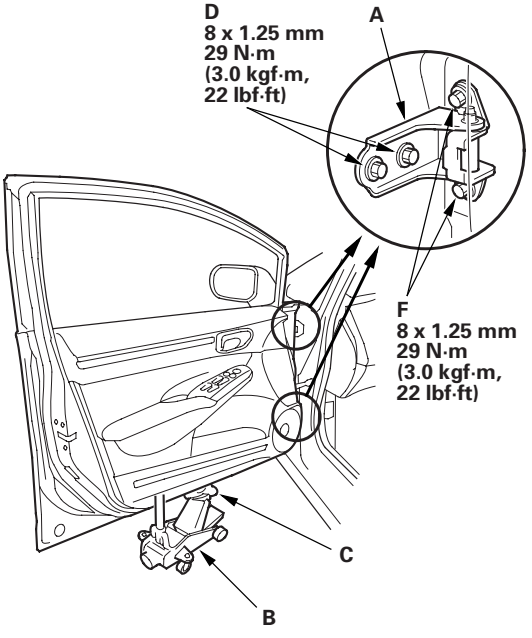
NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and the body edges are parallel. If necessary, replace the mounting bolts before adjusting the door position.

1. Place the vehicle on a firm, level surface when adjusting the doors.

2. Adjust at the hinges (A):

   - Pad a floor jack (B) with shop towels (C), then use the jack to support the door to prevent damage to the door while adjusting it.
   - On the front door: Remove the front inner fender (see page 20-171). Loosen the hinge mounting bolts (D) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.
   - On the rear door: Loosen the hinge mounting bolts (E) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps.

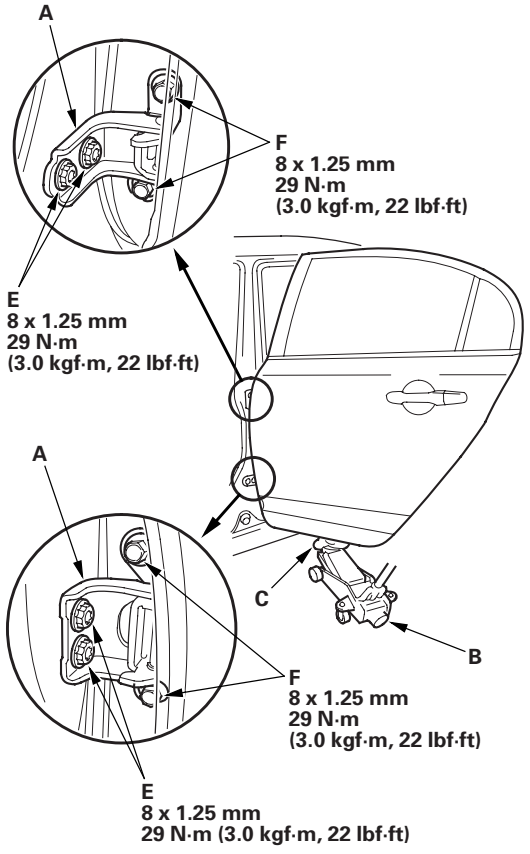
Front door



(cont'd)

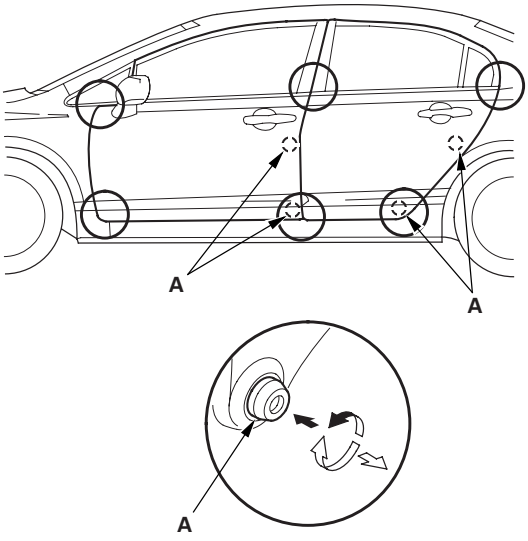
Front and Rear Door Position Adjustment (cont'd)

Rear door



3. If necessary, replace the door mounting bolts with the adjusting bolts (P/N 90102-SFA-305) made specifically for door adjustment, then adjust at the door: Loosen the door mounting bolts (F) slightly, and move the door up or down as necessary to equalize the gaps, and move it in or out until it's flush with the body.

4. Check that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the doors flush with the body.



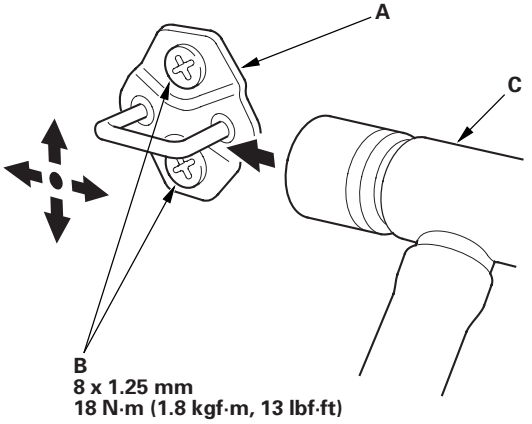
5. Apply touch-up paint to the hinge mounting bolts, and around the hinges.

6. Check for water leaks (see step 9 on page 20-29).

Front and Rear Door Striker Adjustment

Make sure the door latches securely without slamming it. If necessary, adjust the striker (A): The striker nuts are fixed, but the striker can be adjusted slightly up or down, and in or out.

1. Loosen the screws (B).

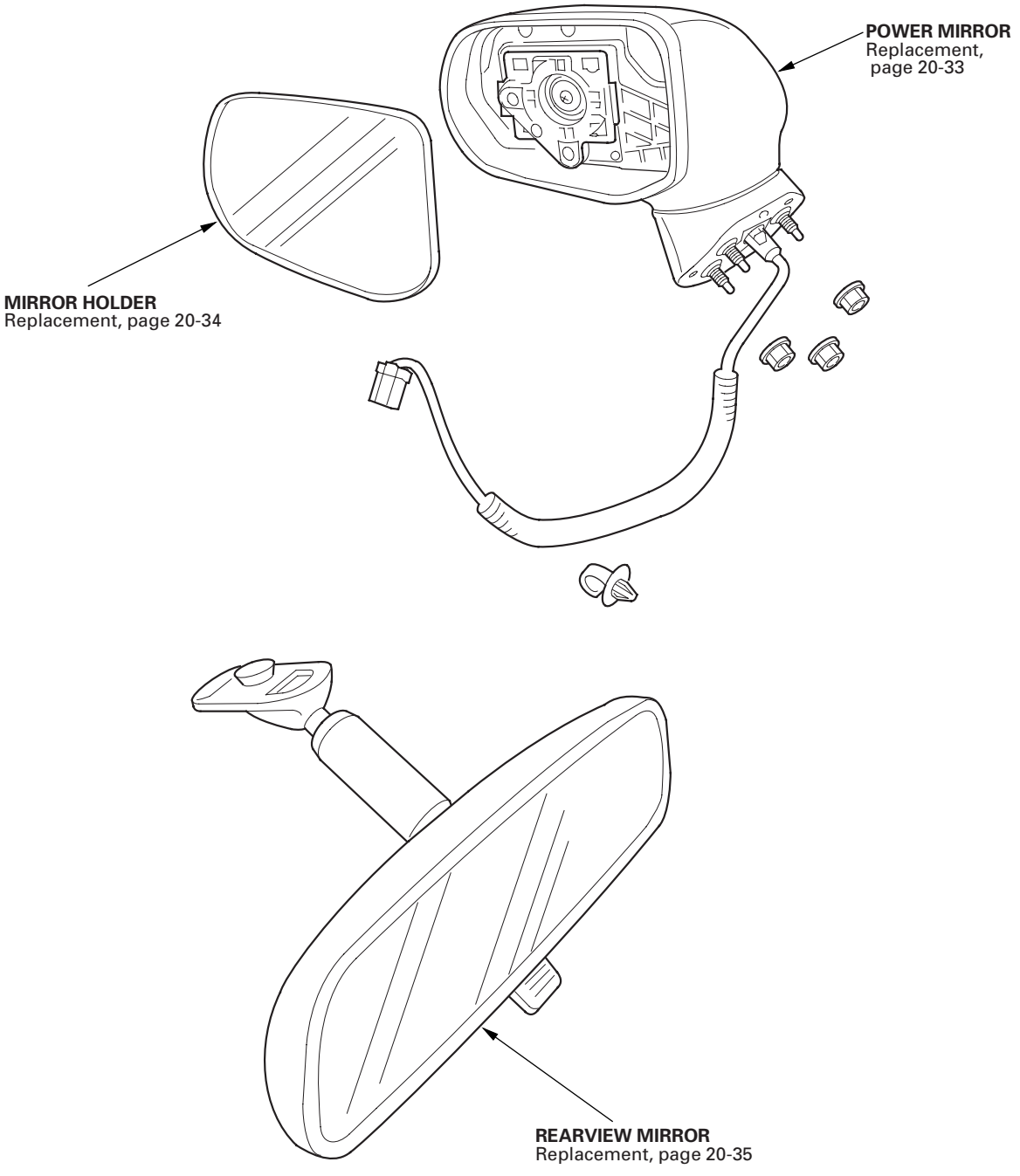


2. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (C). Do not tap the striker too hard.

3. Lightly tighten the screws.

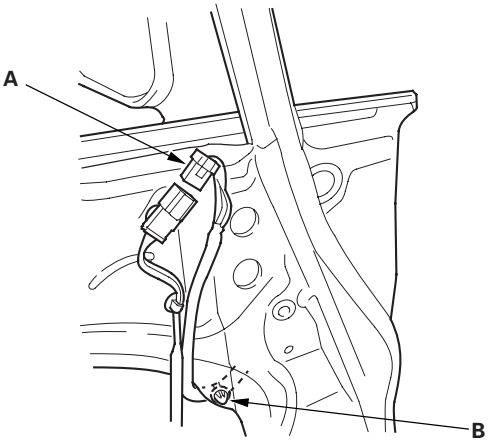
4. Hold the outer handle out, and push the door against the body to be sure the striker allows a flush fit. If the door latches properly, tighten the screws to the specified torque, and recheck.

Component Location Index



Power Mirror Replacement

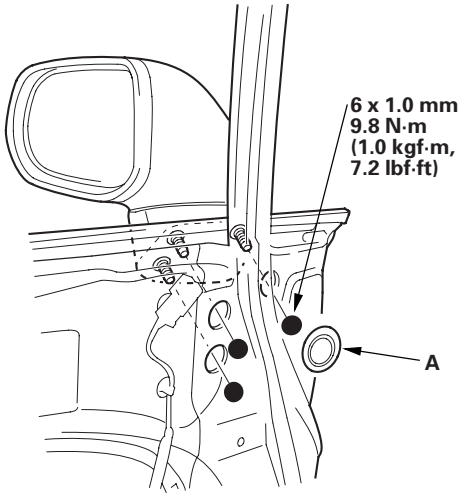
1. Raise the door glass fully.
2. Remove these items:
   - Door panel (see page 20-7)
   - Plastic cover, as needed (see step 4 on page 20-9)
3. Disconnect the connector (A), and detach the harness clip (B).



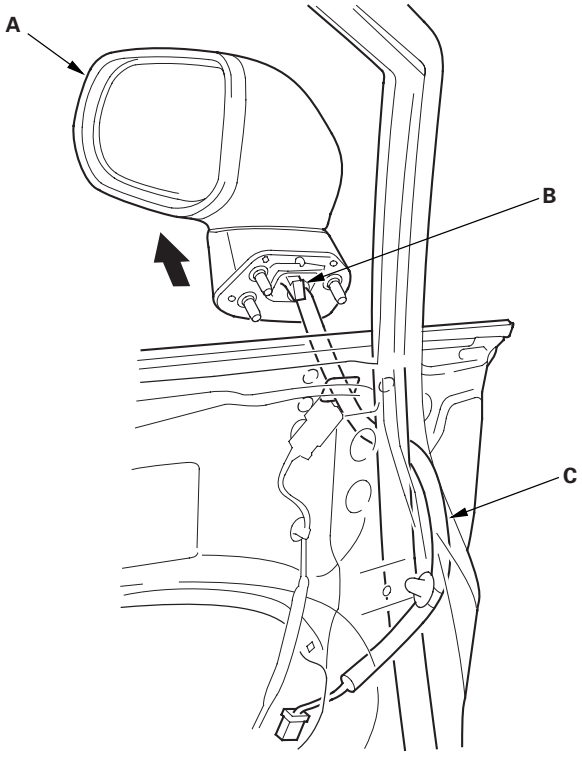
4. Remove the maintenance cap (A), and remove the nuts.

Fastener Locations

● : Nut, 3



5. While holding the mirror (A), detach the clip (B), then remove the mirror, and pull the harness (C) out through the hole in the door. Take care not to scratch the door.

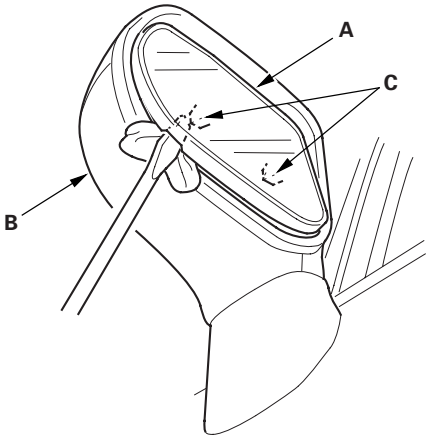


6. Install the mirror in the reverse order of removal, and make sure the connector is plugged in properly.

Mirror Holder Replacement

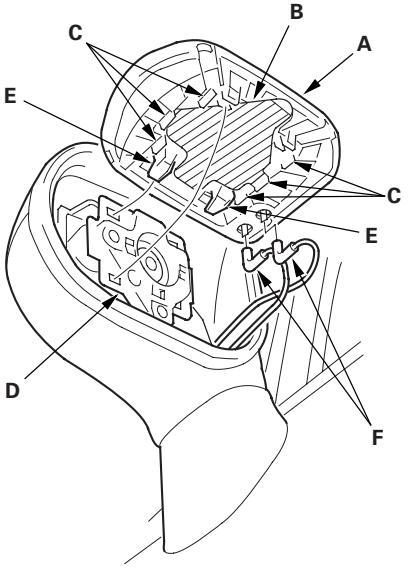
NOTE: Put on gloves to protect your hands.

1. Carefully push on the top edge of the mirror holder (A) by hand.



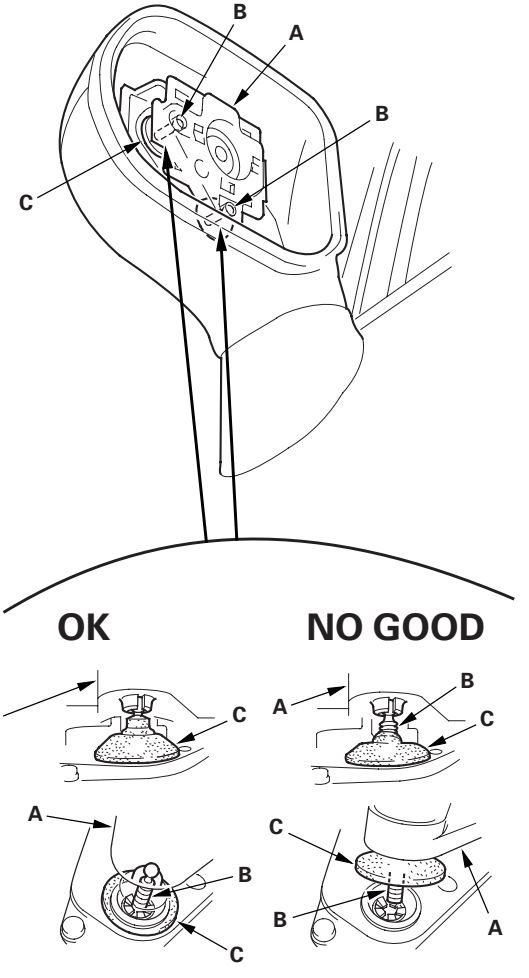
2. Put a shop towel in the opening between the lower edge of the mirror holder and the mirror housing (B) to prevent scratches, and detach the bottom clips (C) with a flat-tip screwdriver wrapped with protective tape.

3. Carefully pull out the bottom edge of the mirror holder (A) to separate the adhesive (B), and then release the side clips (C).



4. Separate the mirror holder from the actuator (D) by releasing the hooks (E). Disconnect the mirror defogger connectors (F) from the heater pad terminals.

5. Before reinstalling the mirror holder to the inner holder (A) on the actuator, check the actuator rods (B) and the actuator boots (C). Make sure the actuator rods are securely mounted in the holes, and that the boots properly cover each rod.



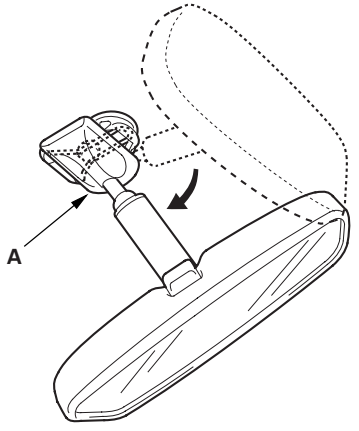
6. Reconnect the mirror defogger connectors.

7. Reattach the hooks of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the clip portions of the mirror holder until the mirror holder locks into place.

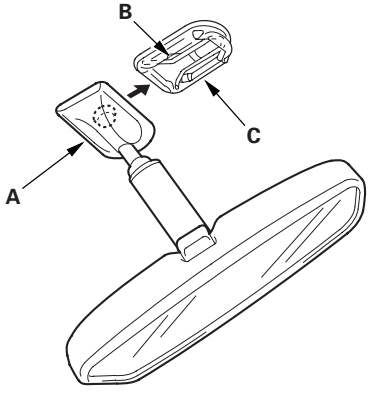
8. Check the actuator operation.

Rearview Mirror Replacement

1. Turn the rearview mirror base (A) 90 °.

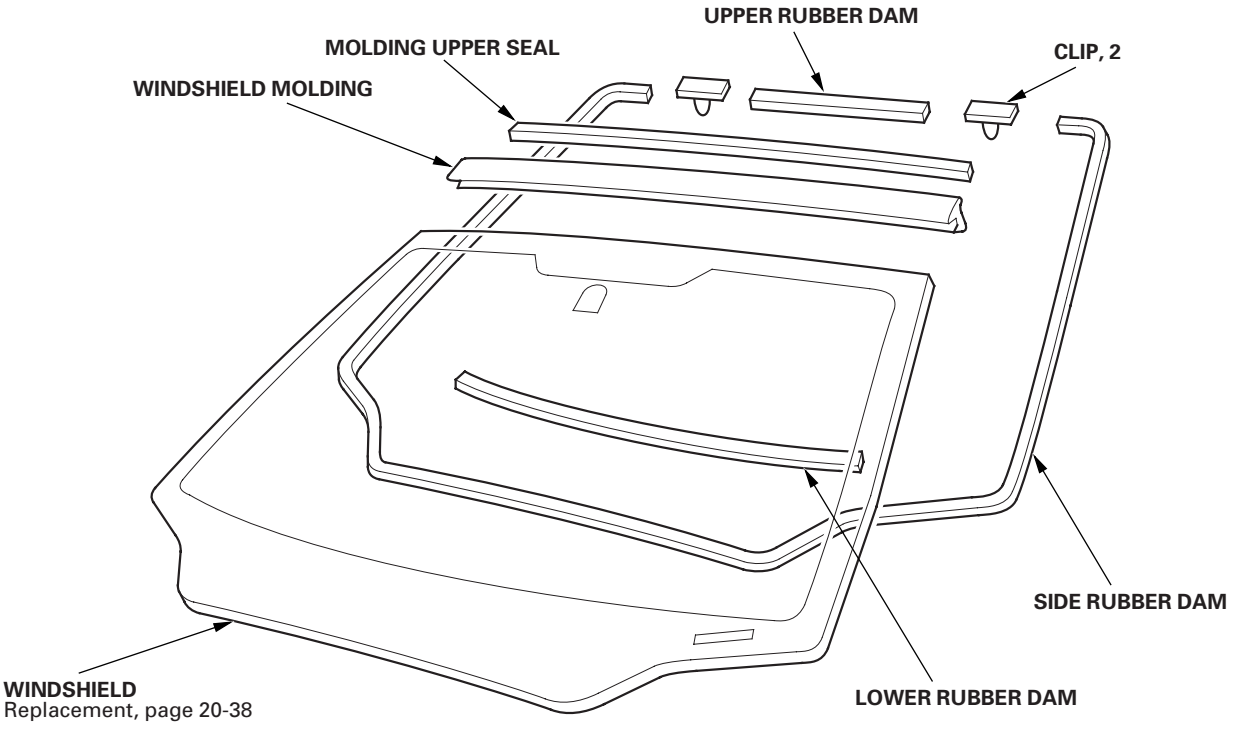


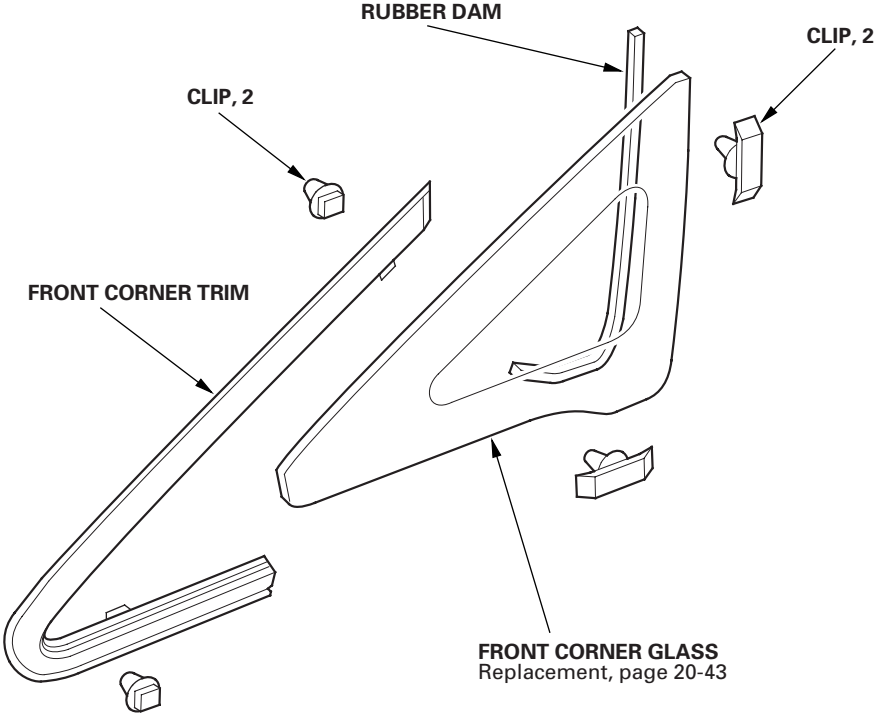
2. Slide the rearview mirror (A) down toward the bottom of the windshield to detach it from the spring (B) in the mount (C).

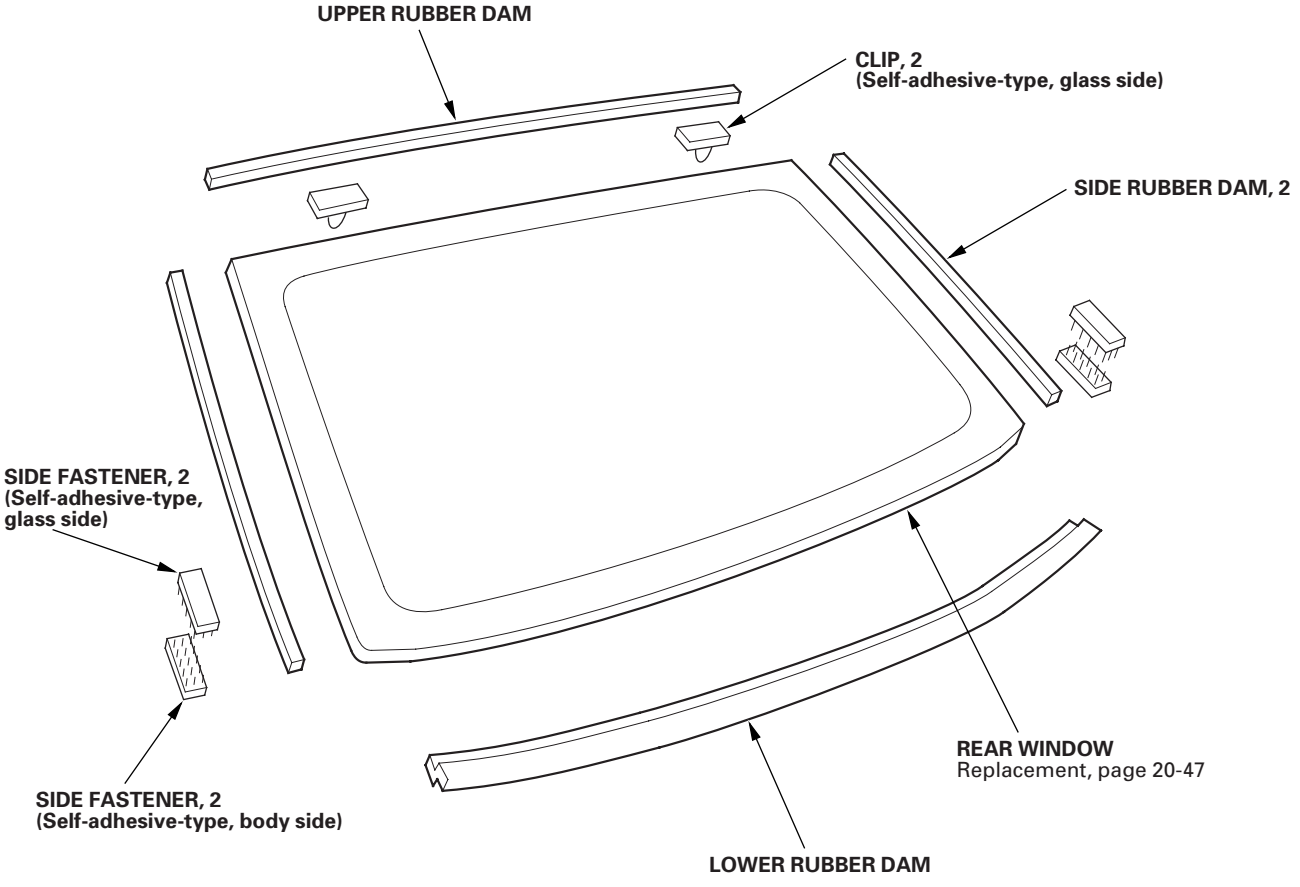


3. Install the rearview mirror in the reverse order of removal.

Component Location Index





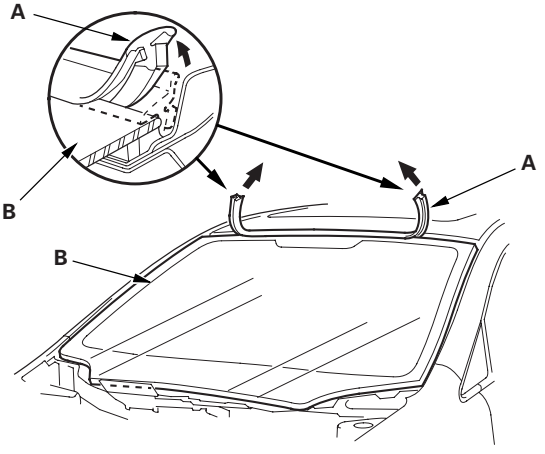

UPPER RUBBER DAM
CLIP, 2
(Self-adhesive-type, glass side)
SIDE RUBBER DAM, 2
SIDE FASTENER, 2
(Self-adhesive-type,
glass side)
SIDE FASTENER, 2
(Self-adhesive-type, body side)
REAR WINDOW
Replacement, page 20-47
LOWER RUBBER DAM

Windshield Replacement

NOTE:
- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with a piano wire.
- Use seat covers to avoid damaging the seat.
- When replacing a broken windshield, a commercially available windshield cutter can be efficiently used for cutting the adhesive. For details, follow the tool manufacturer's instructions.

1. Remove these items:
   - Windshield wiper arms (see page 22-233)
   - Cowl covers (see page 20-163)
   - Rearview mirror (see page 20-35)
   - A-pillar trim, both sides (see page 20-69)
   - Roof moldings (see page 20-165)

2. Remove the molding (A) from the upper edge of the windshield (B). If necessary, cut the molding with a utility knife.

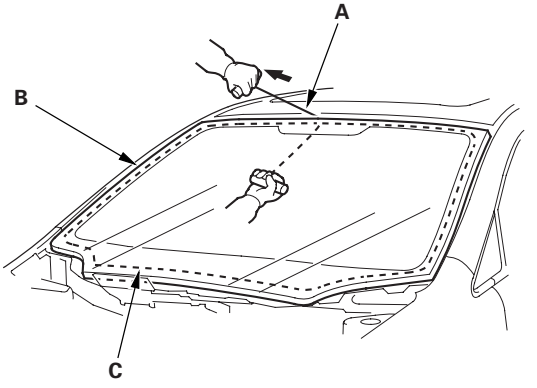


3. If the old windshield will be reinstalled, make alignment marks across the glass and the body with a grease pencil.

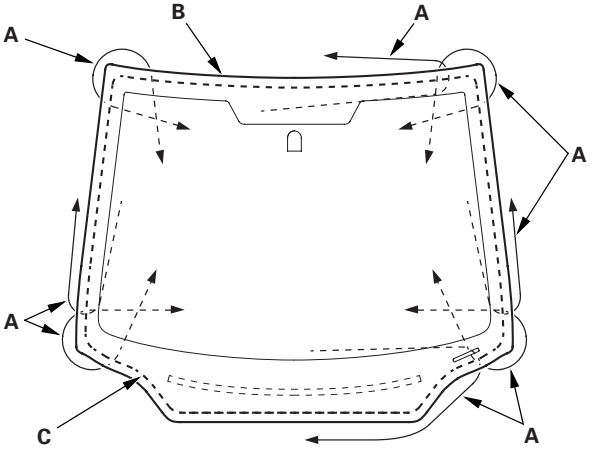
4. Pull down the front portion of the headliner (see page 20-84). Take care not to bend the headliner excessively, or you may crease or break it.

5. Apply protective tape along the edge of the dashboard and the body. Make a hole with an awl through the rubber dam and adhesive from inside the vehicle at a corner of the windshield. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

6. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the windshield (B) as possible to prevent damage to the body and the dashboard. Carefully cut through the rubber dam and adhesive (C) around the entire windshield.



Cutting positions



7. Carefully remove the windshield.

8. Scrape smooth the old adhesive, using a putty knife or similar tool, until there is a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:

   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the rubber dam and fasteners from the body.
   - Replace the dashboard seal with a new one.

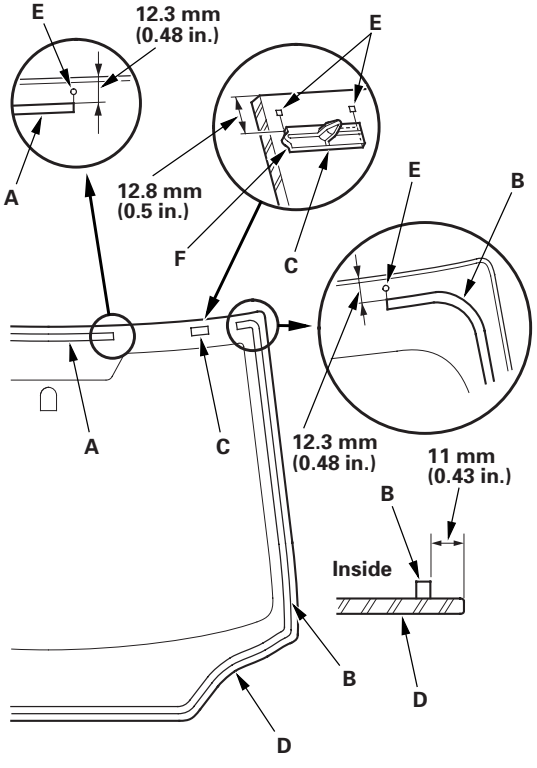
9. Clean the body bonding surface with a shop towel dampened in isopropyl alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.

10. If the old windshield will be reinstalled, scrape off the old adhesive, the fasteners, and the rubber dam from the windshield with a putty knife. Clean the bonding surfaces on the inside face and the edge of the windshield with isopropyl alcohol. Make sure the bonding surface is kept free of water, oil, and grease.

11. Attach the upper rubber dam (A), the lower rubber dam (B), and the clips (C) with adhesive tape to the inside face of the windshield (D) as shown:

    - Be sure the rubber dam and the clips line up with the alignment marks (E).
    - Be sure the convex portion (F) of the left and the right clips faces the left side.
    - Be careful not to touch the windshield where adhesive will be applied.

    Rubber dams adhesive tape:
    Thickness 0.16 mm (0.006 in.)
    Width 3.5 mm (0.14 in.)
    Clips adhesive tape:
    Thickness 0.4 mm (0.016 in.)
    Width 10 mm (0.39 in.)

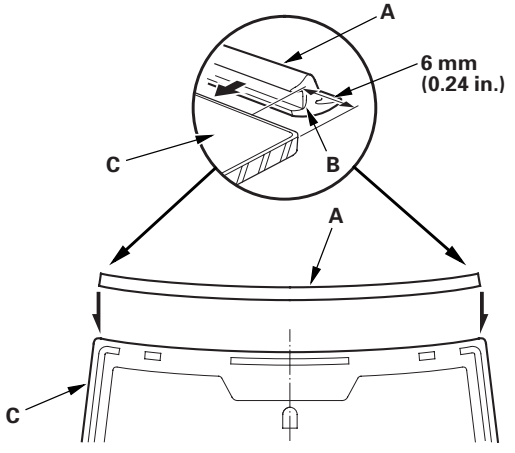


(cont'd)

Windshield Replacement (cont'd)

12. Attach the molding (A) with adhesive tape (B) to the upper edge of the windshield (C). Be careful not to touch the windshield where adhesive will be applied.

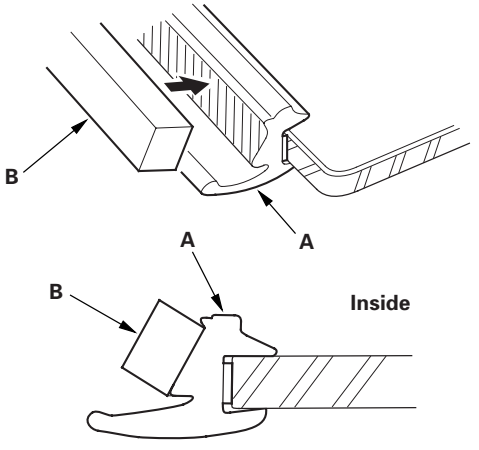
    Molding adhesive tape:
    Thickness 0.8 mm (0.03 in.)
    Width 4 mm (0.16 in.)



13. Apply primer to the molding (A), then attach the molding upper seal (B) with adhesive tape to the inside surface of the molding as shown.

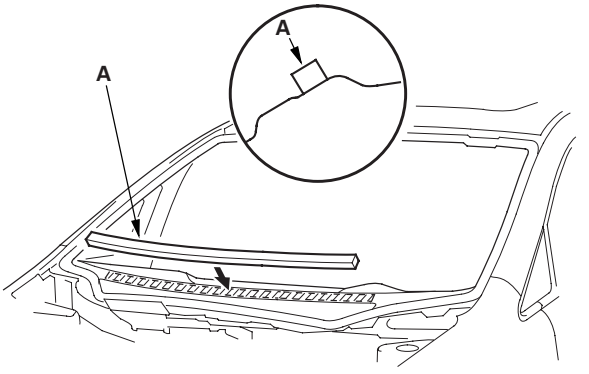
    Seal adhesive tape: Thickness 0.16 mm (0.006 in.)
    Width 7 mm (0.28 in.)

    : Apply primer here.

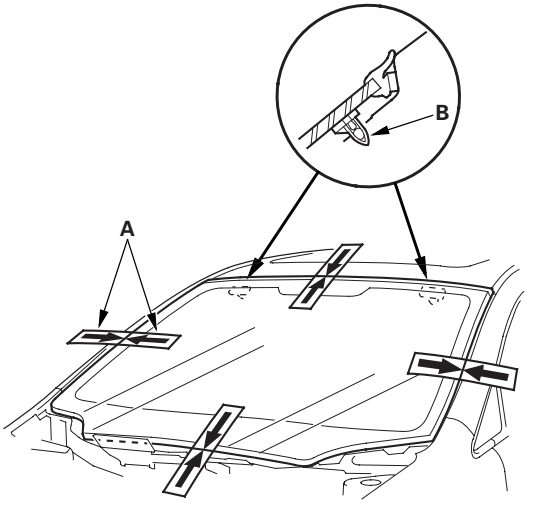


14. Attach the lower rubber dam (A) with adhesive tape to the body as shown.
    Do not peel the glass side adhesive backing.

    Rubber dam adhesive tape:
    Thickness 0.16 mm (0.006 in.)
    Width 5 mm (0.2 in.)



15. Set the windshield in the opening, and center it. Make alignment marks (A) across the windshield and the body with a grease pencil at the four points shown. Make sure both clips (B) contact with the edge of the body holes. Be careful not to touch the windshield where adhesive will be applied.

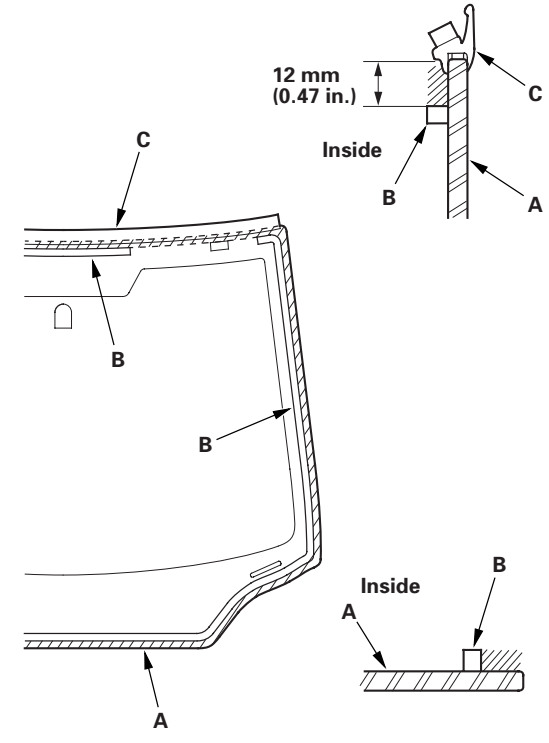


16. Remove the windshield.

17. Apply a light coat of glass primer with a sponge applicator around the edge of the windshield (A) between the dams (B) and molding (C) as shown, then lightly wipe it off with gauze or cheesecloth:

- Apply glass primer to the molding.
- Do not apply body primer to the windshield, and do not get body and glass primer sponge applicators mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
- Keep water, dust, and abrasive materials away from primed surfaces.

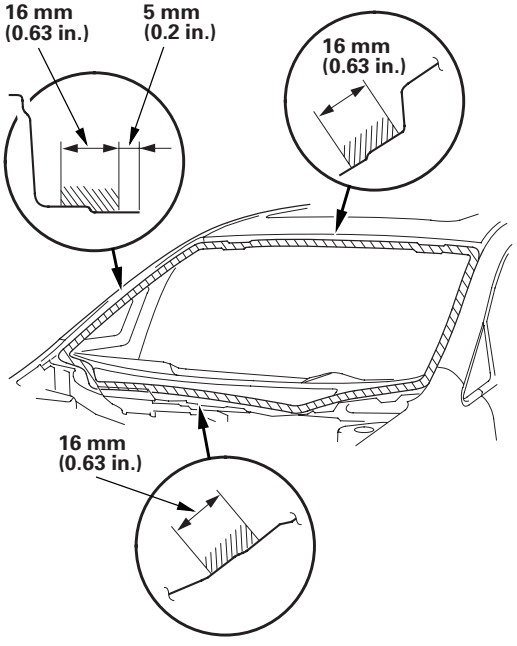
: **Apply glass primer here.**



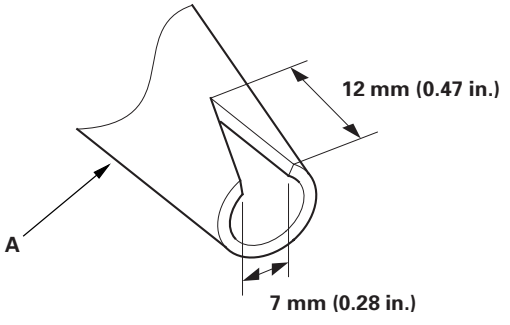
18. Carefully apply a light coat of body primer with a sponge applicator to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:

- Do not apply body primer to any remaining original adhesive on the flange.
- Be careful not to mix up the body and the glass primer sponge applicators.
- Never touch the primed surfaces with your hands.

: **Apply body primer to any exposed paint as shown.**



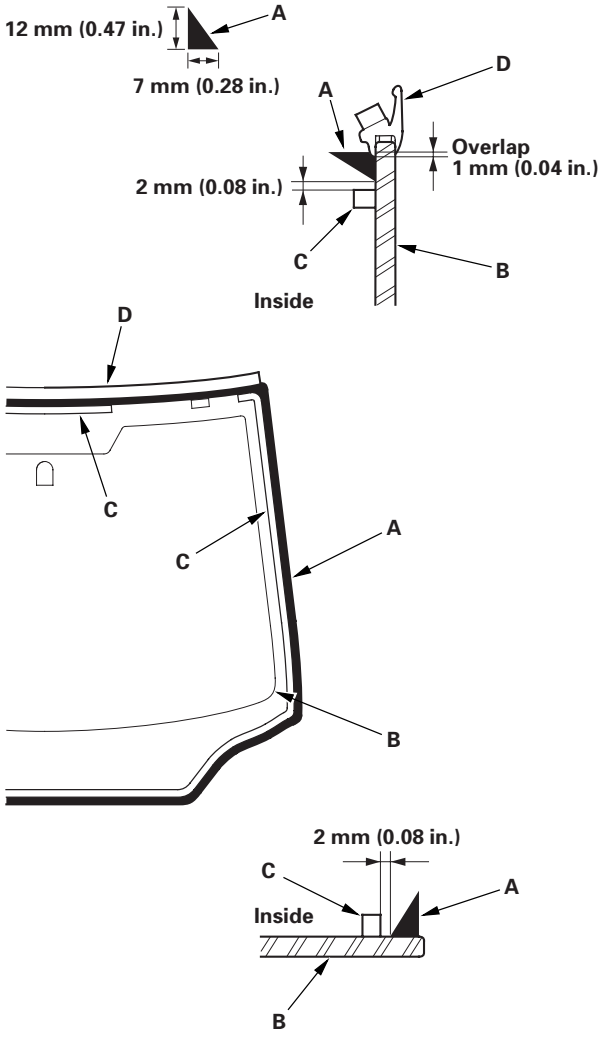
19. Cut a ''V'' in the end of the nozzle (A) on the adhesive cartridge as shown.



(cont'd)

Windshield Replacement (cont'd)

20. Put the cartridge in a caulking gun, and run a continuous bead of adhesive (A) around the edge of the windshield (B) between the dams (C) and the molding (D) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



21. Pull out the glass side adhesive backing away from the lower rubber dam.

22. Hold the windshield with suction cups over the opening, align it with the alignment marks made in step 15, and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

23. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with isopropyl alcohol.

24. After the adhesive has dried, spray water over the windshield and check for leaks. Mark leaking area, let the windshield dry, then seal with sealant. Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.

25. Reinstall all remaining removed parts.

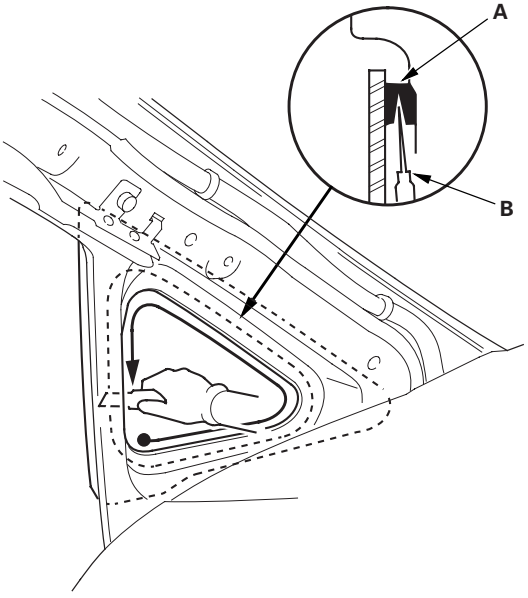
    NOTE: Advise the customer not to do the following things for 2 to 3 days:
    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Front Corner Glass Replacement

NOTE:
- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive.
- Use seat covers to avoid damaging any surface.

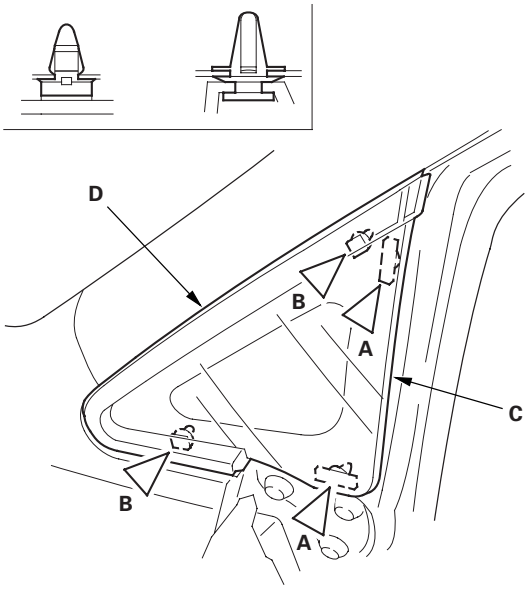
1. Remove the A-pillar trim (see page 20-69).

2. From inside the vehicle, cut through the front corner glass adhesive (A) with a utility knife (B) all the way around. Apply protective tape along the edge of the entire front corner glass opening flange.



3. From outside the vehicle, pry the front corner glass clips (A) and the front corner trim clips (B), then carefully remove the glass (C) and the trim (D) together. The trim is not attached to the glass.

Fastener Locations
A ▷ : Clip, 2 B ▷ : Clip, 2



4. Scrape smooth the old adhesive, using a putty knife or similar tool, until there is a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire front corner glass opening flange:

   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - If any of the clips are broken, remove them from the body.

5. Clean the body bonding surface with a sponge applicator dampened in isopropyl alcohol. After cleaning, keep oil, grease, and water from getting on the surface.

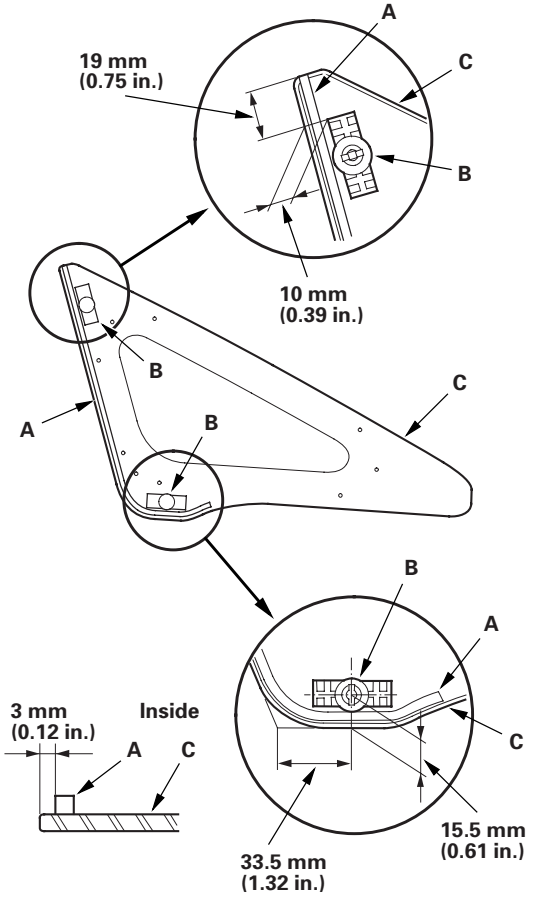
6. If the old front corner glass will be reinstalled, scrape off the old adhesive with a putty knife from the front corner glass. Clean the bonding surfaces on the inside face of the front corner glass and the edge of the glass with isopropyl alcohol. Make sure the bonding surface is kept free of water, oil and grease.

(cont'd)

Front Corner Glass Replacement (cont'd)

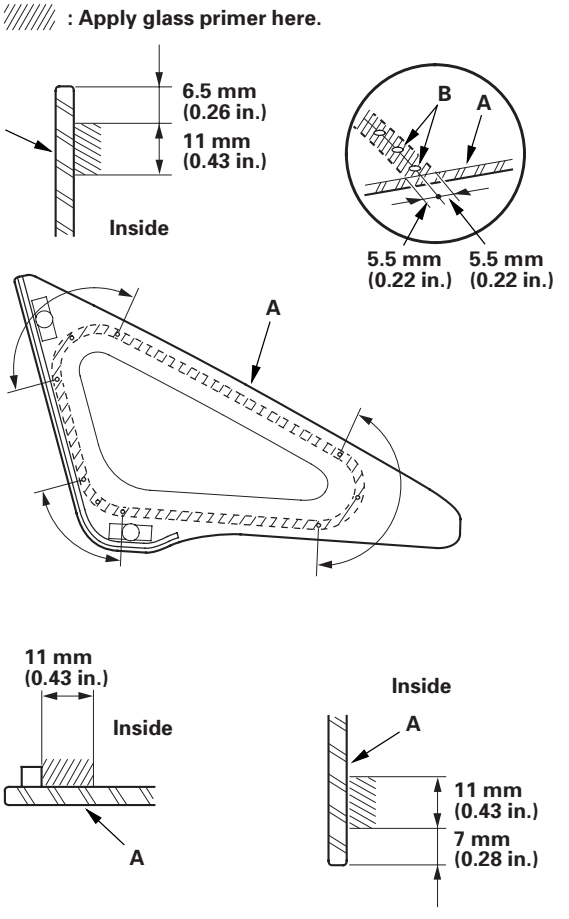
7. Attach the rubber dam (A) and the clips (B) with adhesive tape to the inside face of the front corner glass (C) as shown.
   Be careful not to touch the front corner glass where adhesive will be applied.

   Rubber dam adhesive tape:
   Thickness 0.16 mm (0.006 in.)
   Width 3 mm (0.12 in.)
   Clip adhesive tape:
   Thickness 1.2 mm (0.047 in.)
   Width 9 mm (0.35 in.)



8. Apply a light coat of glass primer with a sponge applicator to the inside face of the front corner glass (A) as shown, then lightly wipe it off with gauze or cheesecloth:

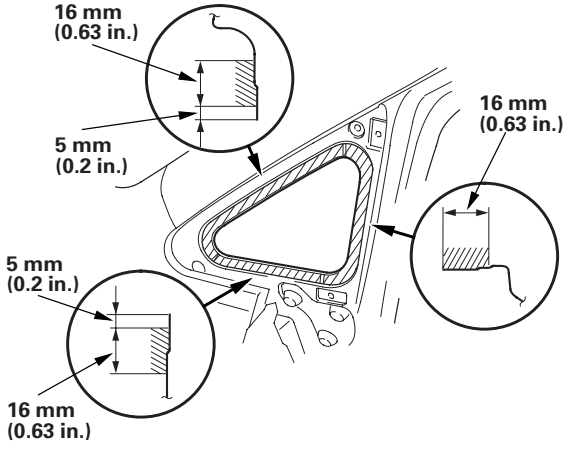
   - With the printed dots (B) on the front corner glass as a guide, apply the glass primer to both lower corner portions of the front corner glass.
   - Do not apply body primer to the front corner glass, and do not get body and glass primer sponge applicators mixed up.
   - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the front corner glass properly, causing a leak after the front corner glass is installed.
   - Keep water, dust, and abrasive materials away from primed surfaces.



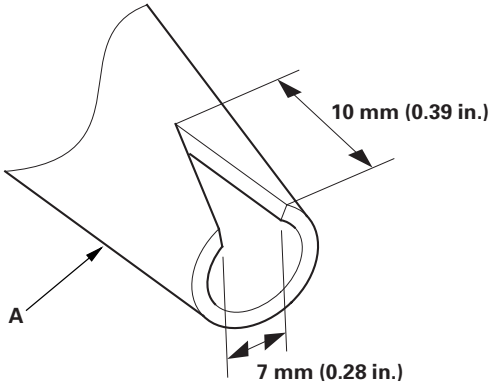
9. Carefully apply a light coat of body primer with a sponge applicator to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:

   - Do not apply body primer to any remaining original adhesive on the flange.
   - Be careful not to mix up the body and glass primer sponge applicators.
   - Never touch the primed surfaces with your hands.
   - Mask off the dashboard before painting the flange.

   : **Apply body primer here.**

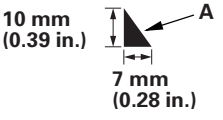


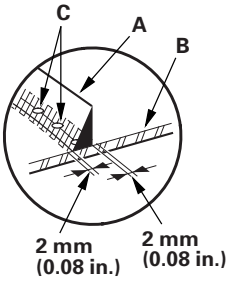
10. Cut a ''V'' in the end of the nozzle (A) on the adhesive cartridge as shown.

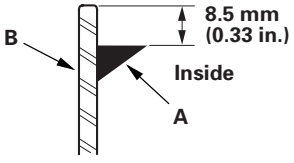


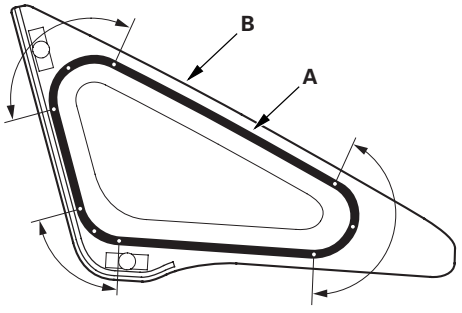
11. Put the cartridge in a caulking gun, and run a continuous bead of adhesive (A) around the front corner glass (B) as shown:

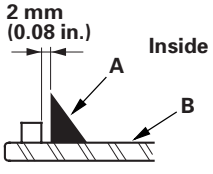
    - With the printed dots (C) on the front corner glass as a guide, apply the adhesive to both side portions of the front corner glass.
    - Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

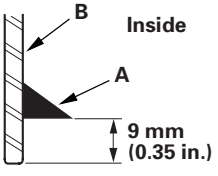












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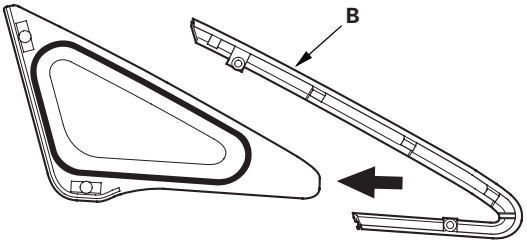
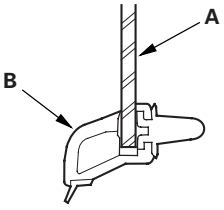
Front Corner Glass Replacement (cont'd)

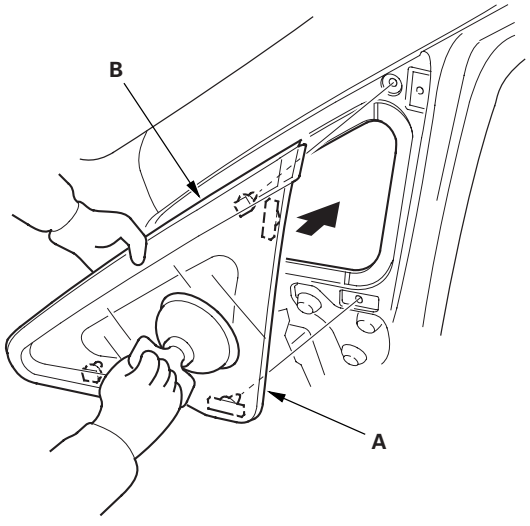
12. Set the front corner glass (A) to the front corner trim (B) quickly. Be careful not to touch the adhesive.





13. Hold the front corner glass (A) with a suction cup over the opening while holding the front corner trim (B) by the other hand, align the clips, and set it down on the adhesive. Lightly push on the front corner glass until its edges are fully seated on the adhesive all the way around.

    NOTE:
    - Make sure that there is no clearance between the sash and front lower sash.
    - Do not open or close any of the doors for about an hour until the adhesive is dry.



14. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the front corner glass, wipe with a soft shop towel dampened with isopropyl alcohol.

15. After the adhesive has dried, spray water over the front corner glass and check for leaks. Mark the leaking area, let the front corner glass dry, then seal with sealant. Let the vehicle stand for at least 4 hours after front corner glass installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.

16. Reinstall all remaining removed parts.

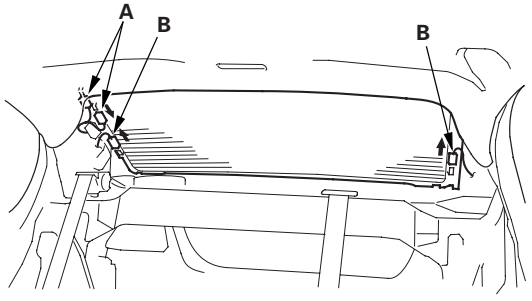
    NOTE: Advise the customer not to do the following things for 2 to 3 days:
    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Rear Window Replacement

NOTE:
- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with a piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the rear window defogger grid lines, window antenna grid lines, and terminals.

1. Remove these items:
   - Trunk lid
   - C-pillar trim (see page 20-75)
   - Rear shelf (see page 20-78)

2. Disconnect the window antenna connectors (A) and rear window defogger connectors (B).

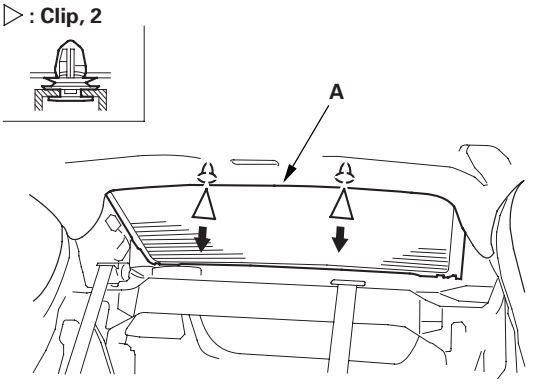


3. If the old rear window will be reinstalled, make alignment marks across the glass and the body with a grease pencil.

4. Pull down the rear portion of the headliner (A) by detaching the clips. Take care not to bend the headliner excessively, or you may crease or break it.

Fastener Locations

▷ : **Clip, 2**



5. Apply protective tape along the inside and outside edges of the body. Make a hole with an awl through the adhesive from inside the vehicle at a corner of the rear window. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

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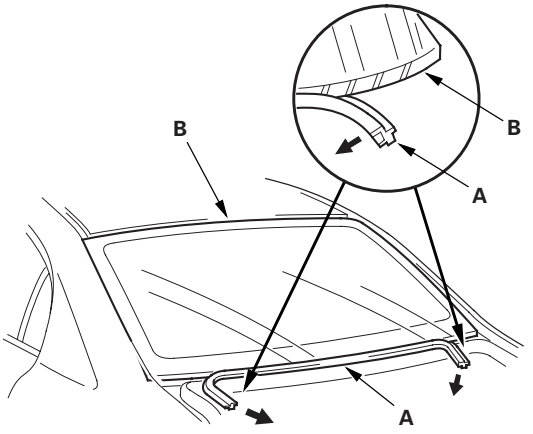
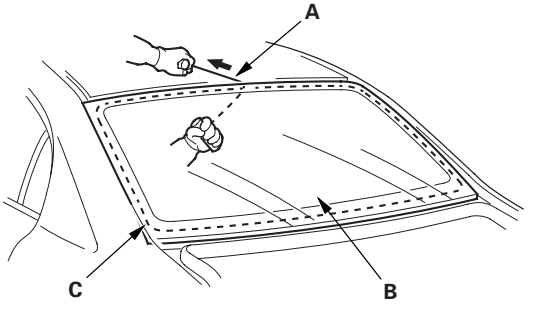
Rear Window Replacement (cont'd)

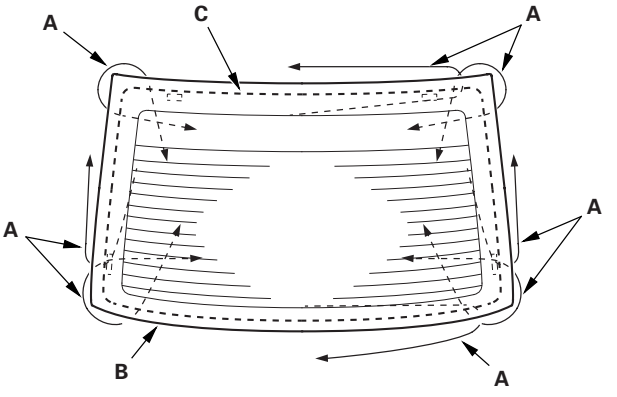
6. Remove the lower rubber dam (A) from the lower edge of the rear window (B). If necessary, cut the rubber dam with a utility knife.



7. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the rear window (B) as possible to prevent damage to the body, and carefully cut through adhesive (C) around the entire rear window.



Cutting positions



8. Carefully remove the rear window.

9. Scrape smooth the old adhesive, using a putty knife or similar tool, until there is a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:

   - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
   - Remove the fasteners from the body.

10. Clean the body bonding surface with a shop towel dampened in isopropyl alcohol. After cleaning, keep oil, grease, and water from getting on the surface.

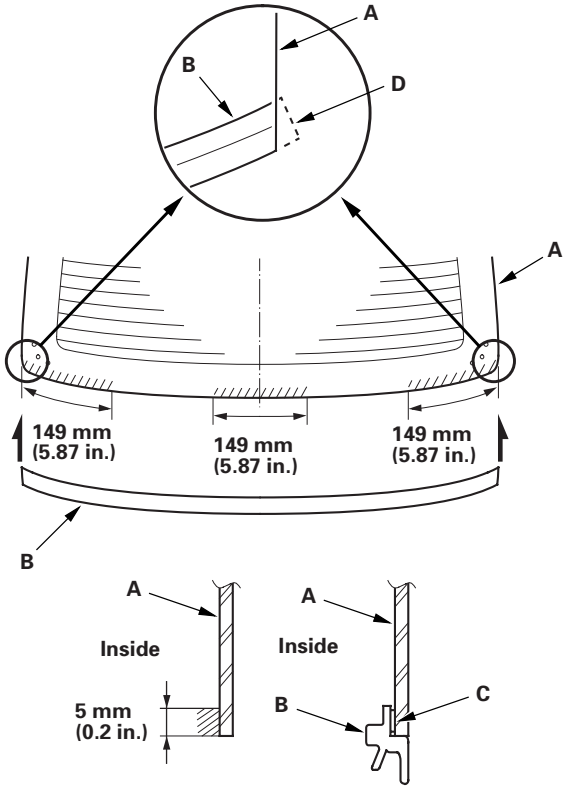
11. If the old rear window will be reinstalled, scrape off the old adhesive, the fasteners, and the rubber dam from the rear window with a putty knife. Clean the bonding surfaces on the inside face and the edge of the rear window with isopropyl alcohol. Make sure the bonding surface is kept free of water, oil, and grease.

12. Apply primer to the edge of the rear window (A) where the lower rubber dam adhesive tape will be attached as shown. Attach the lower rubber dam (B) with adhesive tape (C) to the lower edge of the rear window:

- After installing the rubber dam, cut the ends (D) of the rubber dam as shown.
- Be careful not to touch the windshield where adhesive will be applied.

Rubber dam adhesive tape:
Thickness 0.2 mm (0.008 in.)
Width 4 mm (0.16 in.)

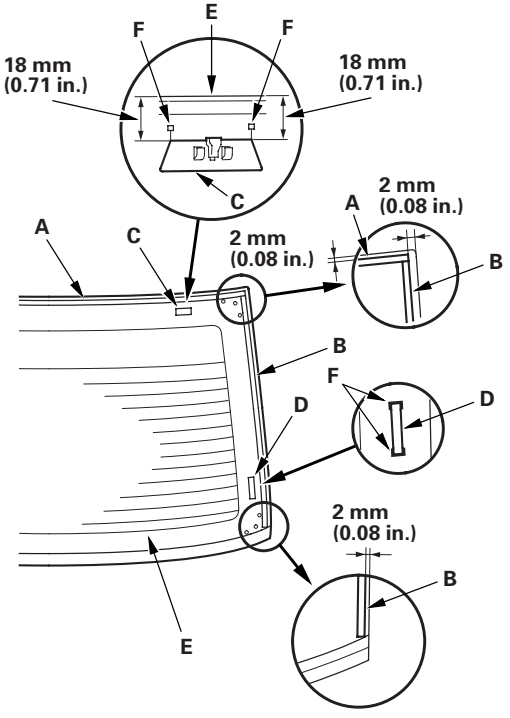
: **Apply primer here.**



13. Attach the upper rubber dams (A), the side rubber dams (B), the clips (C), and the fasteners (D) with adhesive tape to the inside face of the rear window (E) as shown:

- First attach the upper rubber dam, then attach the side rubber dams around the edge of the rear window. Be sure the top of the side rubber dam contacts with the bottom of the upper rubber dam. If necessary, cut the rubber dam with a utility knife.
- Be sure the clips, and the fasteners line up with the alignment marks (F).
- Be careful not to touch the rear window where adhesive will be applied.

Rubber dams adhesive tape:
Thickness 0.16 mm (0.006 in.)
Width 5 mm (0.2 in.)
Clips adhesive tape:
Thickness 0.4 mm (0.016 in.)
Width 13 mm (0.53 in.)
Fasteners adhesive tape:
Thickness 0.8 mm (0.03 in.)
Width 7 mm (0.28 in.)



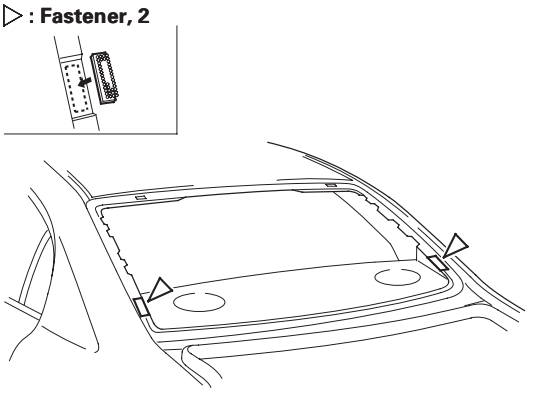
(cont'd)

Rear Window Replacement (cont'd)

14. Attach the fasteners with adhesive tape to the rear window opening flange of the body on both sides.

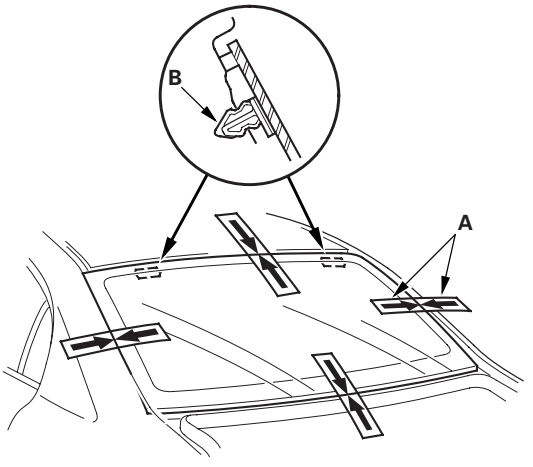
    Fasteners adhesive tape:
    Thickness 0.8 mm (0.031 in.)
    Width 9 mm (0.35 in.)

    Fastener Locations
    ▷: Fastener, 2



15. Set the rear window in the opening, and center it. Make alignment marks (A) across the rear window and the body with a grease pencil at the four points are shown:

    - Make sure both upper clips (B) are in the body holes.
    - Be careful not to touch the rear window where adhesive will be applied.

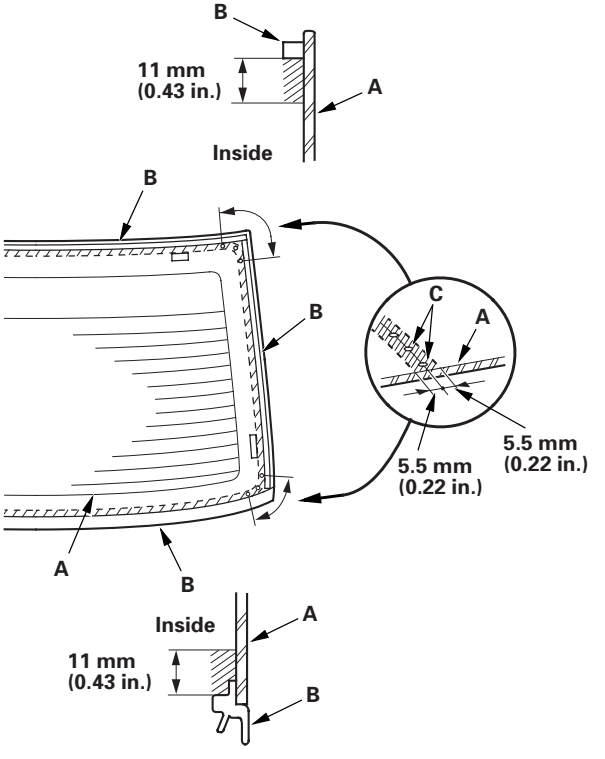


16. Remove the rear window.

17. Apply a light coat of glass primer with a sponge applicator along the edge of the rear window (A) between the dams (B) as shown, then lightly wipe it off with gauze or cheesecloth:

    - With the printed dots (C) on the rear window as a guide, apply the glass primer to both lower corner portions of the rear window.
    - Do not apply body primer to the rear window, and do not get body and glass primer sponge applicators mixed up.
    - Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
    - Keep water, dust, and abrasive materials away from primed surfaces.

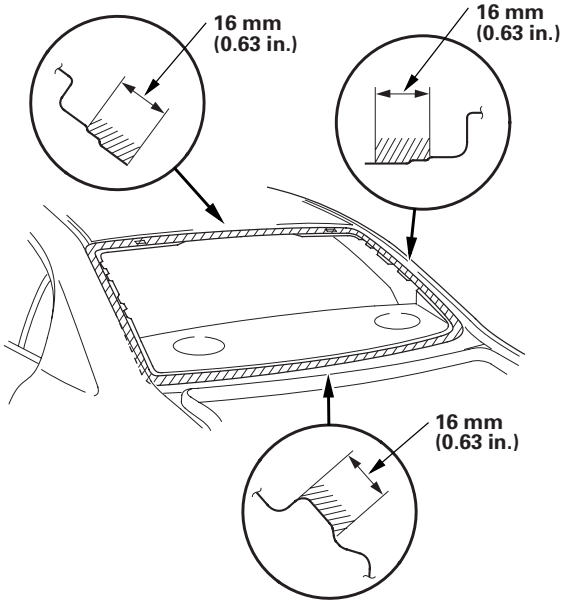
    : Apply glass primer here.



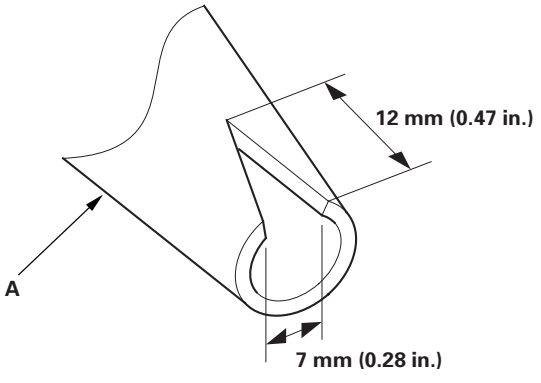
18. Carefully apply a light coat of body primer with a sponge to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:

    - Do not apply body primer to any remaining original adhesive on the flange.
    - Be careful not to mix up the body and glass primer sponge applicators.
    - Never touch the primed surfaces with your hands.

    : **Apply body primer to exposed point as shown.**

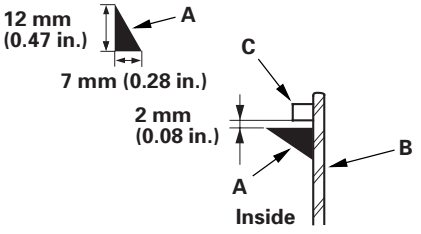


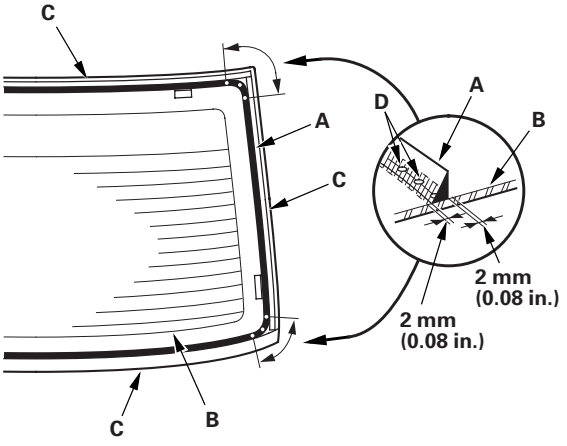
19. Cut a ''V'' in the end of the nozzle (A) on the adhesive cartridge as shown.

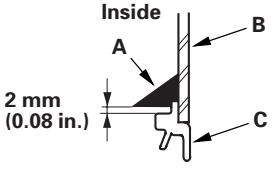


20. Put the cartridge in a caulking gun, and run a continuous bead of adhesive (A) around the edge of the rear window (B) between the dams (C) as shown:

    - With the printed dots (D) on the rear window as a guide, apply the adhesive to both side portions of the rear window.
    - Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.







(cont'd)

Rear Window Replacement (cont'd)

21. Hold the rear window with suction cups over the opening, align it with the alignment marks you made in step 15, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around.

    NOTE: Do not open or close any of the doors for about an hour until the adhesive is dry.

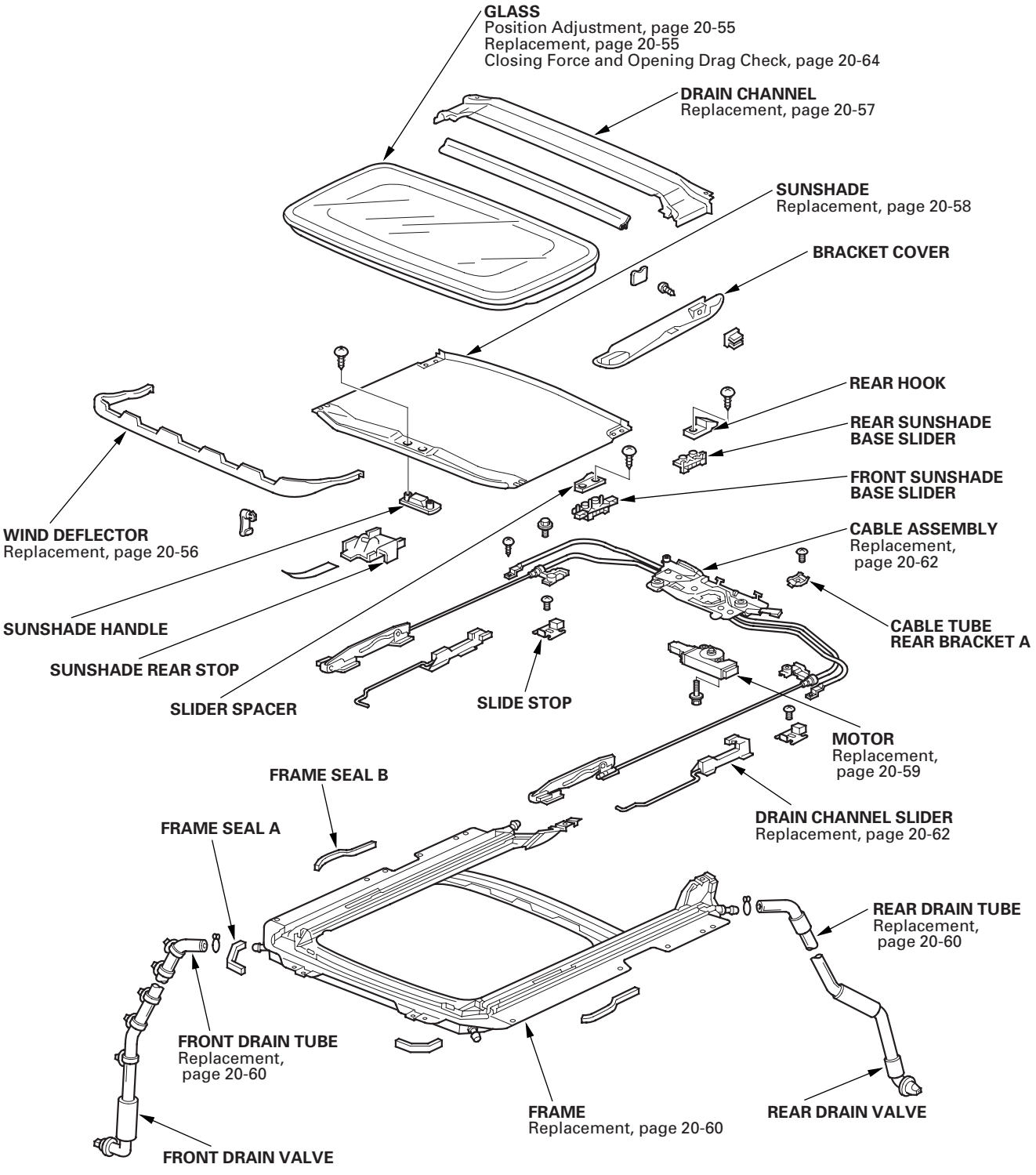
22. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with isopropyl alcohol.

23. After the adhesive has dried, spray water over the rear window and check for leaks. Mark the leaking area, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.

24. Reinstall all remaining removed parts.

    NOTE: Advise the customer not to do the following things for 2 to 3 days:
    - Slam the doors with all the windows rolled up.
    - Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Component Location Index

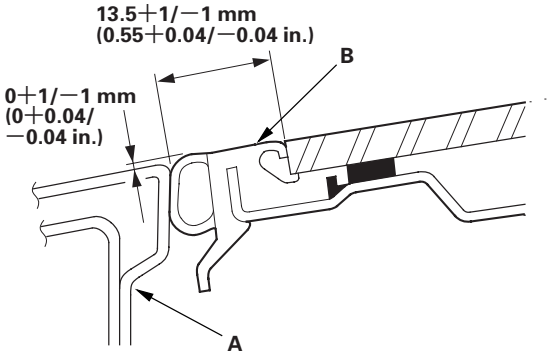


Symptom Troubleshooting Index

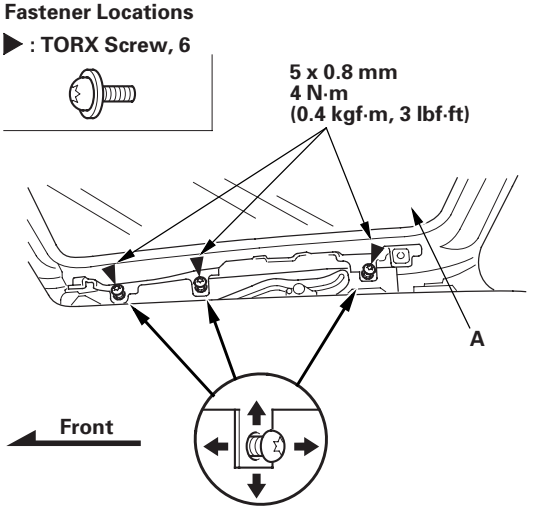
Symptom	Diagnostic procedure
Water leaks from moonroof	1. Check for a clogged drain tube. 2. Check for a gap between the glass weatherstrip and the roof panel (see page 20-55). 3. Check for a defective or an improperly installed glass weatherstrip or drain channel. 4. Check for a gap between the drain seal and the roof panel. 5. Adjust the moonroof position.
Wind noise from moonroof	1. Check for excessive clearance between the glass weatherstrip and the roof panel. 2. Adjust the moonroof position.
Motor noise from moonroof	1. Check for a loose motor. 2. Check for a worn gear or bearing. 3. Check for a deformed cable assembly.
Moonroof glass does not move, but motor turns	1. Check for a defective gear or inner cable. 2. Check for foreign matter stuck between the guide rail and the slider. 3. Check for a loose inner cable. 4. Make sure the cable assembly is attached properly.
Moonroof glass does not move and motor does not turn (glass can be moved with 5 mm hexagonal wrench)	1. Check for a blown fuse. 2. Check for a faulty moonroof switch. 3. Check for a run down battery. 4. Check for a defective motor control unit.
Moonroof glass does not stop at proper flush closed position	1. Reset the moonroof control unit (see page 22-287). 2. Check glass position adjustment.
During auto close operation, moonroof glass reverses when no object is trapped	Check for dirt and debris in the track. Reset the moonroof control unit (see page 22-287).
Moonroof glass moves, but there is no AUTO function	Reset the moonroof control unit (see page 22-287).

Glass Position Adjustment

The roof panel (A) should be even with the glass weatherstrip (B), to within 0+1/−1 mm (0+0.04/−0.04 in.) all the way around, and the distance from glass edge to the roof panel edge should be 13.5+1/−1 mm (0.55+0.04/−0.04 in.). If not, make the following adjustment:



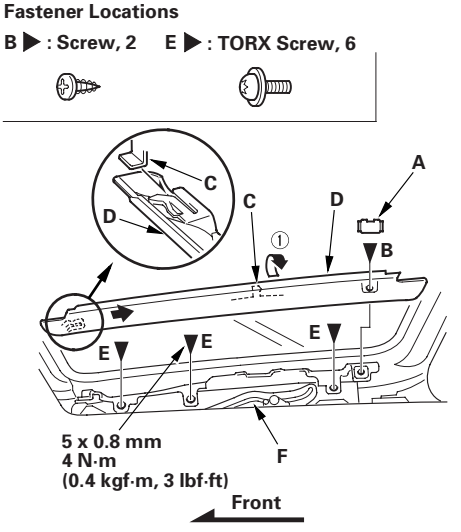
1. Remove the bracket cover.
2. Adjust the glass (A).
   - 1 Slightly loosen the screws with a TORX T25 bit.
   - 2 Move the glass up or down and forward or rearward.
   - 3 Tighten all screws securely.



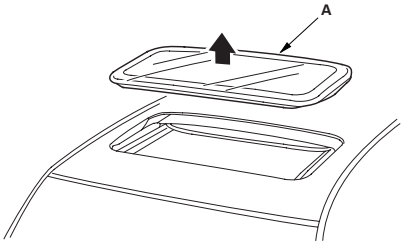
3. If necessary, repeat on the opposite side.

Glass Replacement

1. Close the glass fully.
2. Slide the sunshade all the way back.
3. Pry out the lid (A), remove the screws (B), and release the hooks (C), then remove both bracket covers (D). Remove the screws (E) with a TORX T25 bit from both glass brackets (F).



4. Remove the glass (A) by lifting it up. Do not damage the roof panel.

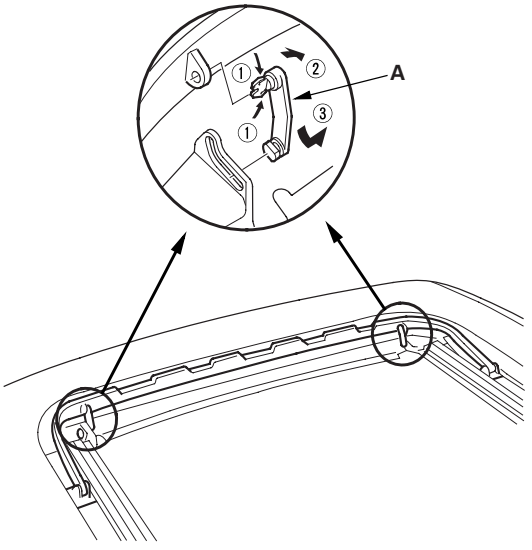


5. Install the glass in the reverse order of the removal, and adjust the glass position alignment (see page 20-55).
6. Reset the moonroof control unit (see page 22-287).
7. Check for water leaks. Use free-flowing water from a hose without a nozzle. Do not use high-pressure water.

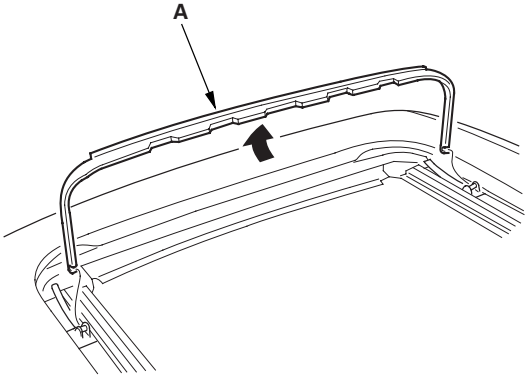
   NOTE: It is normal for some water to seep past the moonroof into the moonroof frame, and exit through the drains.

Wind Deflector Replacement

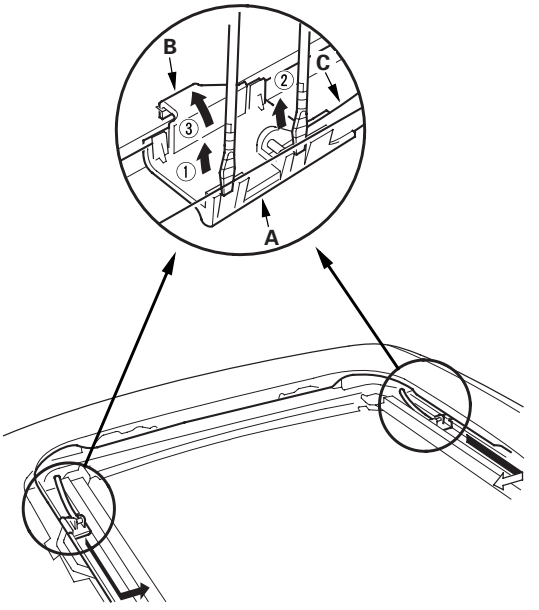
1. Open the glass fully.
2. Remove the links (A) from both sides.



3. Remove the wind deflector (A).



4. Pry up on the deflector bases (A) and release the hooks (B), then remove the bases with springs (C) from both sides.

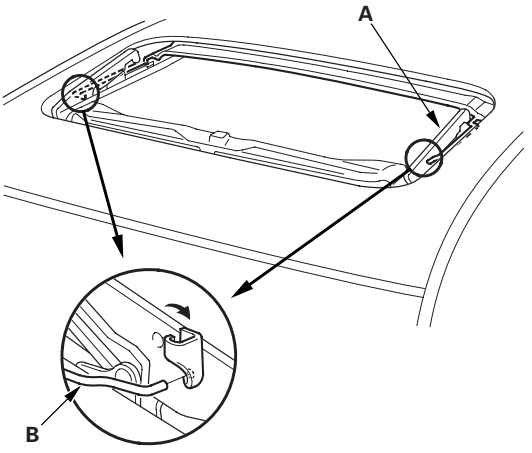


5. Install the deflector in the reverse order of removal.
6. Reset the moonroof control unit (see page 22-287).

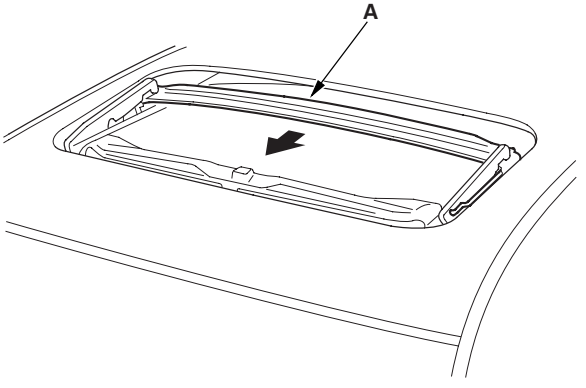
Drain Channel Replacement

1. Remove the glass (see page 20-55).

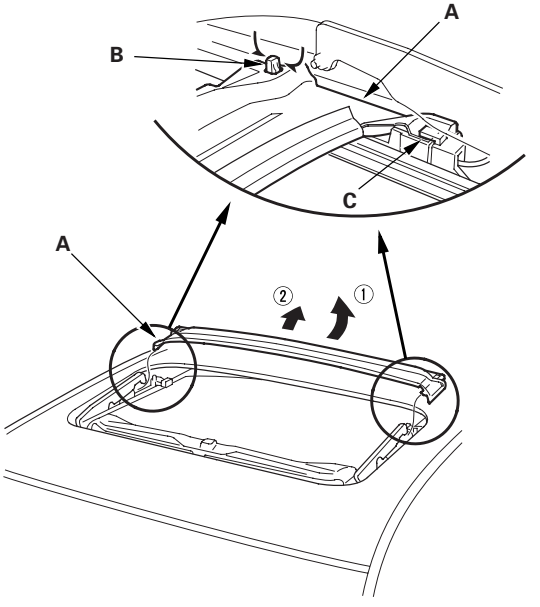
2. Move both glass brackets (A) with a 5 mm hexagonal wrench to the position where the moonroof normally tilts up, and disconnect the drain channel rods (B) on both sides.



3. Slide the drain channel (A) forward.



4. Pull up the rear edge of the drain channel (A) while pushing both clips (B), and release the channel from both hooks (C) of the drain channel slider by pulling it rearward.



5. Remove the drain channel.

6. Install the channel in the reverse order of removal, and note these items:

   - Push the clip portions into place securely.
   - Check the glass position adjustment (see page 20-55).

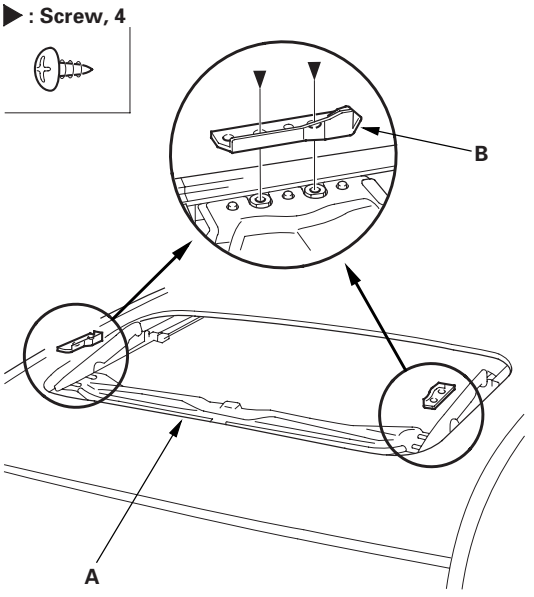
7. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Sunshade Replacement

1. Remove the drain channel (see page 20-57).
2. Slide the sunshade (A) until you can see both sunshade slider spacers (B).

Fastener Locations

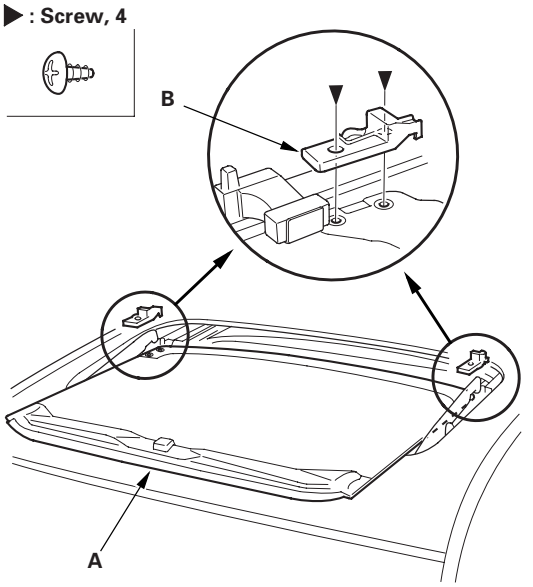
▶ : Screw, 4



3. Remove the screws, then remove both spacers.
4. While lifting the front portion of the sunshade (A), move the sunshade forward until you can see both sunshade rear hooks (B). Do not damage the sunshade or the hooks.

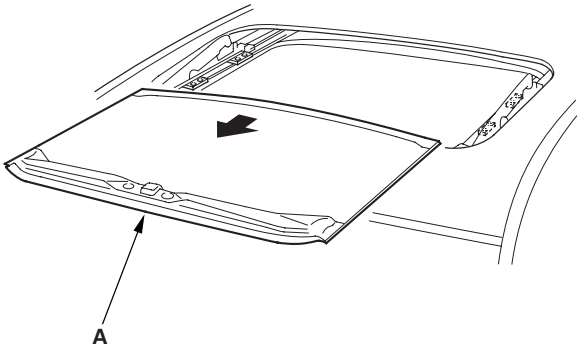
Fastener Locations

▶ : Screw, 4

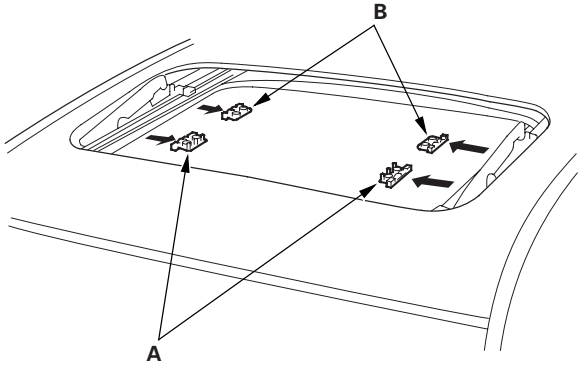


5. Remove the screws, then remove both rear hooks.

6. Remove the sunshade (A).



7. Remove both front sunshade base sliders (A) and both rear sunshade base sliders (B).



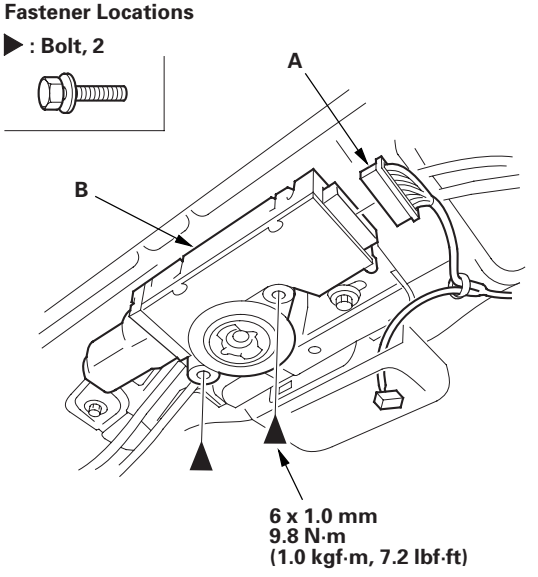
8. Install the sunshade in the reverse order of removal, and check the glass position adjustment (see page 20-55).

9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Motor Replacement

1. Remove the headliner (see page 20-84).

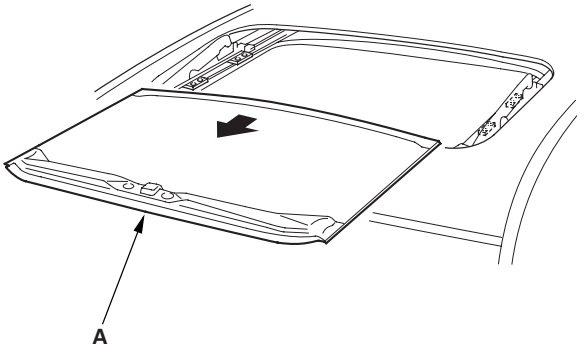
2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor (B).



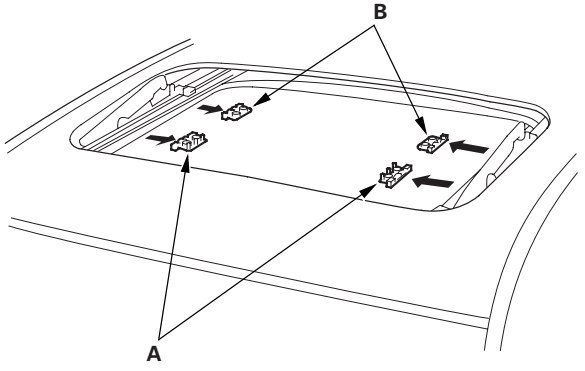
3. Install the motor in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly.
- Reset the moonroof control unit (see page 22-287).
- Check the motor operation.

6. Remove the sunshade (A).



7. Remove both front sunshade base sliders (A) and both rear sunshade base sliders (B).



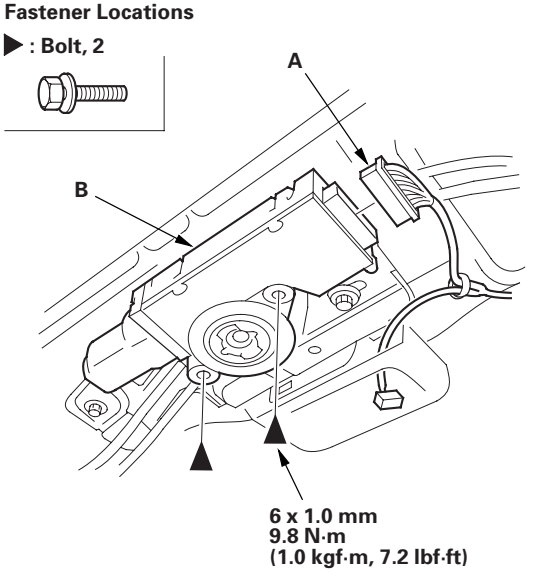
8. Install the sunshade in the reverse order of removal, and check the glass position adjustment (see page 20-55).

9. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

Motor Replacement

1. Remove the headliner (see page 20-84).

2. Put on gloves to protect your hands. Disconnect the connector (A), and remove the bolts, then remove the motor (B).



3. Install the motor in the reverse order of removal, and note these items:

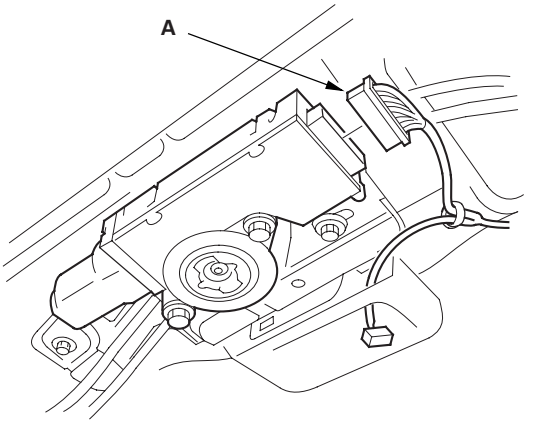
- Make sure the connector is plugged in properly.
- Reset the moonroof control unit (see page 22-287).
- Check the motor operation.

Frame and Drain Tube Replacement

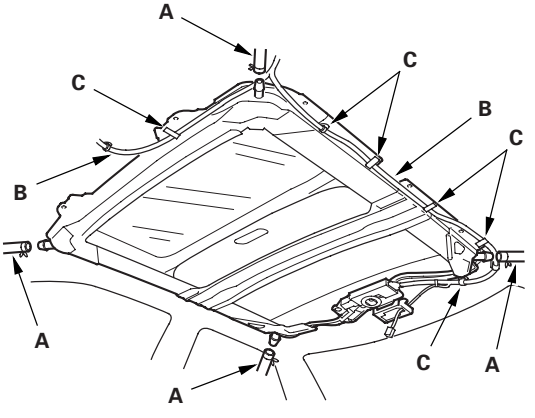
SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

1. Remove these items:
   - Headliner (see page 20-84)
   - Moonroof glass (see page 20-55)

2. Put on gloves to protect your hands. Disconnect the motor connector (A).



3. Disconnect the drain tubes (A).

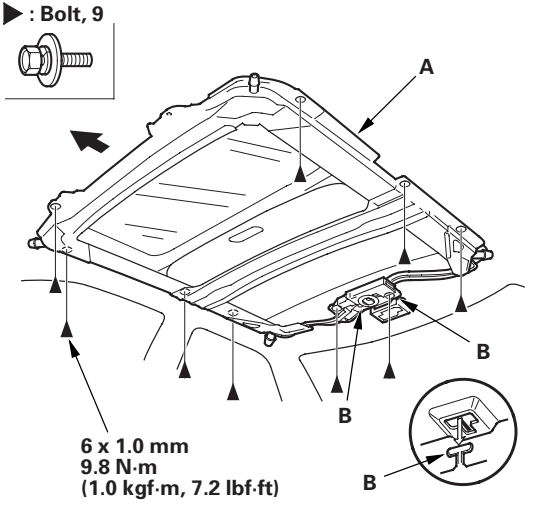


4. Remove the roof wire harness (B) by detaching the harness clips (C).

5. With an assistant holding the frame (A), remove the bolts, starting at the rear, and release the rear hooks (B) by moving the frame forward.

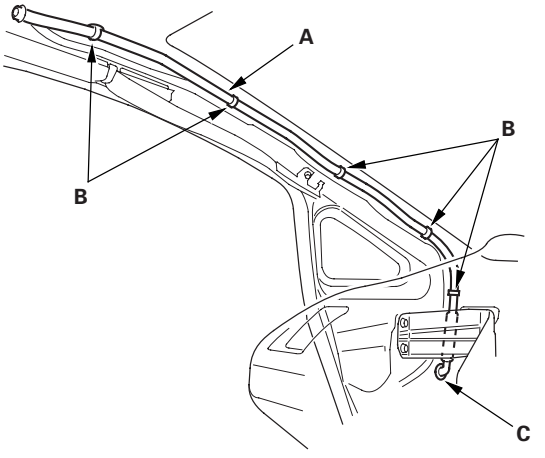
Fastener Locations

▶ : Bolt, 9



6. With the help of an assistant, carefully remove the frame through the front door opening. Take care not to scratch the interior trim or the body, or tear the seat covers.

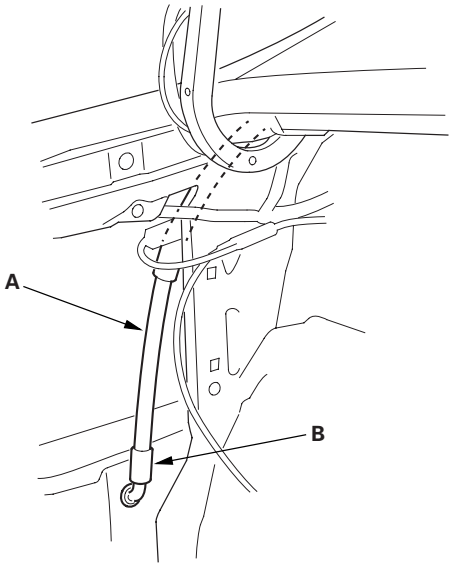
7. To remove a front drain tube (A) from the body, remove the kick panel, left or right (see page 20-66), and the driver's dashboard undercover (see page 20-103) or the passenger's dashboard undercover (see page 20-104). Detach the clips (B) and remove the drain valve (C) from the body hole, then remove the front drain tube.

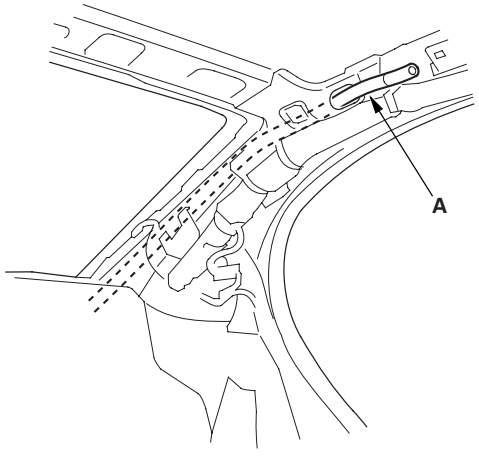


8. To remove a rear drain tube (A) from the body, remove these parts:

   - Spare tire lid (see step 2 on page 20-80)
   - Trunk rear trim panel (see step 4 on page 20-80)
   - Trunk side trim panel (see step 6 on page 20-81)

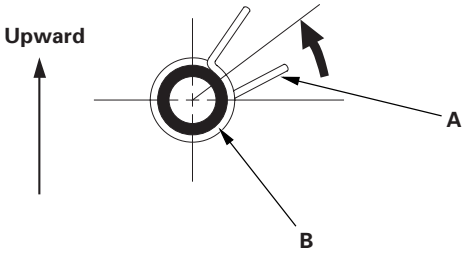
   Remove the drain valve (B) from the body hole. Tie a string to the top end of the rear drain tube, then pull back the trunk side trim panel and pull the drain tube down out of the pillar.





9. Install the frame and the drain tubes in the reverse order of removal, and note these items:

   - Before installing the frame, clear the drain tubes and the drain valves using compressed air.
   - When installing, tie the string left in the body during drain tube removal to the top end of the new drain tube and pull it up into the roof.
   - Check the frame seal.
   - Clean the surface of the frame.
   - When installing the frame, first attach the rear hooks into the body holes.
   - Make sure the connectors are plugged in properly.
   - When connecting the drain tubes, slide it over the frame nozzles at least 10 mm (0.39 in.).
   - Adjust the tube clips (A) on the drain tubes (B) up or down so as not to interfere other interior pieces or body.



10. Check for water leaks. Let the water run freely from a hose without a nozzle. Do not use a high-pressure spray.

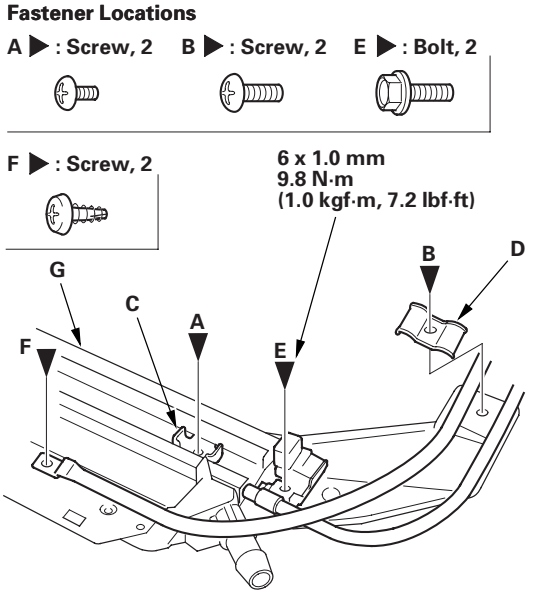
Drain Channel Slider and Cable Assembly Replacement

1. Remove the frame (see page 20-60).

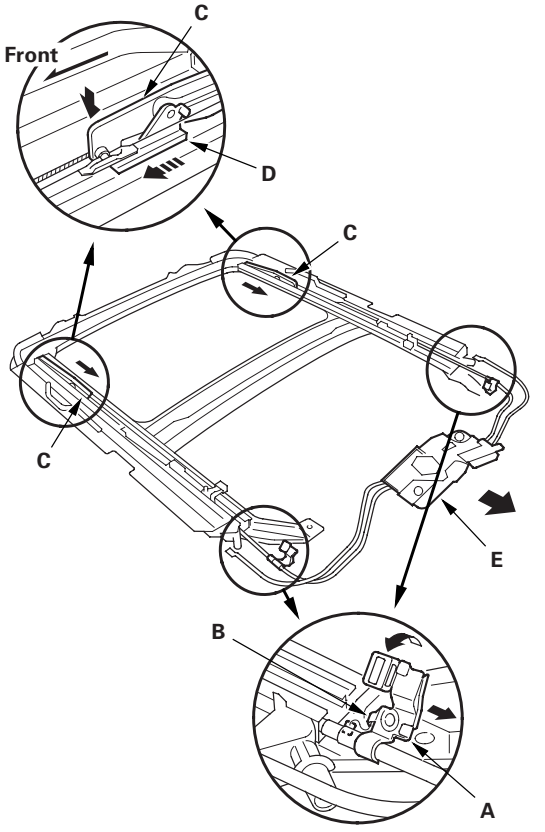
2. Remove these parts from the frame:

   - Sunshade (see page 20-58)
   - Moonroof motor (see page 20-59)

3. Put on gloves to protect your hands. Remove the screws (A, B) securing the slide stops (C), and the cable tube rear brackets A (D), the cable tube side bracket mounting bolts (E) and the cable tube mounting screws (F) from both sides of the frame (G).



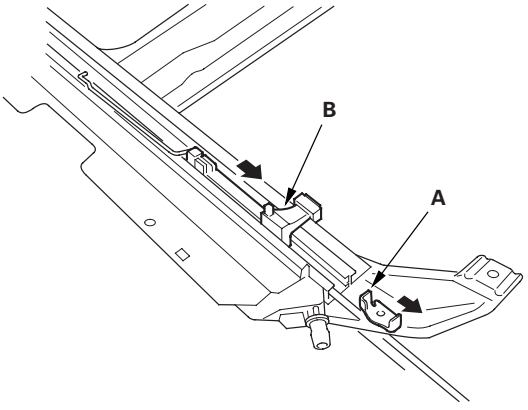
4. Turn both cable tube side brackets (A) up to release the hooks (B) from the holes in both sides of the frame.



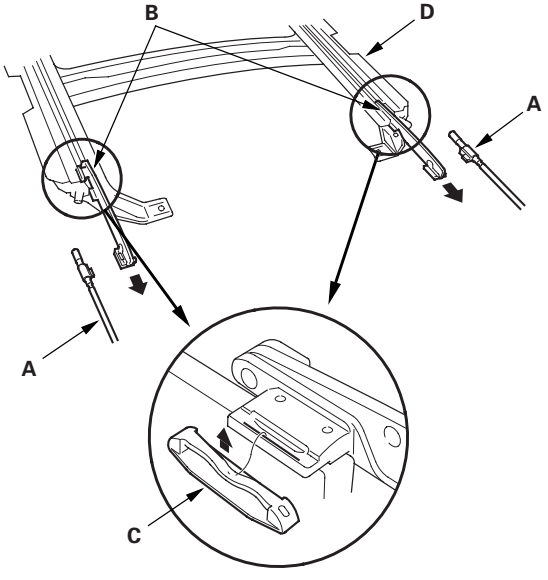
5. Pivot the glass brackets (C) down by sliding the link lifters (D) back, then slide both glass brackets back with the link lifters.

6. Slide the cable assembly (E) half-way back.

7. Remove the slide stops (A) and the drain channel sliders (B) from both sides.

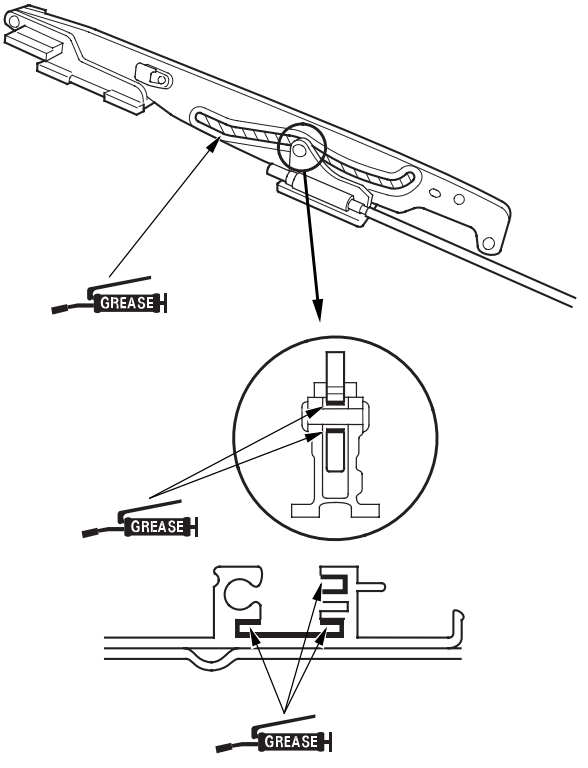


8. Slide the cable assembly (A) and both glass brackets (B) back, remove the deflector sliders (C) from both glass brackets, then remove them from the frame (D).



9. Install the slider and the cable assembly in the reverse order of removal, and note these items:

- Damaged parts should be replaced.
- Apply multipurpose grease to the glass bracket (A) and the guide rail portion of the frame (B) indicated by the arrows.
- Before reinstalling the motor, make sure both link lifters are parallel, and in the fully closed position.
- Before reinstalling the motor, install the frame and the glass, then check the opening drag (see page 20-64).
- After reinstalling the motor, do the moonroof calibration (see page 22-287).



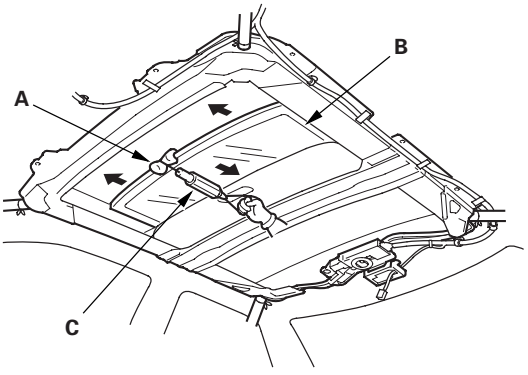
Closing Force and Opening Drag Check

1. Remove the headliner (see page 20-84).

2. Closing force check:

   - With a shop towel (A) on the leading edge of the glass (B), attach a spring scale (C) as shown.
   - Have an assistant hold the switch to close the glass while you measure the force required to stop it.
   - Read the force as soon as the glass stops moving, then immediately release the switch and spring scale.

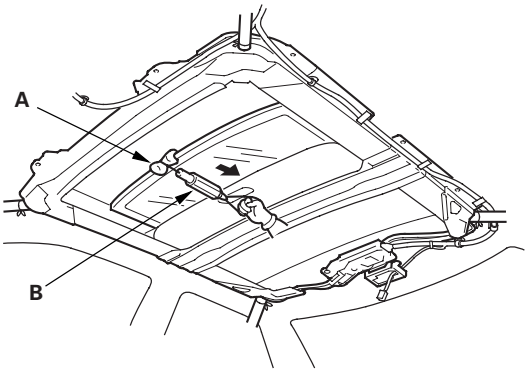
   Closing force: 200—290 N (20—30 kgf, 44—66 lbf)



3. If the force in not within specification, remove the moonroof motor (see page 20-59), and check the following items:

   - Check the gear portion and the inner cable for breakage and damage. If the gear portion is broken, replace the motor. If the inner cable is damaged, remove the frame (see page 20-60), and replace the cable (see page 20-62).
   - Check the moonroof motor (see page 22-290). If the motor fails to run or doesn't turn smoothly, replace it.
   - Check the opening drag. Go to step 4.

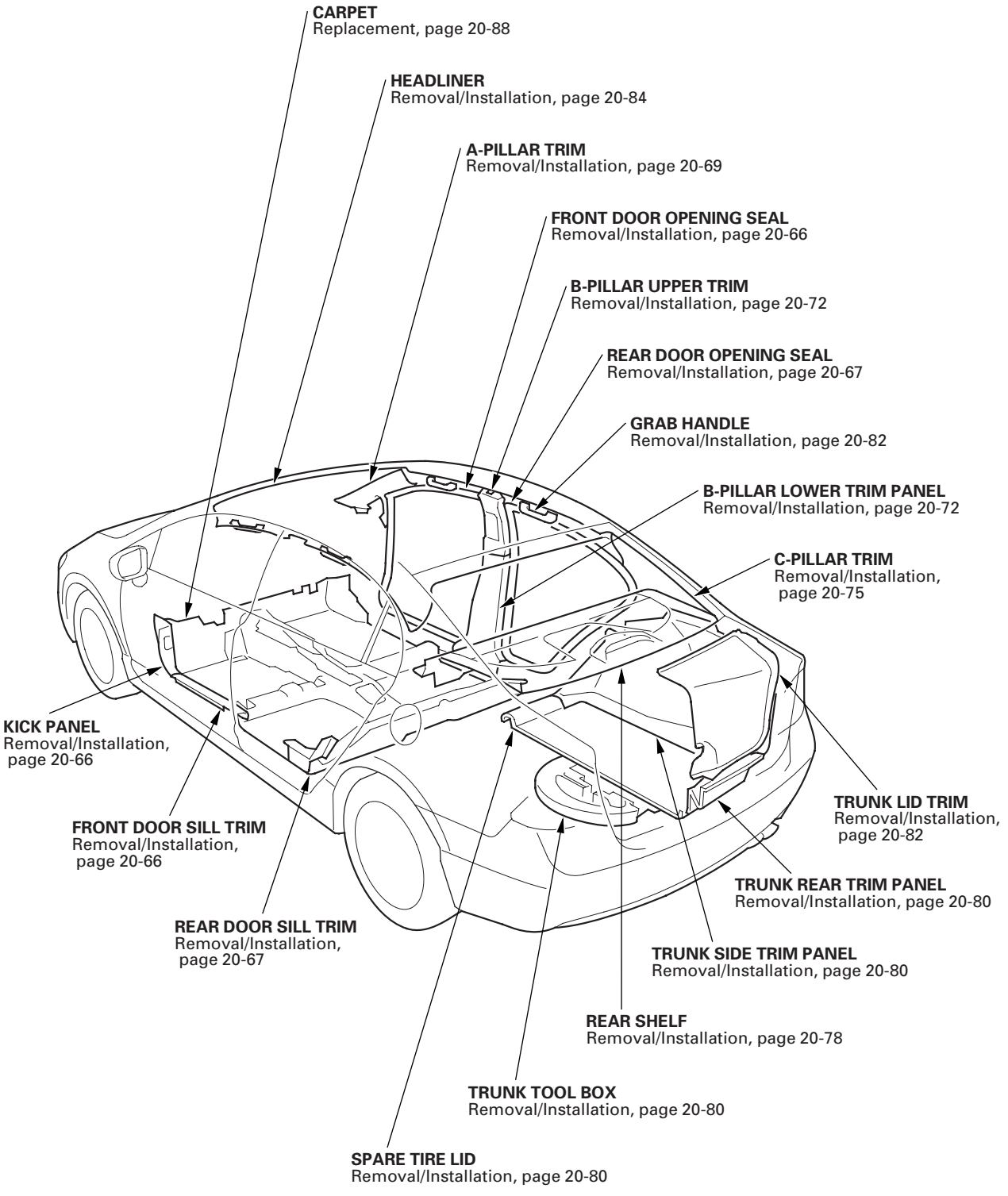
4. Opening drag check: Protect the leading edge of the glass with a shop towel (A). Measure the effort required to open the glass using a spring scale (B) as shown.



5. If the load is over 40 N (4 kgf, 9 lbf), check:

   - The side clearance and glass position adjustment (see page 20-55).
   - For broken or damaged sliding parts. If any sliding parts are damaged, replace them.

Component Location Index



Trim Removal/Installation - Door Areas

Special Tools Required
KTC trim tool set 07AAC-SEPA240

Front Door Sill Area

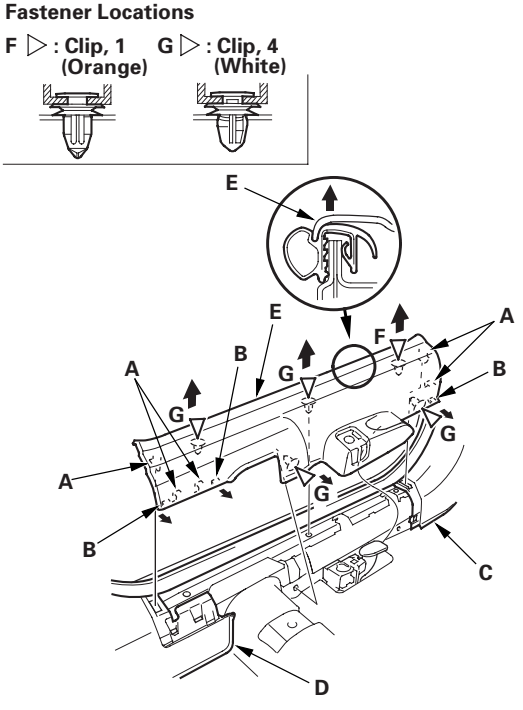
NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

1. Driver's side: Remove the footrest (see step 3 on page 20-89).

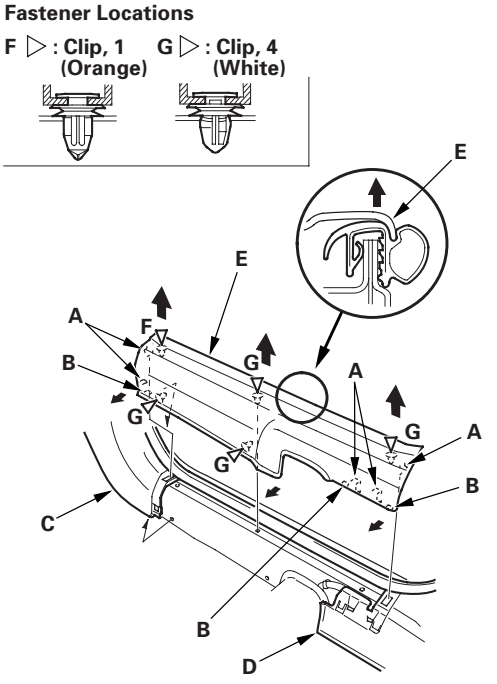
2. Driver's side: Remove the front side cap from the front door sill trim, and remove the trunk lid/fuel fill door opener lock cylinder and the screw (see page 20-184).

3. Detach the hooks (A) and the tabs (B) from the kick panel (C) and the B-pillar lower trim (D), and pull the front door sill trim (E) up by hand to detach the clips (F, G), then remove it.

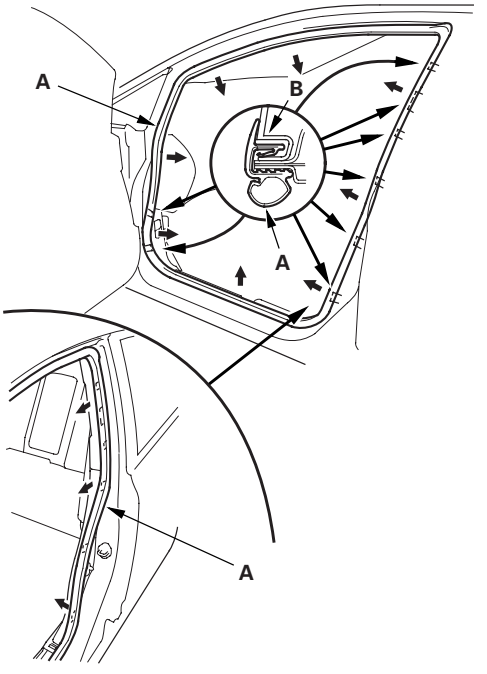
Driver's side



Passenger's side



4. Pull out the front door opening seal (A) from the trim hooks (B) and around the front door opening flange, then remove the seal.

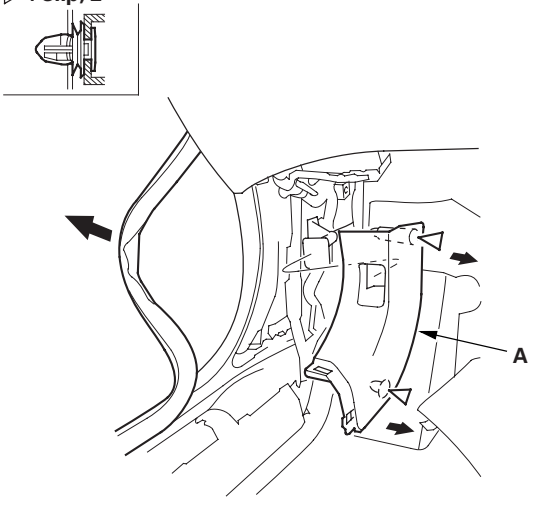


5. Pull the driver's kick panel (A) or the passenger's kick panel (B) back by hand to detach the clips, then remove it.

Driver's side

Fastener Locations

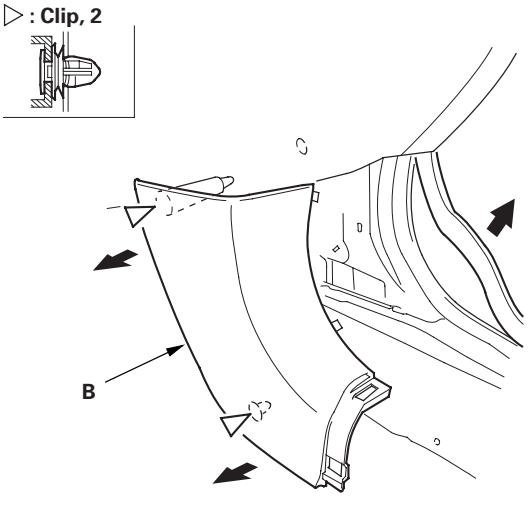
▷: **Clip, 2**



Passenger's side

Fastener Locations

▷: **Clip, 2**



6. Install the trim in the reverse order of removal, and note these items:

- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips and the hooks into place securely.

Special Tools Required
KTC trim tool set 07AAC-SEPA240

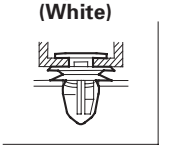
Rear Door Sill Area

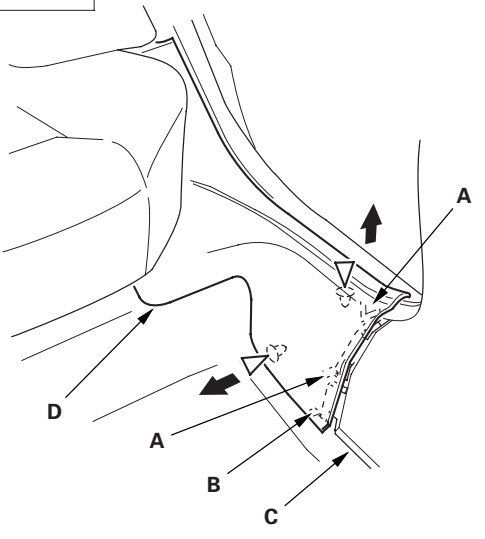
NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

1. Detach the hooks (A) and the tab (B) from the B-pillar lower trim (C), and pull the rear door sill trim (D) up by hand to detach the clips, then remove it.

Fastener Locations

▷: **Clip, 2 (White)**





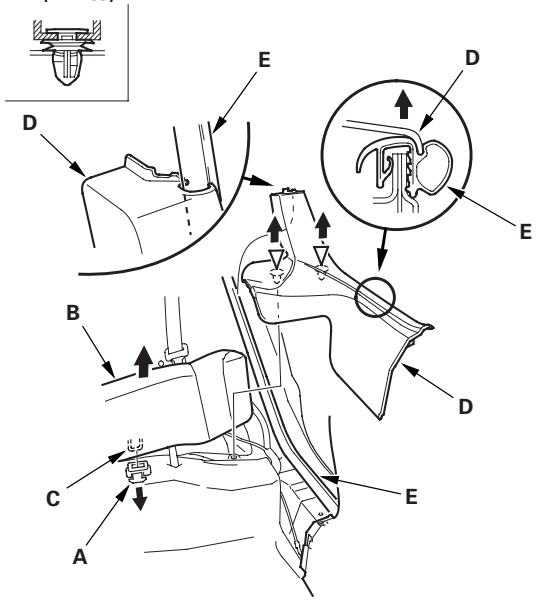
(cont'd)

Trim Removal/Installation - Door Areas (cont'd)

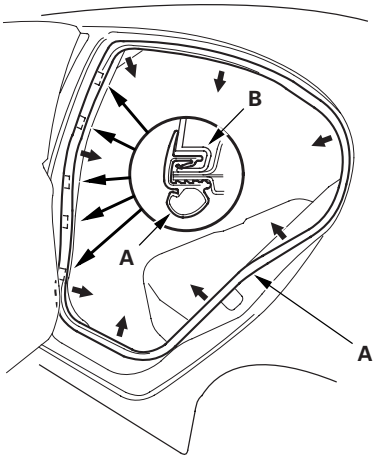
2. Pull the seat hook knob (A) while pushing down on the rear seat cushion (B) to release the hook (C). While pulling the cushion up, detach the clips and remove the rear door sill trim (D) from the rear door opening seal (E).

Fastener Locations

▷: **Clip, 2 (White)**



3. Pull out the rear door opening seal (A) from the trim hooks (B) and around the rear door opening flange, then remove the seal.



4. Install the trim in the reverse order of removal, and note these items:

- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips and the hooks into place securely.

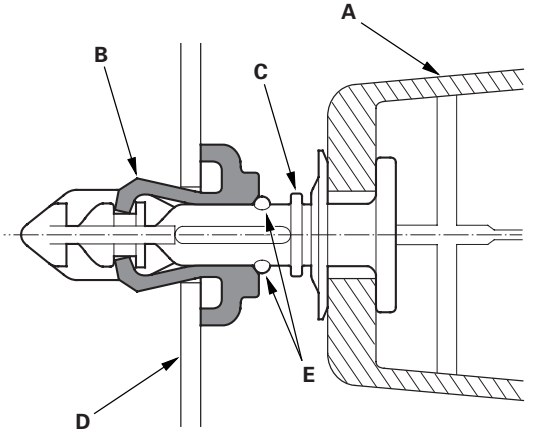
Trim Removal/Installation - Pillar Areas

Special Tools Required
KTC trim tool set 07AAC-SEPA240

A-Pillar Trim

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

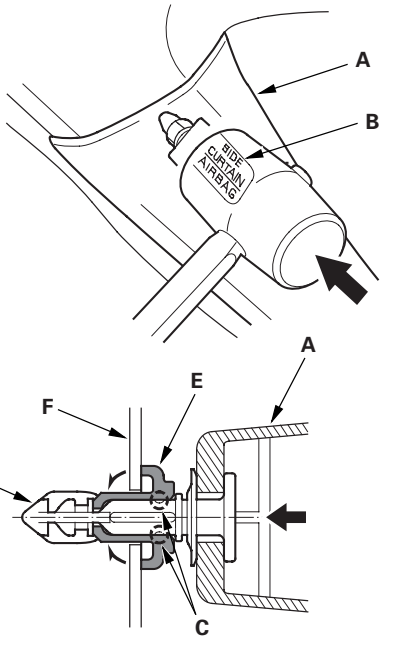
NOTE:
- Follow the A-pillar trim installation procedure carefully; improper installation could cause the side curtain airbag to deploy improperly and possibly cause injury.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the trim and panels.
- The upper clip in the A-pillar trim (A) consists of a grommet (B) and a pin (C). The grommet expanded with the pin secures it to the body panel (D). The projections (E) on the pin are broken during removal, so the clip must be replaced with a new one when the trim is reinstalled.



1. Pull the door opening seal away from the A-pillar as needed (see step 4 on page 20-66).

2. Hit the upper clip in the A-pillar trim (A) with a rubber mallet. The clip is under the ''SIDE CURTAIN AIRBAG'' mark (B). Hitting the clip breaks the projections (C) on the pin (D) and pushes it into the grommet (E) on the body (F).

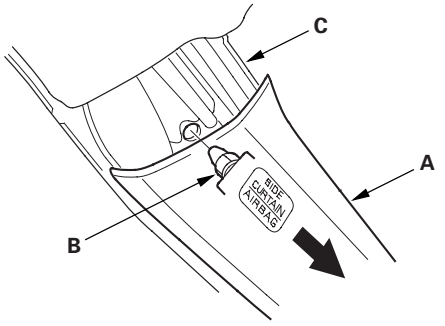
   NOTE: The upper clip must be replaced with a new one when the A-pillar trim is reinstalled.

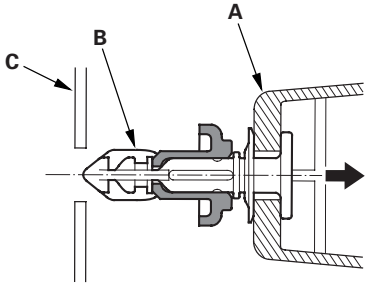


(cont'd)

Trim Removal/Installation - Pillar Areas (cont'd)

3. Pull the front of the A-pillar trim (A) back by hand to remove the upper clip (B) from the body (C).

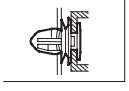


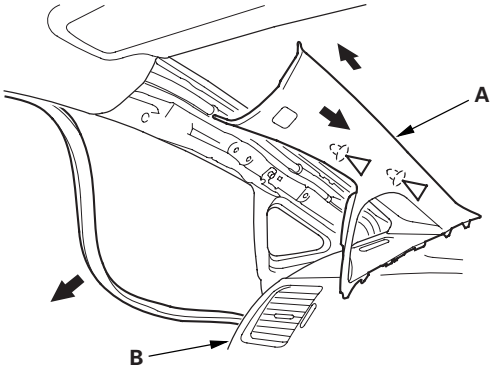


4. Pull the A-pillar trim (A) by hand to detach the clips. Pull the trim up from the dashboard (B), then remove it.

Fastener Locations

▷: **Clip, 2 (Black)**

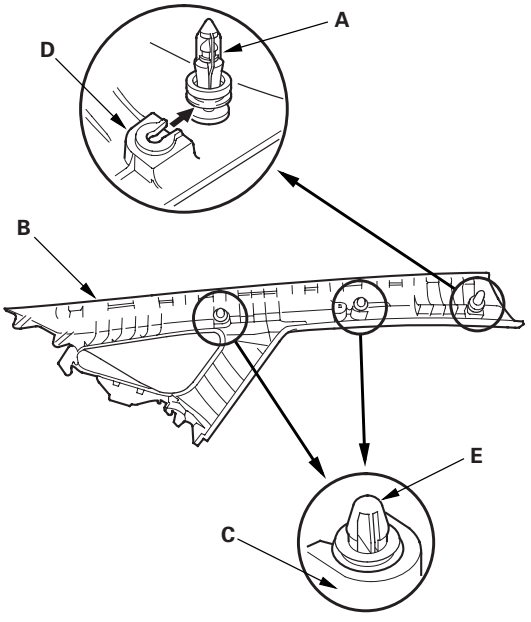




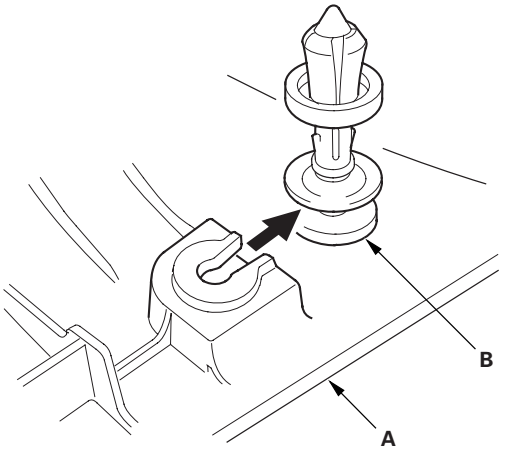
5. If the side curtain airbag has deployed, replace the A-pillar trim and all clips on the trim with new ones (see page 24-185).

6. If the side curtain airbag has not deployed, remove the upper clip (A) from the removed A-pillar trim (B) and discard it. Then check the trim:

   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect the A-pillar trim and replace it if it has any of the following damage:
     – Any cracks, deformations, or stress-whitening in the A-pillar trim
     – Any cracks or stress-whitening in the clip seating surfaces (C, D)
   - If the clips (E) are damaged or stress-whitened, replace them with new ones.
   - Replace the upper clip with a new one.

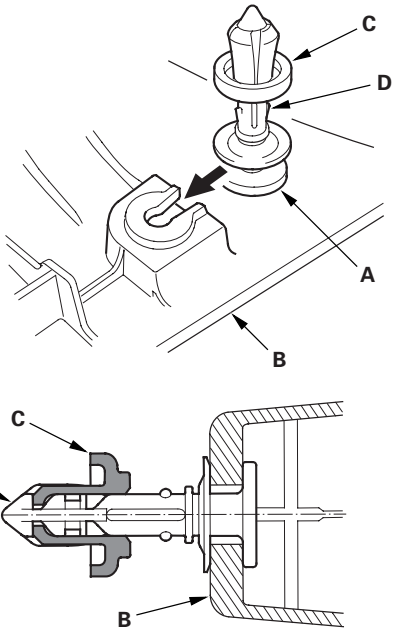


7. Before installing the A-pillar trim (A), whether it is being replaced or reinstalled, temporarily remove the new upper clip (B).



8. Check the overlap between the headliner and A-pillar trim, and if necessary, adjust it (see page 24-185).

9. Carefully install a new upper clip (A) to the A-pillar trim (B). Be sure that the grommet (C) is nearest to the top of the pin (D) as shown.



10. Reinstall the A-pillar trim (A).

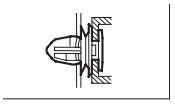
–1 Insert the bottom of the trim into the dashboard (B).

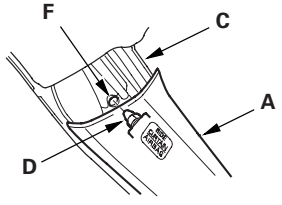
–2 Place the trim over the A-pillar (C), and fit its upper clip (D), and lower clips (E) into the holes (F) in the A-pillar, then lightly push the trim into place.

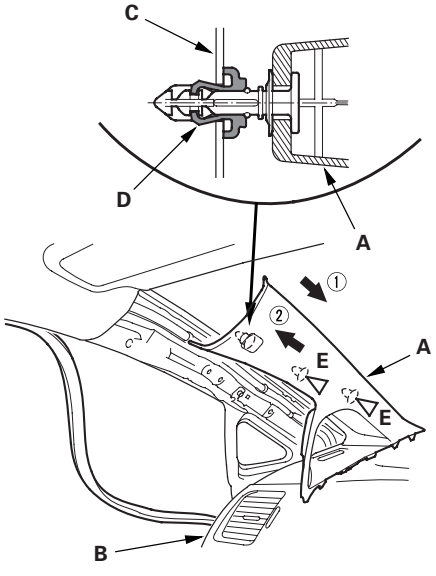
NOTE:
- Make sure the side curtain airbag is not tucked down under the clips and the ribs.
- Push lightly on the upper clip. If you push too hard, the clip will be damaged, and it will not hold the trim properly.

Fastener Locations

E ▷ : Clip, 2 (Black)







11. Reinstall the front door opening seal.

Trim Removal/Installation - Pillar Areas (cont'd)

Special Tools Required
KTC trim tool set 07AAC-SEPA240

B-Pillar Upper/Lower Trim

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

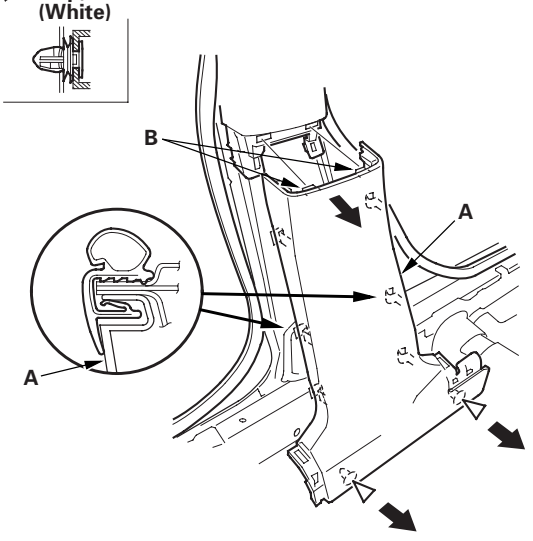
1. Remove these items:
   - Front door sill trim (see page 20-66)
   - Rear door sill trim (see page 20-67)
   - Front door opening seal, as needed (see step 4 on page 20-66)
   - Rear door opening seal, as needed (see step 3 on page 20-68)

2. Slide the front seat fully forward.

3. Remove the B-pillar lower trim (A).
   - 1 Pull the upper portion of the trim back to release the upper hooks (B).
   - 2 Detach the lower clips by pulling the bottom of the trim back by hand.

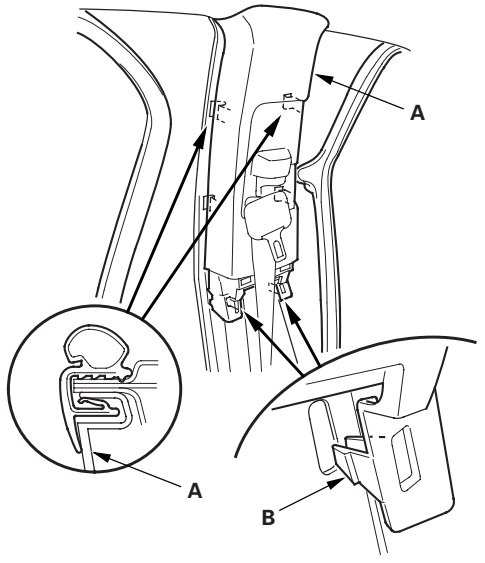
Fastener Locations

▷: **Clip, 2 (White)**



4. Remove the front seat belt lower anchor (see page 24-4).

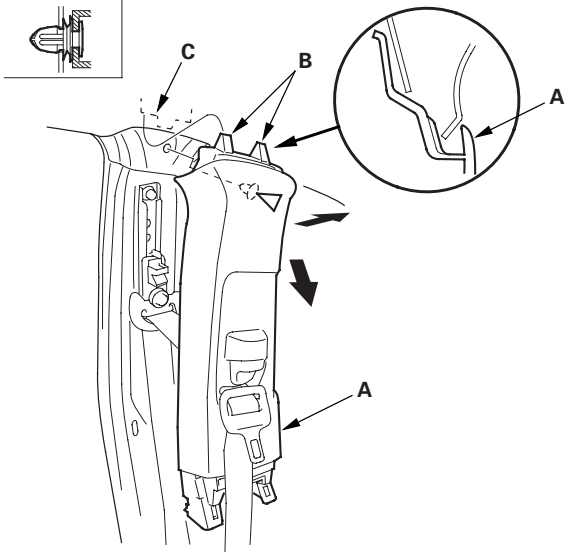
5. Pull the bottom of the B-pillar upper trim (A) back by hand to detach the lower hooks (B).



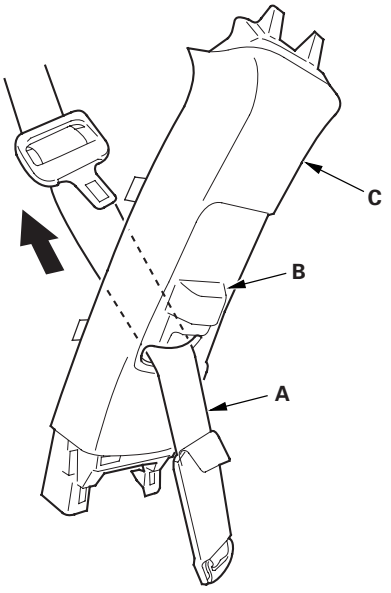
6. Detach the upper clip by pulling the top of the B-pillar upper trim (A). Pull the trim down to release the upper hooks (B) from the side curtain airbag B-pillar bracket (C).

Fastener Location

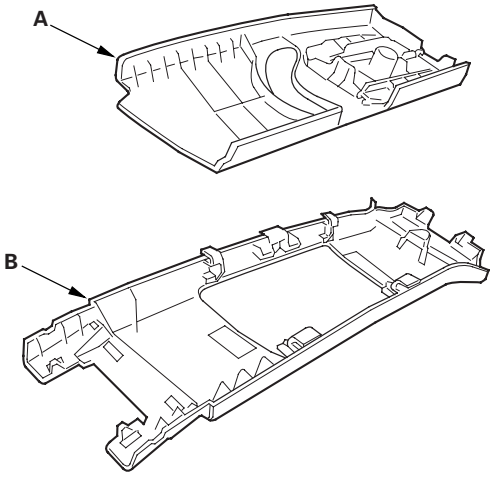
▷: **Clip, 1 (Pink)**



7. Pass the front seat belt (A) lower anchor out through a hole in the slider (B), then remove the B-pillar upper trim (C).



8. Remove the slider (A) from the B-pillar upper trim (B).

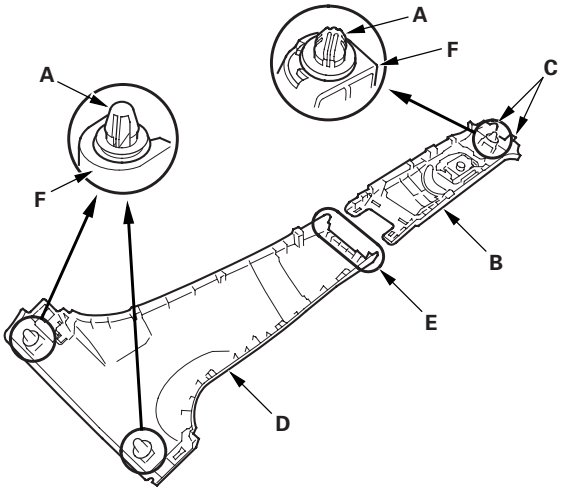


(cont'd)

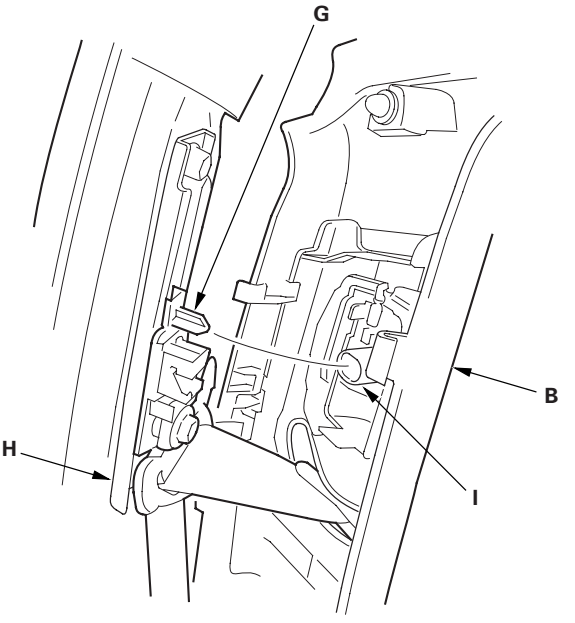
Trim Removal/Installation - Pillar Areas (cont'd)

9. Install the trim in the reverse order of removal, and note these items:

   - If the clips (A) are damaged or stress-whitened, replace them with new ones.
   - If the side curtain airbag has deployed, replace the B-pillar upper and lower trim and all clips on the trim with new ones (see page 24-185).
   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect the trim and replace it if it has any of the following damage:
     – Any cracks or deformations in the B-pillar upper trim (B) and the upper hooks (C), and any stress-whitening in the upper part of the trim
     – Any cracks or deformations in the B-pillar lower trim (D), and any breakages in the part (E) fitted with the B-pillar upper trim
     – Any cracks or stress-whitening in the clips seating surface (F)
   - Replace any damaged parts with new ones.
   - Make sure the top of the trim overlaps with the headliner correctly (see page 24-187).
   - Make sure the pin (G) on the front seat belt shoulder anchor adjuster (H) and the hole (I) on the back of the slider are engaged when installing the B-pillar upper trim.
   - Make sure the trim hook is installed into the side curtain airbag B-pillar bracket securely.
   - Push the clips and the hooks into place securely.
   - Before installing the anchor bolt, make sure there are no twists or kinks in the seat belt.



Slider engagement with shoulder anchor adjuster

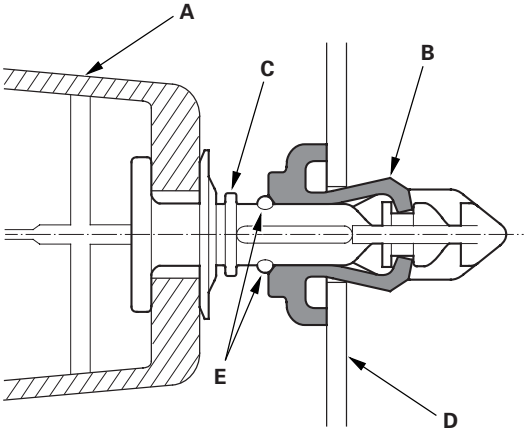


Special Tools Required
KTC trim tool set 07AAC-SEPA240

C-Pillar Trim

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Follow the C-pillar trim installation procedure carefully; improper installation could cause the side curtain airbag to deploy improperly and possibly cause injury.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the trim and panels.
- The front clip in the C-pillar trim (A) consists of a grommet (B) and a pin (C). The grommet expanded with the pin secures it to the body panel (D). The projections (E) on the pin are broken during removal, so the clip must be replaced with a new one when the trim is reinstalled.

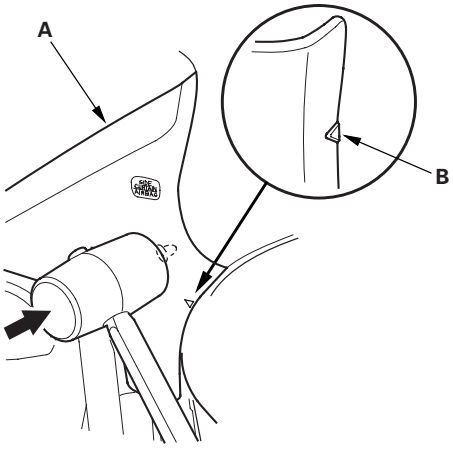


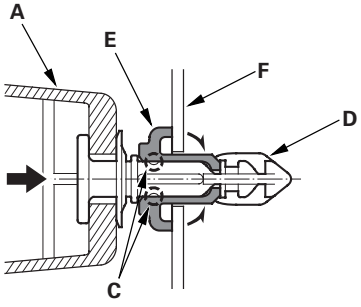
1. Remove these items:
   - Rear seat cushion (see page 20-133)
   - Rear seat side bolster (see page 20-134)
   - Rear door opening seal, as needed (see step 3 on page 20-68)

2. Fold the seat-back forward.

3. Hit the front clip in the C-pillar trim (A) with a rubber mallet. The clip is near the triangle mark (B). Hitting the clip breaks the projections (C) on the pin (D) and pushes it into the grommet (E) on the body (F).

   NOTE: The clip must be replaced with a new one when the C-pillar trim is reinstalled.

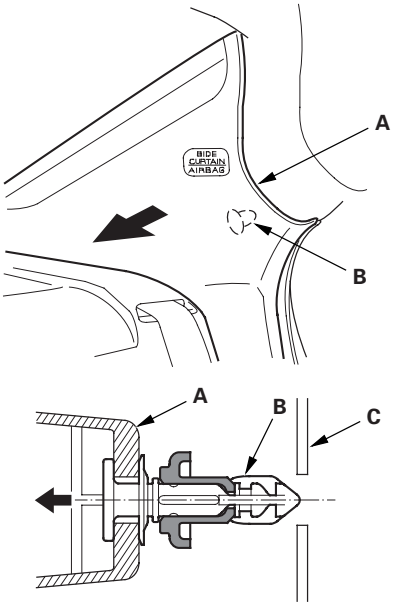




(cont'd)

Trim Removal/Installation - Pillar Areas (cont'd)

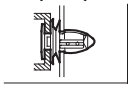
4. Pull the front of the C-pillar trim (A) back by hand to remove the front clip (B) from the body (C).

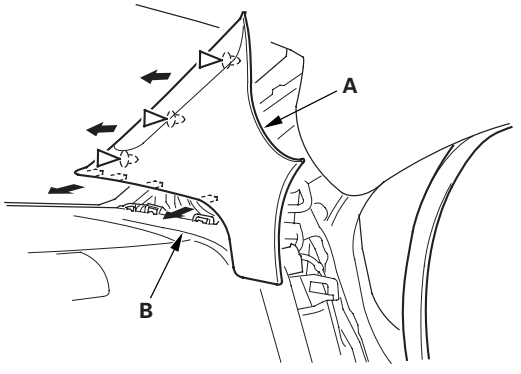


5. Pull the C-pillar trim (A) by hand to detach the clips, then pull the trim up from the rear shelf (B).

Fastener Locations

▷: **Clip, 3 (Red)**

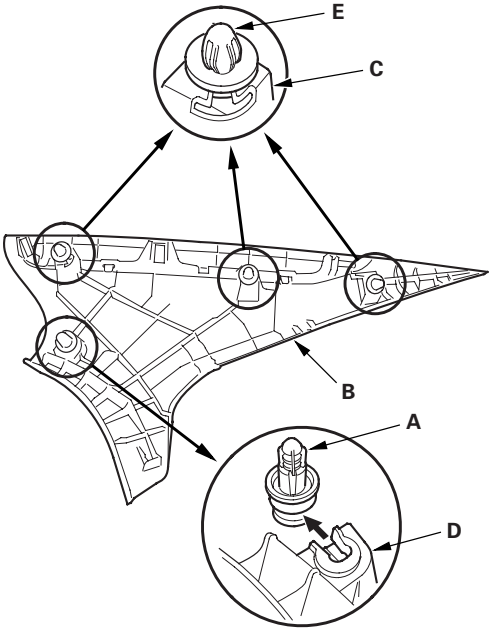




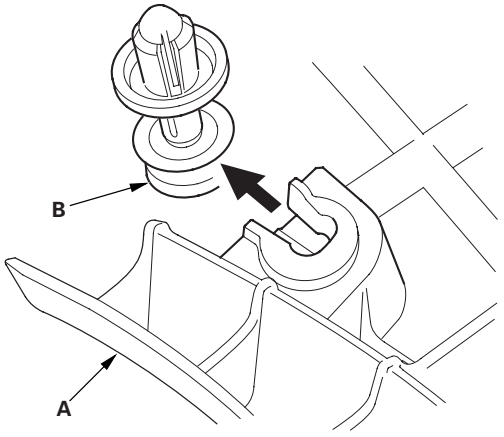
6. If the side curtain airbag has deployed, replace the C-pillar trim and all clips on the trim with new ones (see page 24-185).

7. If the side curtain airbag has not deployed, remove the front clip (A) from the removed C-pillar trim (B) and discard it. Then check the trim:

   - To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect the C-pillar trim and replace it if it has any of the following damage:
     – Any cracks, deformations, or stress-whitening in the C-pillar trim
     – Any cracks or stress-whitening in the clip seating surfaces (C, D)
   - If the clips (E) are damaged or stress-whitened, replace them with new ones.
   - Replace the front clip with a new one.

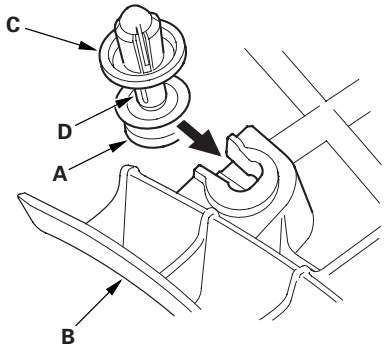


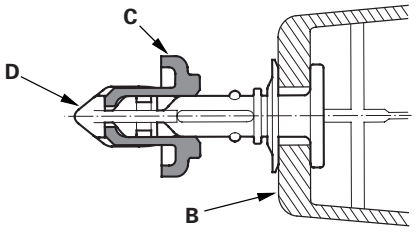
8. Before installing the C-pillar trim (A), whether it is being replaced or reinstalled, temporarily remove the new front clip (B).



9. Check the overlap between the headliner and C-pillar trim, and if necessary, adjust it (see page 24-187).

10. Carefully reinstall a new front clip (A) to the C-pillar trim (B). Be sure that the grommet (C) is nearest to the top of the pin (D) as shown.





11. Reinstall the C-pillar trim (A).

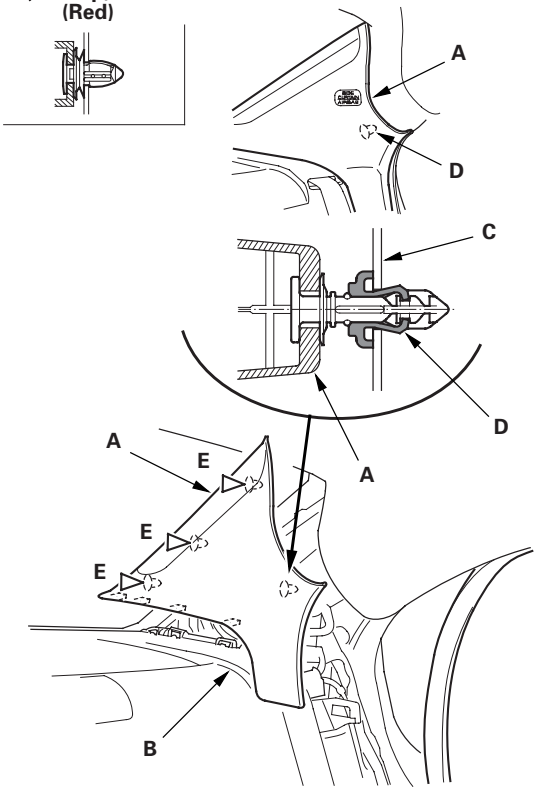
–1 Insert the bottom of the trim into the rear shelf (B).

–2 Place the trim over the C-pillar (C), and fit its front clip (D) and rear clips (E) into holes in the C-pillar, then lightly push the trim into place.

NOTE:
- Make sure the side curtain airbag is not tucked down under the clips and ribs.
- Push lightly on the front clip. If you push too hard, the clip will be damaged, and it will not hold the trim properly.

Fastener Locations

E ▷ : Clip, 3 (Red)



12. Reinstall the rear door opening seal.

13. Reinstall the rear seat side bolster (see page 20-134) and rear seat cushion (see page 20-133).

Trim Removal/Installation - Rear Shelf Area

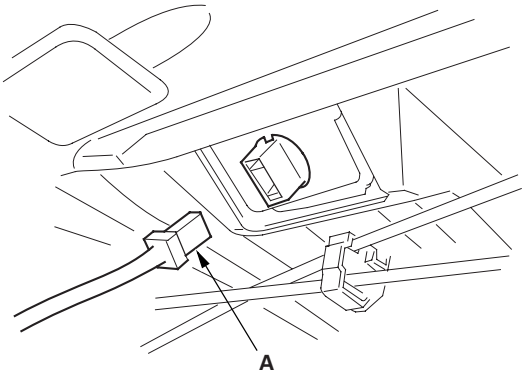
Special Tools Required
KTC trim tool set 07AAC-SEPA240

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the rear shelf or the trim.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

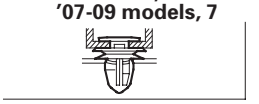
1. Remove these items:
   - Rear seat cushion (see page 20-133)
   - Rear seat-back (see page 20-131)
   - Rear door opening seal, as needed (see step 3 on page 20-68)
   - C-pillar trim, both sides (see step 3 on page 20-75)

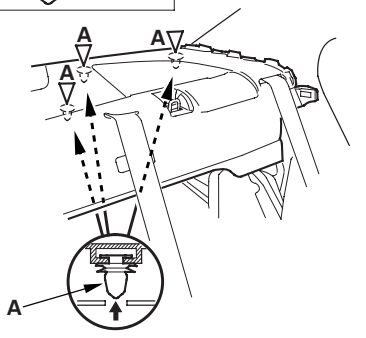
2. From the trunk compartment, disconnect the high mount brake light connector (A).



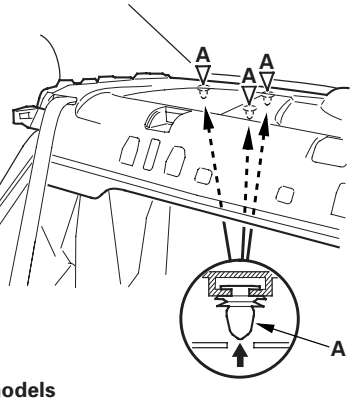
3. From the trunk compartment, release the six or seven white clips (A) by tapping on them.

Fastener Locations
A ▷ : Clip (White) '06 model, 6 '07-09 models, 7

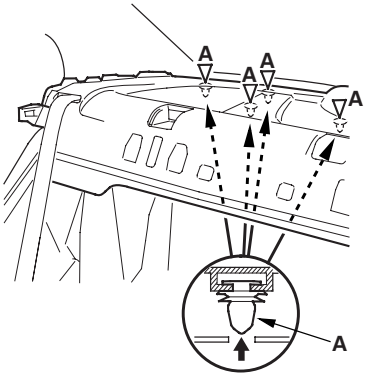




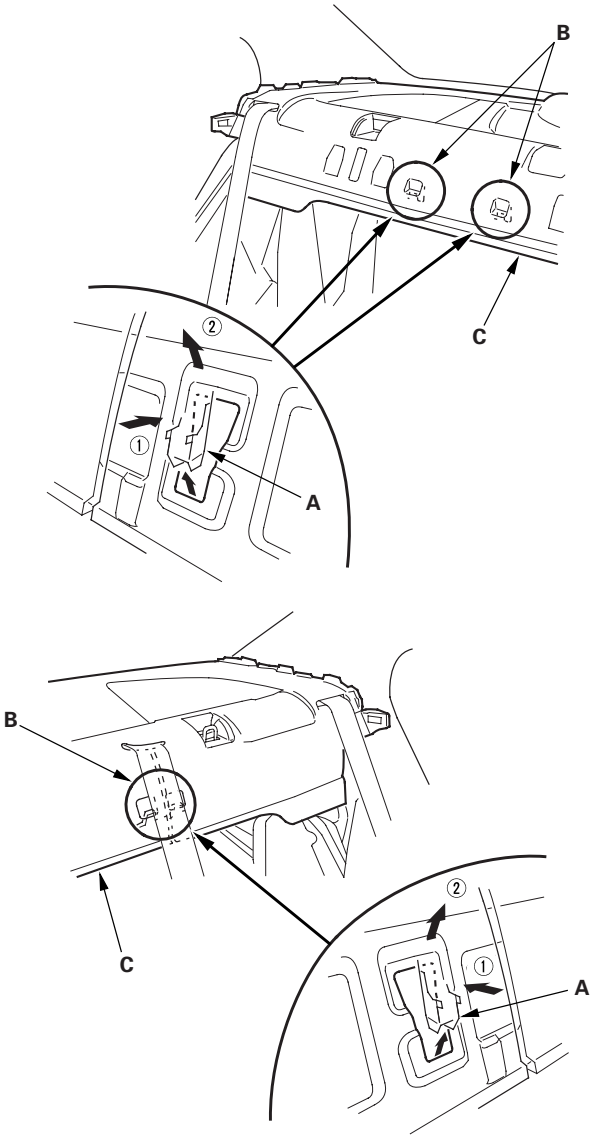
'06 model



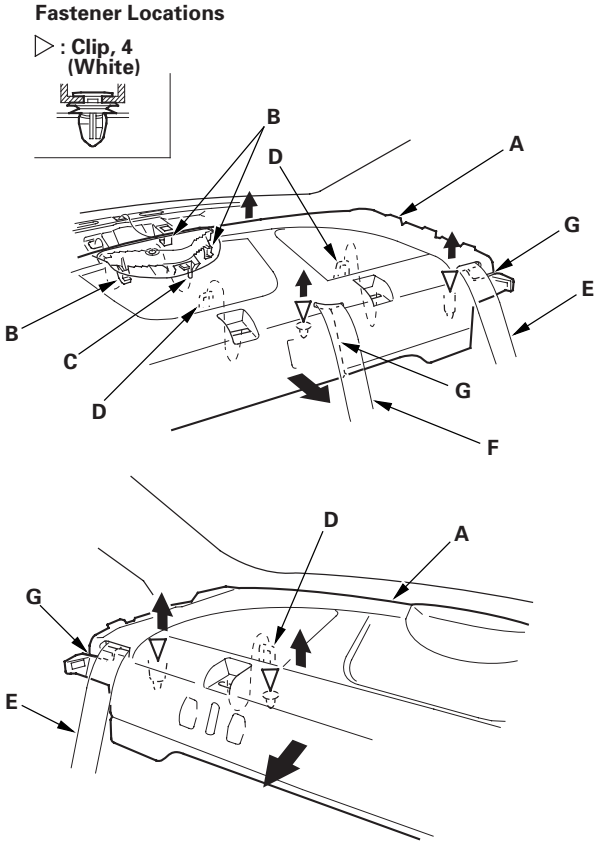
'07-09 models



4. Release the hook (A) by pushing in on the detents (B) on the rear shelf (C), then lift up on the front edge of the shelf at each detent.



5. Lift the rear shelf (A) upward to detach the remaining four clips, and release the hooks (B) of the high mount brake light from the rear shelf. Release the pin (C) from the holes on the body.



6. Release each anchor rod (D) out through the hole in the rear shelf, and pull both rear seat belts (E) and rear center seat belt (F) out through the slits (G) in the rear shelf.

7. Install the shelf in the reverse order of removal, and note these items:

- If the clips are damaged or stress-whitened, replace them with new ones.
- When installing the rear shelf, slip the rear seat belt through the slit and the rear center seat belt into the lid opening in the rear shelf.
- Push the clips and the hooks into place securely.
- Make sure the high mount brake light connector is connected securely.

Trim Removal/Installation - Trunk Area

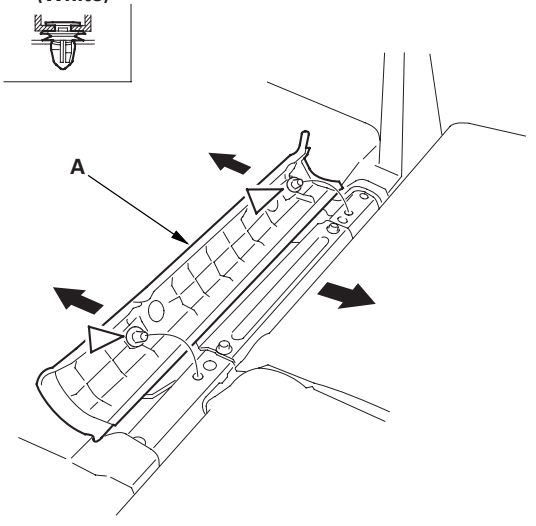
Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

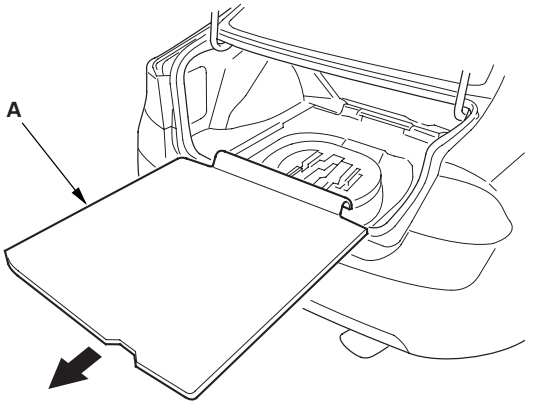
1. Fold the rear seat-back forward.

2. Pull back the front portion of the spare tire lid (A), and detach the clips.

Fastener Locations
▷ : **Clip, 2 (White)**



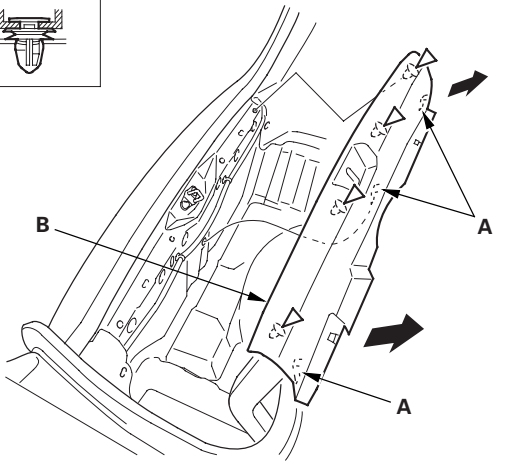
3. Remove the spare tire lid (A).



4. Remove the trunk lid weatherstrip near the trunk rear trim panel.

5. Detach the clips, and release the hooks (A) by pulling the trunk rear trim panel (B) up, then remove it.

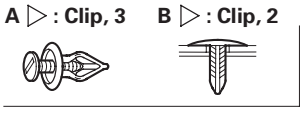
Fastener Locations
▷ : **Clip, 4 (White)**

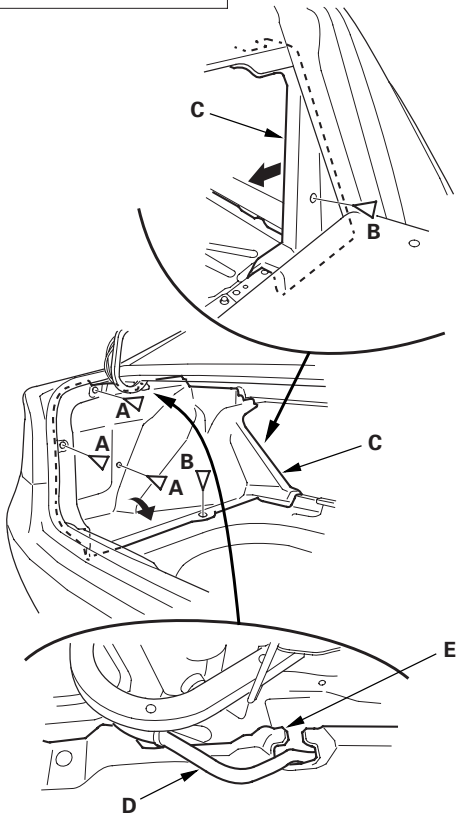


6. Remove the clips (A, B), then remove the trunk side trim panel (C). Release the wire harness (D) from the slit (E) in the trim panel.

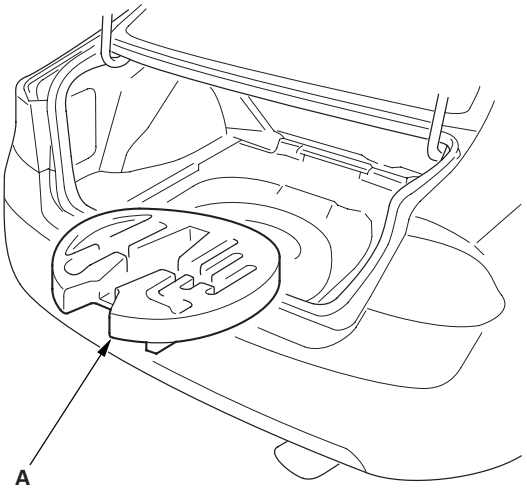
Fastener Locations

A ▷ : Clip, 3 **B ▷ : Clip, 2**





7. If necessary, remove the trunk tool box (A).



8. Install the trim in the reverse order of removal, and note these items:

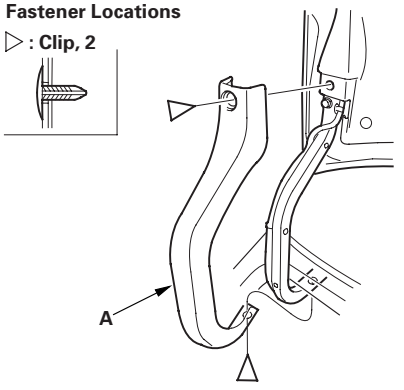
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

Trim Removal/Installation - Trunk Lid

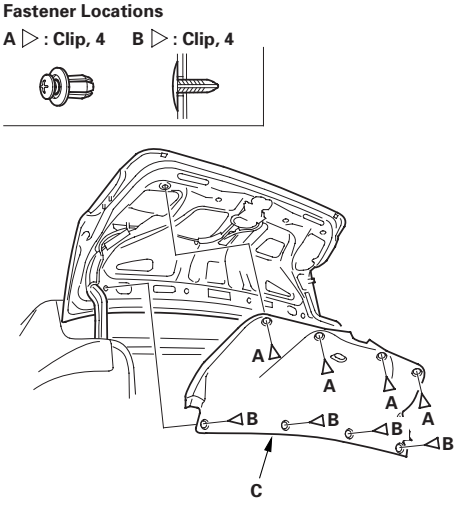
Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

1. Remove the clips from both trunk lid hinge cover (A), then remove the covers.



2. Remove the clips (A, B), then remove the trunk lid trim (C).



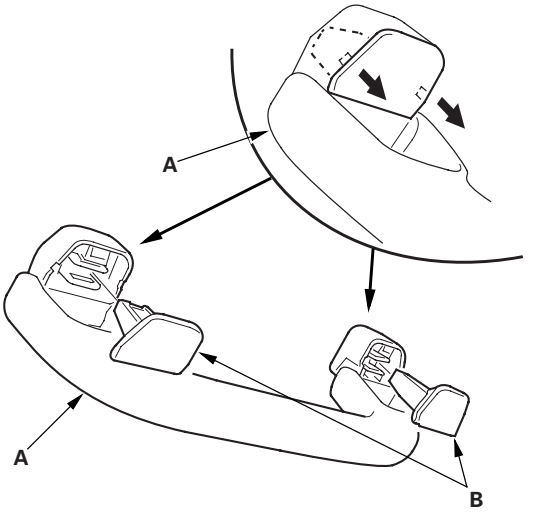
3. Install the trim in the reverse order of removal, and if the clips are damaged or stress-whitened, replace them with new ones.

Grab Handle Removal/Installation

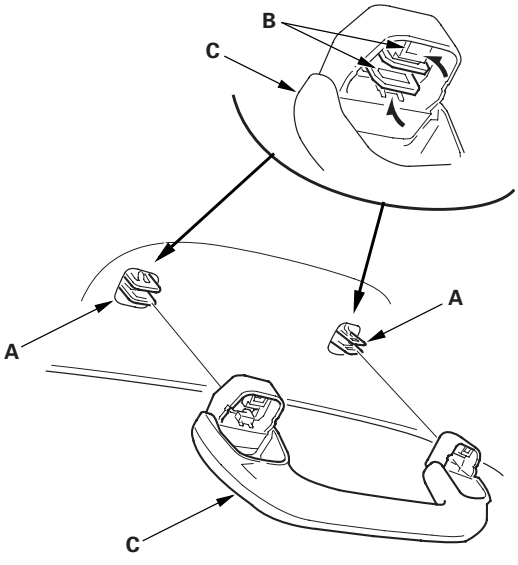
Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

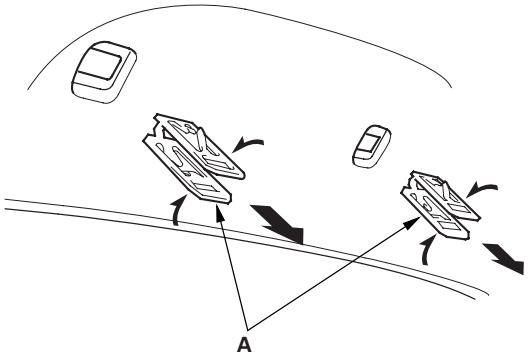
1. Lower the grab handle (A), then pull out the stoppers (B).



2. While pinching the clips (A), release the hooks (B), then remove the grab handle (C).



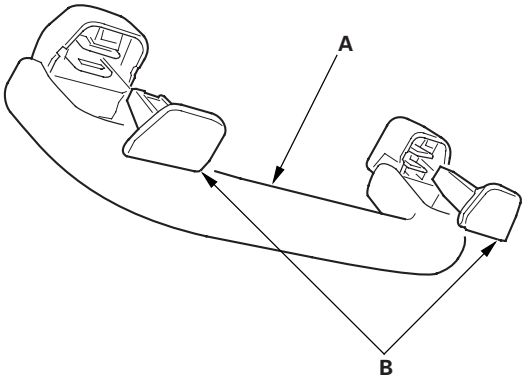
3. Remove all of the clips (A) with a pair of pliers by pinching its hooks.



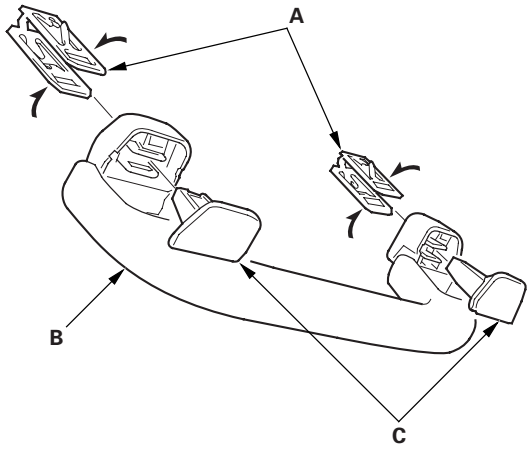
4. If the side curtain airbag has deployed, replace the grab handle with a new one.

5. If the side curtain airbag has not deployed, to prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect the removed pieces and replace them if they have any of the following damage:

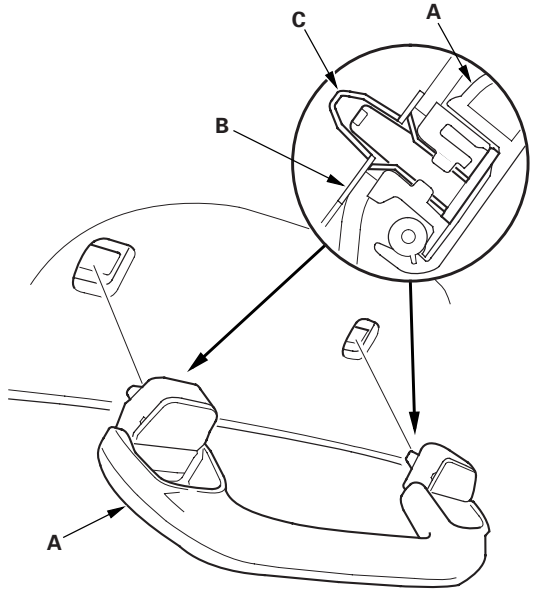
   - Any cracks or breakage in the grab handle (A).
   - Any cracks or stress-whitening in the stoppers (B).



6. Install the clips (A) to the grab handle (B), then install the stoppers (C) fully into the clips.



7. Position the grab handle (A) on the bracket (B), and push on the grab handle until the clips (C) snap into place securely.



Headliner Removal/Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

SRS components are located in this area. Review the SRS component locations, (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

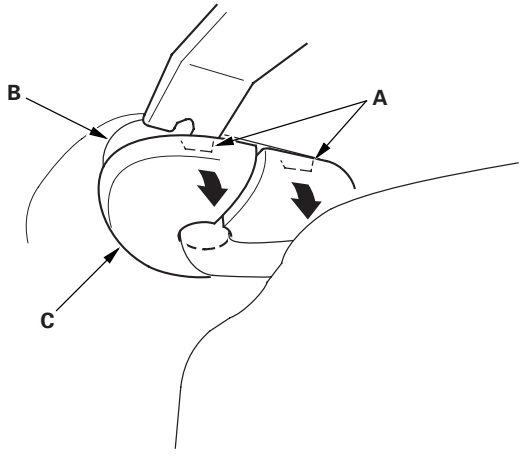
NOTE:
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

1. Do the battery terminal disconnection procedure (see page 22-68), and wait at least 3 minutes before beginning work.

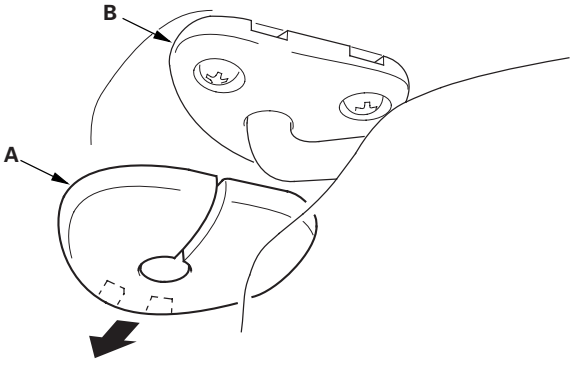
2. Remove these items:

   - A-pillar trim, both sides (see page 20-69)
   - Ceiling light (see page 22-197)
   - Front seat belt upper anchor, both sides (see step 6 on page 24-4)
   - B-pillar lower trim, both sides (see page 20-72)
   - B-pillar upper trim, both sides (see page 20-72)
   - C-pillar trim, both sides (see page 20-75)
   - Grab handles, four places (see page 20-82)

3. Release the tabs (A) from the bracket (B) of the sunvisor cap (C) with a trim tool.



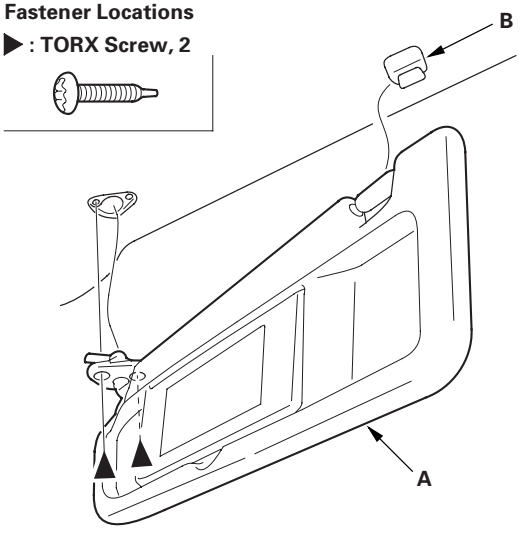
4. Remove the sunvisor cap (A) from the bracket (B).



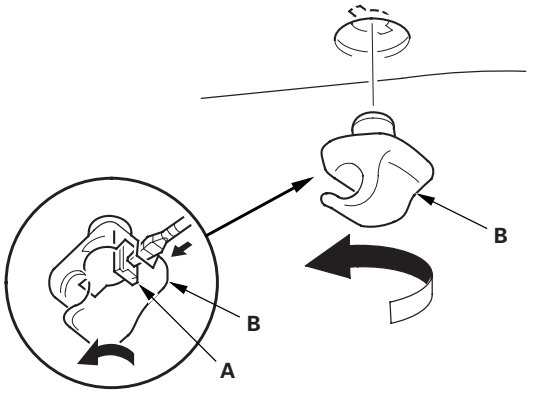
5. From both sides, remove the sunvisor (A).

   1. Remove the sunvisor from the body and the holder (B).
   2. Remove the screws with a TORX T25 bit.
   3. Remove the sunvisor from the body, and if equipped disconnect the vanity mirror light connector.

Fastener Locations
▶ : TORX Screw, 2



6. Push the hook (A) with a flat-tip screwdriver wrapped with protective tape, and turn the holder (B) 90 °, then pull it out.

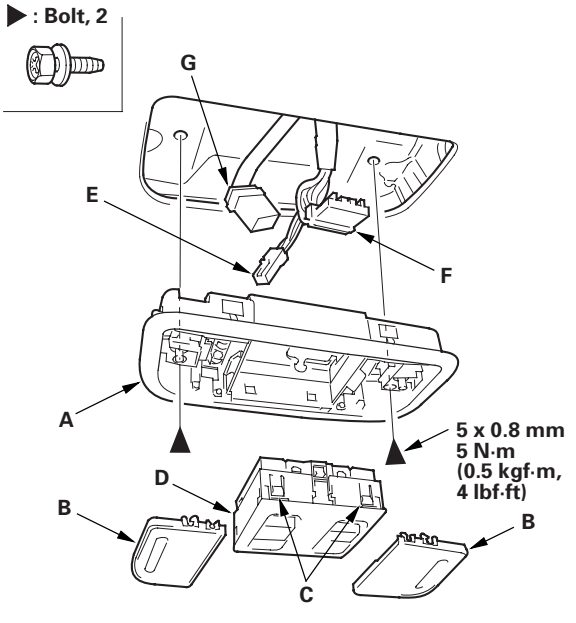


7. Remove the individual map light assembly (A).

   1. Remove the lenses (B).
   2. Remove the bolts.
   3. If equipped, release the four tabs (C), then pull out the moonroof switch (D) or the navigation microphone.
   4. Disconnect the front individual map light connector (E). If equipped, disconnect the moonroof switch connector (F) and the navigation microphone connector (G).

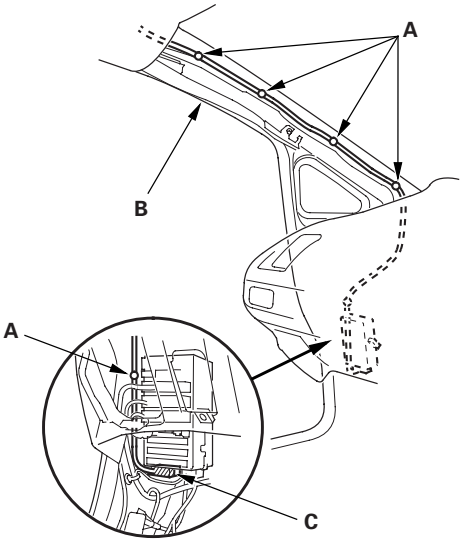
Fastener Locations

▶ : Bolt, 2



8. Without moonroof: Remove the driver's dashboard undercover (see page 20-104).

9. Detach the harness clips (A) from the A-pillar (B), and disconnect the roof wire harness connector (C).



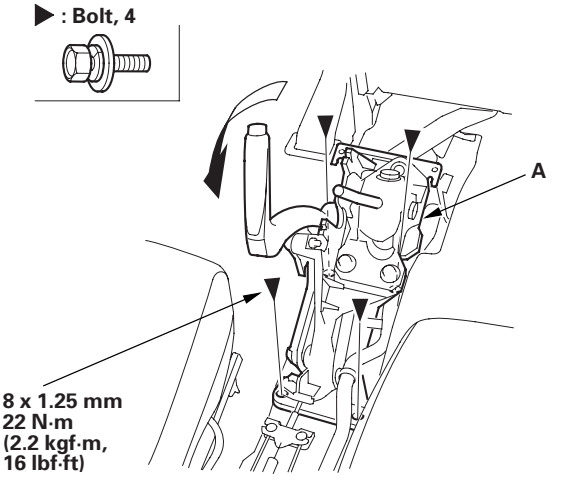
10. Remove the center console (see page 20-92).

11. Slide both front seats all the way back, and recline the seat-backs fully.

12. Remove the bolts securing the parking brake base frame (A), and lay it down as needed.

Fastener Locations

▶ : Bolt, 4



(cont'd)

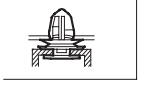
Headliner Removal/Installation (cont'd)

13. Lower the headliner (A).

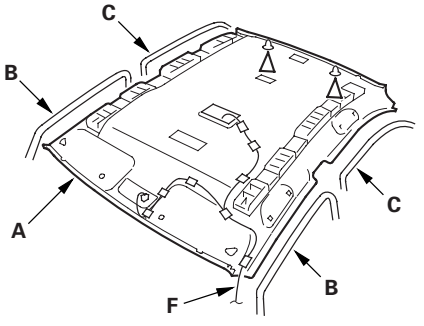
    -1 Remove the front door opening seals (B) and rear door opening seals (C) from each roof portion.
    -2 With the help of an assistant, detach the rear clips by pulling the rear portion of the headliner down.
    -3 With moonroof: Release the Velcro fastener (D) by lowering the headliner.
    -4 With moonroof: Release the hook (E) of the moonroof by moving the headliner rearward.

Fastener Locations

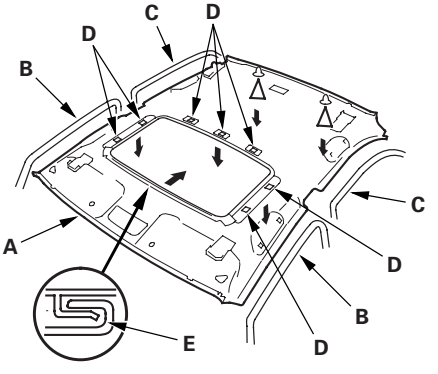
▷ : **Clip, 2 (White)**



Without moonroof



With moonroof



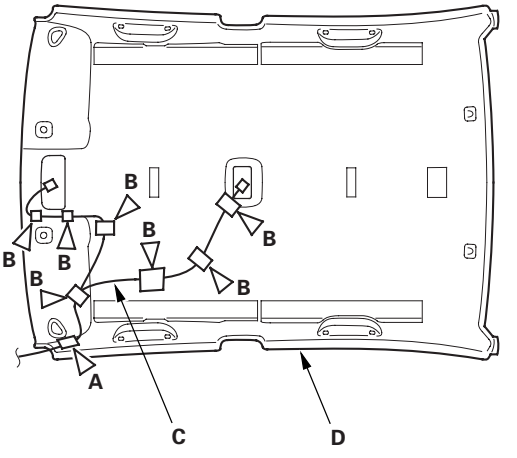
14. Lower the front of the headliner below the steering wheel. Rotate the liner, and pull it along with the roof wire harness (F) (without moonroof) out through the passenger's front door. Do not bend the liner. Bending the liner will crease and damage it.

15. If necessary, remove the cushion tape (A, B) fastening the roof wire harness (C) to the headliner (D), then remove them from the headliner.

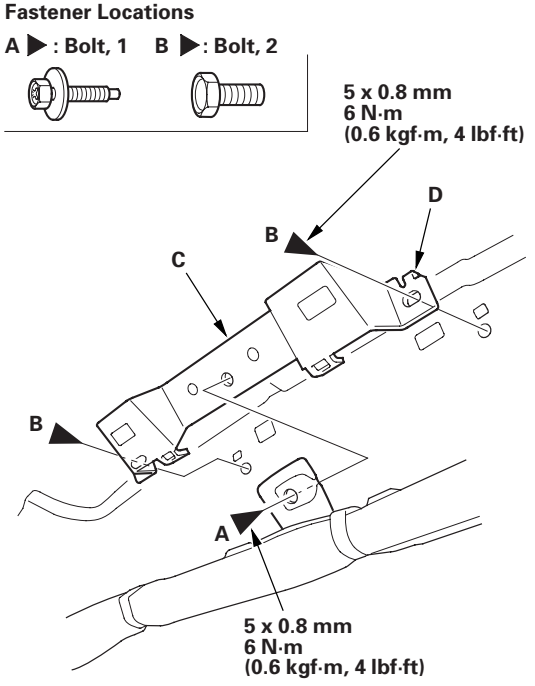
Cushion tape A: P/N 91903-SNA-003
100 x 50 mm (3.94 x 1.97 in.)
Cushion tape B: P/N 91902-SNA-003
50 x 50 mm (1.97 x 1.97 in.)

Fastener Locations

A, B ▷ : Cushion tape, 8



16. If necessary, remove the side curtain airbag mounting bolt (A) and grab handle bracket mounting bolts (B), then remove the grab handle bracket (C) from each side by releasing the hooks (D).



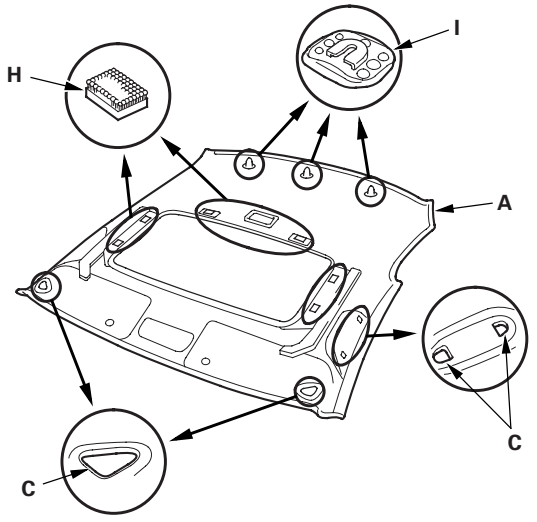
17. Install the headliner in the reverse order of removal, and note these items:

- If the side curtain airbag has deployed, replace the headliner and related parts with new ones (see page 24-185).
- To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect the removed pieces and replace them if they have any of the following damage:
  – Any crease or tears in the headliner (A)
  – Any cracks or breakage in the grab handle (B)
  – Any damages around the grab handle holes (C) or sunvisor holes in the headliner
  – Any cracks in the sunvisor stay base (D)
  – Any bends or cracks in the sunvisor stay shaft (E)
  – Any cracks in the sunvisor base (F)
  – Any cracks or breakage in the vanity mirror base (G)
  – Any Velcro fasteners (H) and the clip bases (I) which have come off the headliner
- When installing the grab handle, push on the grab handle against the bracket (J) until the clips (K) snap into place securely.
- If the clips are damaged or stress-whitened, replace them with new ones.
- Replace the removed cushion tape with new ones.
- Check that both sides of the headliner are securely attached to the trim.
- Make sure the headliner overlaps the trim pieces correctly (see page 24-187).
- When reinstalling the headliner through the front passenger's door opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
- Check for any DTCs that may have been set during repairs, and clear them.
- Do the battery terminal reconnection procedure (see page 22-68).

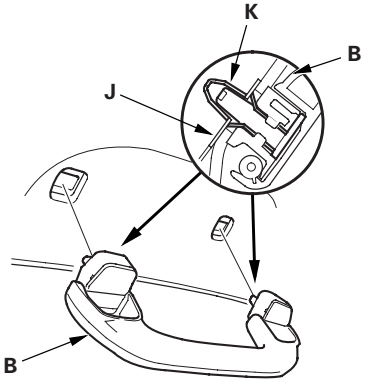
(cont'd)

Headliner Removal/Installation (cont'd)

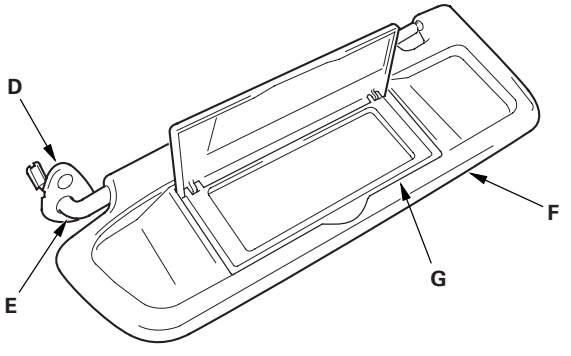
Headliner



Grab handle



Sunvisor



Carpet Replacement

Special Tools Required
KTC trim tool set 07AAC-SEPA240

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

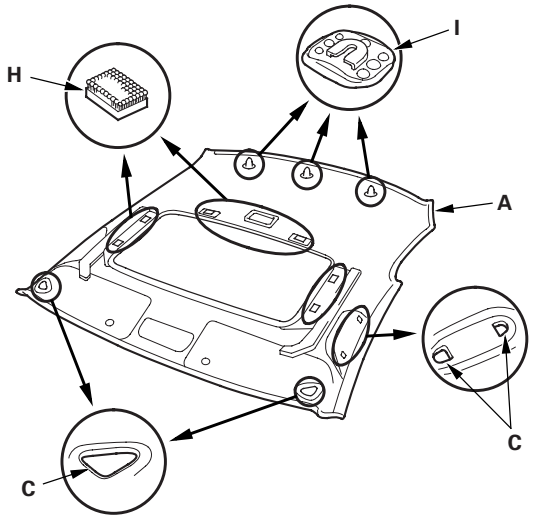
NOTE:
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to damage, wrinkle, or twist the carpet.
- Be careful not to damage the dashboard or other interior trim pieces.

1. Remove these items:

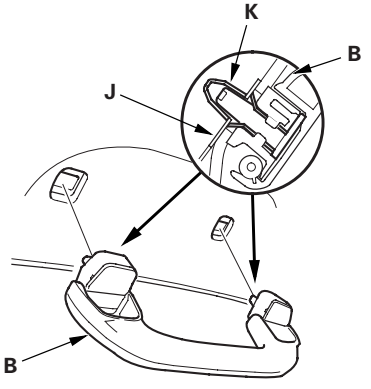
   - Front seats, both sides (see page 20-118)
   - Rear seat cushion (see page 20-133)
   - Front door sill trim, both sides (see page 20-66)
   - Rear door sill trim, both sides (see page 20-67)
   - Kick panels, both sides (see step 5 on page 20-67)
   - B-pillar lower trim (see page 20-72)
   - Driver's dashboard undercover (see page 20-103)
   - Passenger's dashboard undercover (see page 20-104)
   - Center console (see page 20-92)
   - Steering joint cover (see page 17-10)

Headliner Removal/Installation (cont'd)

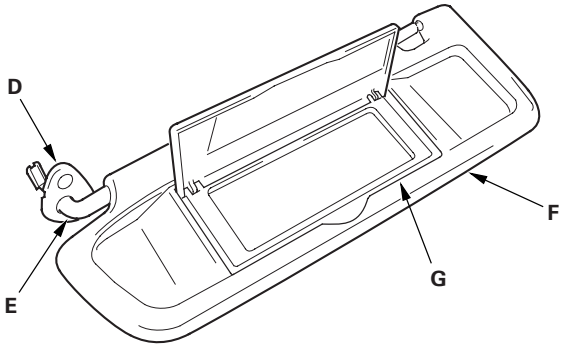
Headliner



Grab handle



Sunvisor



Carpet Replacement

Special Tools Required
KTC trim tool set 07AAC-SEPA240

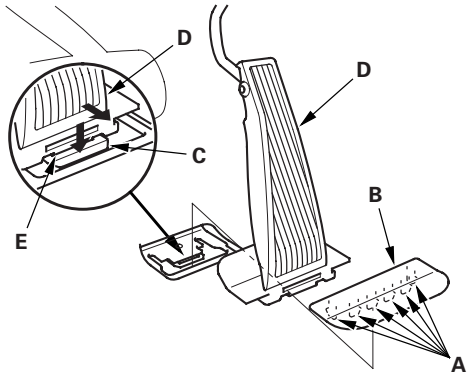
SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to damage, wrinkle, or twist the carpet.
- Be careful not to damage the dashboard or other interior trim pieces.

1. Remove these items:

   - Front seats, both sides (see page 20-118)
   - Rear seat cushion (see page 20-133)
   - Front door sill trim, both sides (see page 20-66)
   - Rear door sill trim, both sides (see page 20-67)
   - Kick panels, both sides (see step 5 on page 20-67)
   - B-pillar lower trim (see page 20-72)
   - Driver's dashboard undercover (see page 20-103)
   - Passenger's dashboard undercover (see page 20-104)
   - Center console (see page 20-92)
   - Steering joint cover (see page 17-10)

2. Release the hooks (A) to remove the accelerator pedal clip (B). While pushing down the back-up spring (C), pull back the accelerator pedal (D) to release the hook (E).

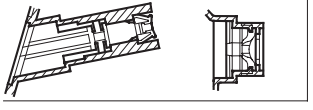


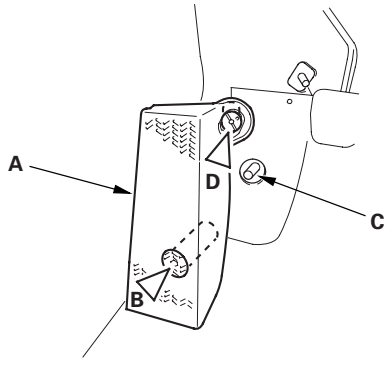
3. Remove the footrest (A).

–1 Remove the lower clip (B) with a 6 mm hexagon wrench, from the stud bolt (C).
–2 Remove the upper clip (D) with a flat-tip screwdriver, from the stud bolt.

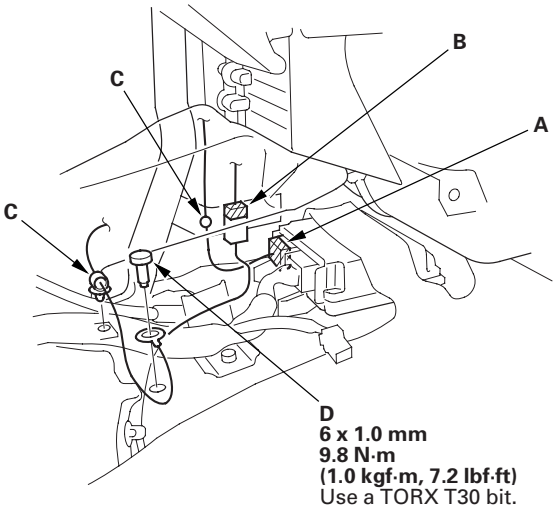
Fastener Locations

B ▷ : Clip, 1 **D ▷ : Clip, 1**





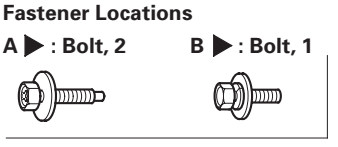
4. Disconnect the SRS unit connector (A), antenna connector (B), and detach the wire harness clips (C). Remove the ground bolt (D) with a TORX T30 bit.

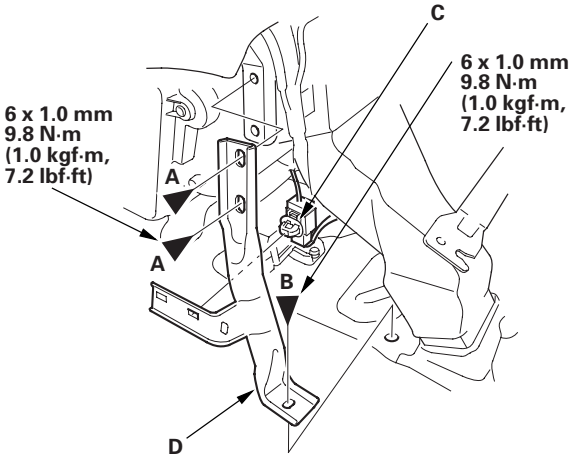


(cont'd)

Carpet Replacement (cont'd)

5. Remove the bolts (A, B), and detach the connector clip (C), then remove the center pipe extension (D).

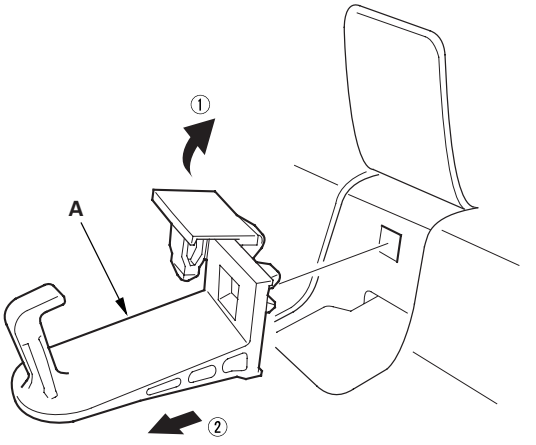




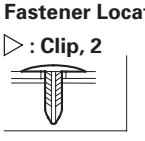
6. Remove the rear heater joint duct (A).

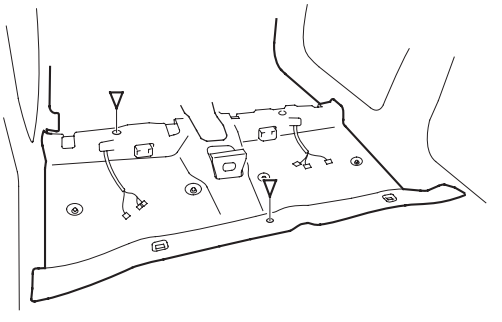
7. Disconnect the parking brake cables from the equalizer (see page 19-40).

8. Remove the floor mat holders (A) from the driver's side.

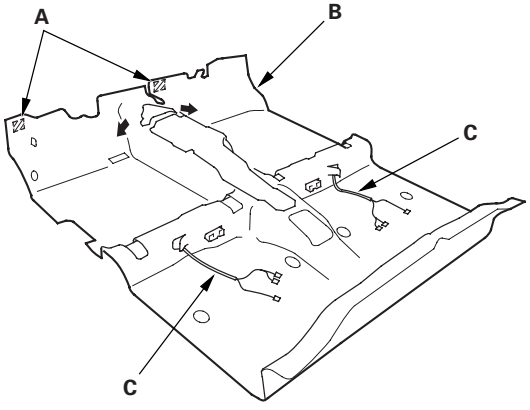


9. Remove the clips.





10. Release the Velcro fastener (A), then pull the carpet (B) out from under the dashboard.



11. Pull the seat harnesses (C) out through the hole in the carpet, then remove the carpet.

12. Install the carpet in the reverse order of removal, and note these items:

- Take care not to damage, wrinkle or twist the carpet.
- Make sure the seat harnesses and parking brake cables are routed correctly.
- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the Velcro fasteners and the clips into place securely.
- Push the accelerator pedal hooks into place securely, and verify that the pedal is properly fastened to the floor.

Center Console Removal/Installation

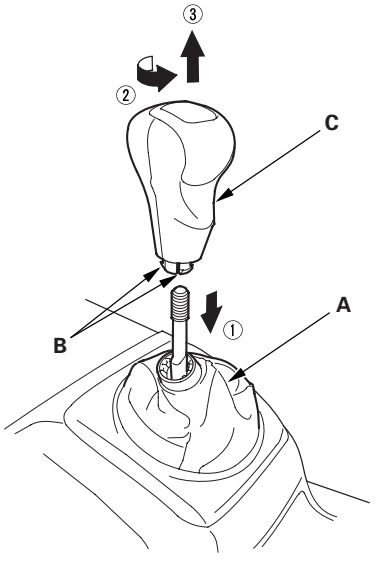
Special Tools Required
KTC trim tool set 07AAC-SEPA240

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the front seat, dashboard, and related parts.

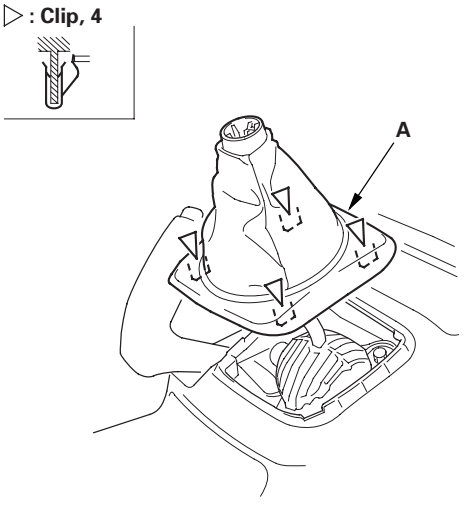
1. Remove the passenger's dashboard undercover (see page 20-104).

2. M/T model: Lower the shift lever boot (A) to release the hooks (B) from the boot, then remove the shift knob (C).



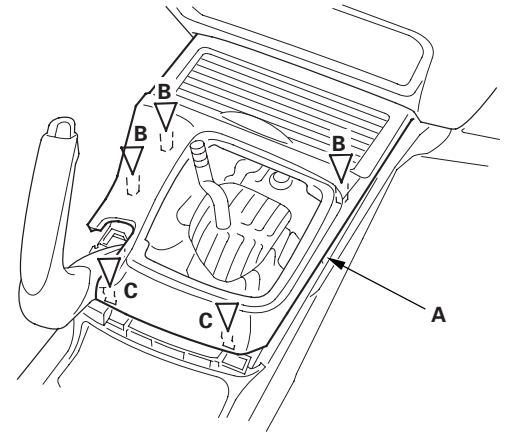
3. Detach the clips by pulling the front inner panel (A) up.

Fastener Locations
▷: **Clip, 4**

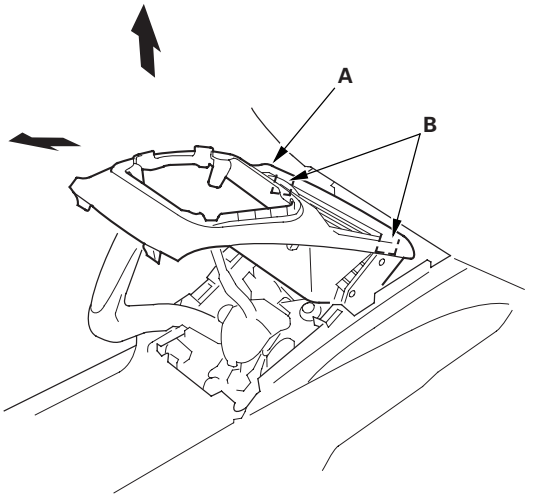


4. Gently pull out along the rear of the center console panel (A) to release the clips (B, C).

Fastener Locations
B ▷: **Clip, 3** **C** ▷: **Clip, 2**



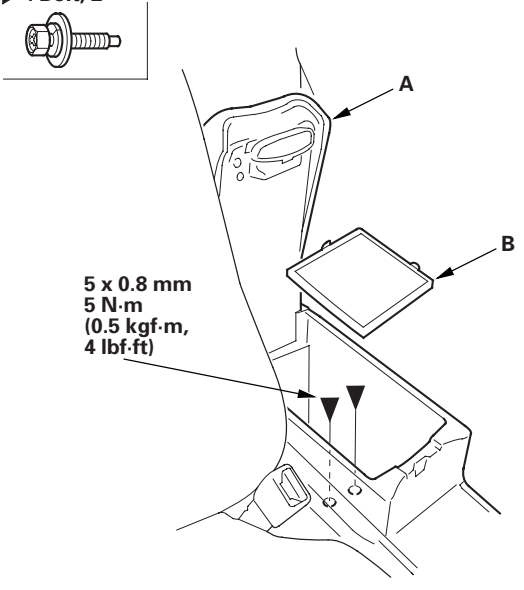
5. Pull the center console panel (A) up and rearward to release the tabs (B).



6. Open the armrest (A), and remove the console box mat (B) to access and remove the bolts.

Fastener Locations

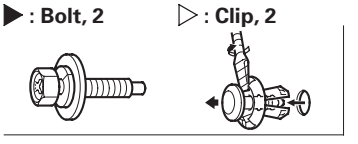
▶ : Bolt, 2

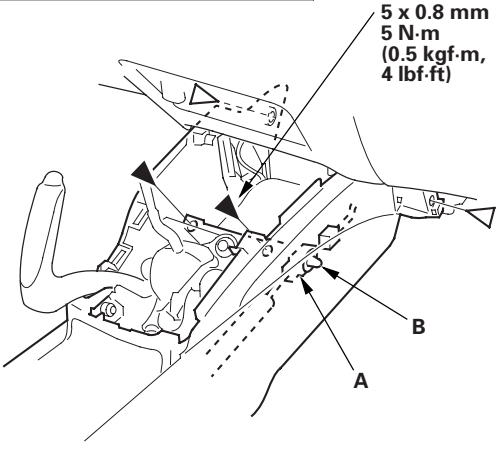


7. Remove the bolts and the clips from the front portion of the center console. Disconnect the console subharness connector (A), and detach the connector clip (B).

Fastener Locations

▶ : Bolt, 2 ▷ : Clip, 2



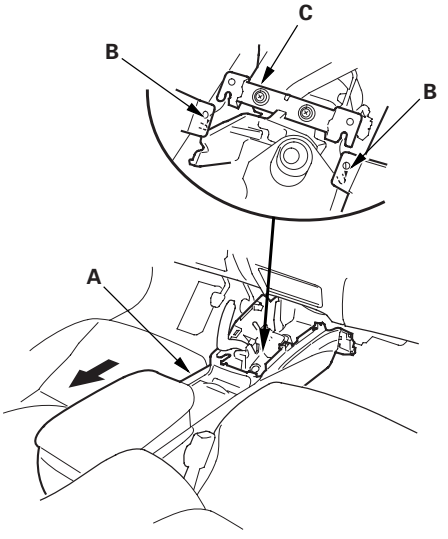


(cont'd)

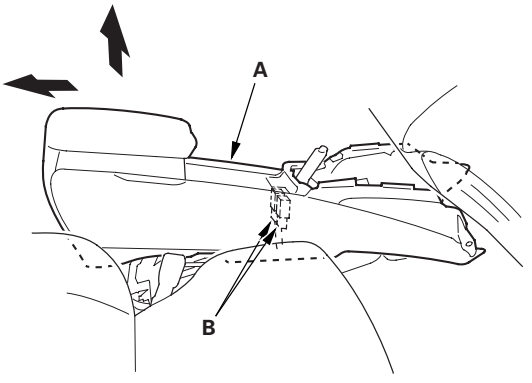
Center Console Removal/Installation (cont'd)

8. Slide both front seats all the way back, and recline the seat-back fully.

9. Slide the center console (A) rearward to release the pins (B) from the bracket (C).



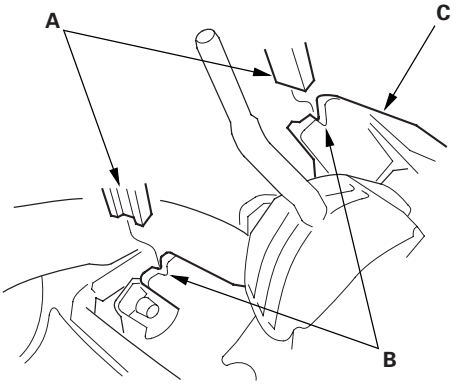
10. Lift up the rear of the console (A), and remove it from the dashboard.



11. If equipped, disconnect the seat heater switch connectors (B).

12. Install the console in the reverse order of removal, and note these items:

- Make sure each connector is plugged in properly.
- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips and the hooks into place securely.
- When installing the center console panel, install the tabs (A) into the notch (B) of the parking brake base frame (C).



Center Console Disassembly/Reassembly

Special Tools Required
KTC trim tool set 07AAC-SEPA240

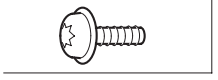
NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the center console, the dashboard, and related parts.

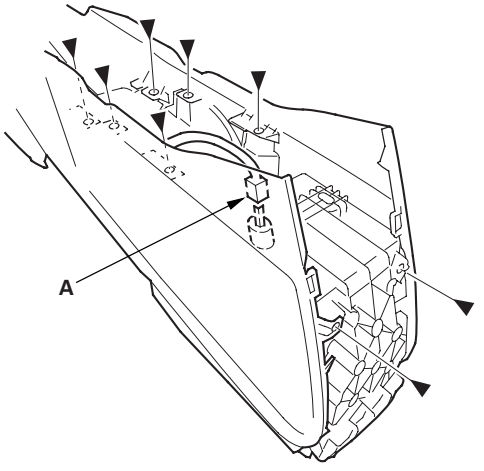
1. Remove the center console (see page 20-92).

2. Remove the center console armrest (see page 20-96).

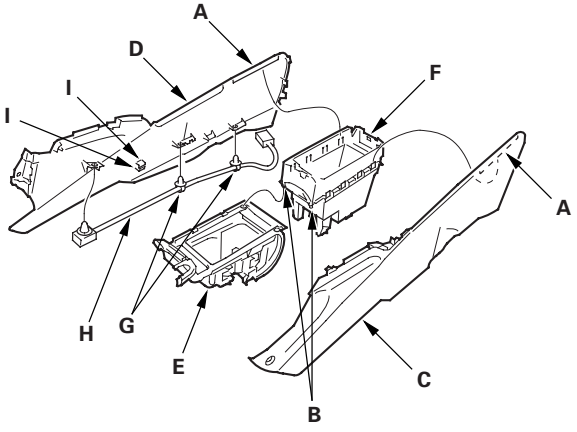
3. Remove the screws with a TORX T20 bit, and disconnect the console accessory power socket connector (A).

Fastener Locations
▶ : TORX Screw, 8

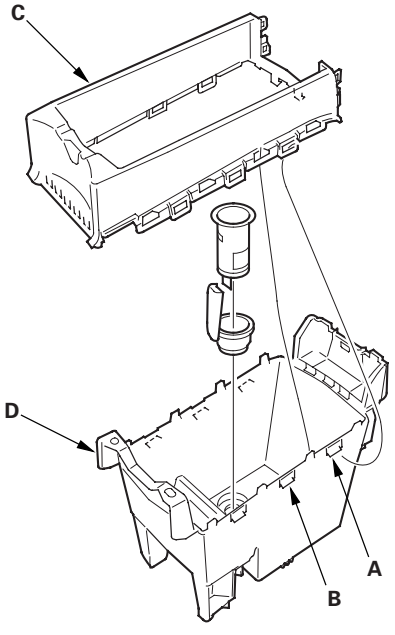




4. Release the hooks (A) and the pins (B), then separate the left console side panel (C), the right console side panel (D), the console beverage holder (E) and the console box (F). If equipped, detach the harness clips (G), then remove the console subharness (H) from the hooks (I).



5. Release the hooks (A, B), then separate the console upper box (C) and the console lower box (D).



6. Assemble the console in the reverse order of disassembly, and make sure the console subharness connector is plugged in properly.

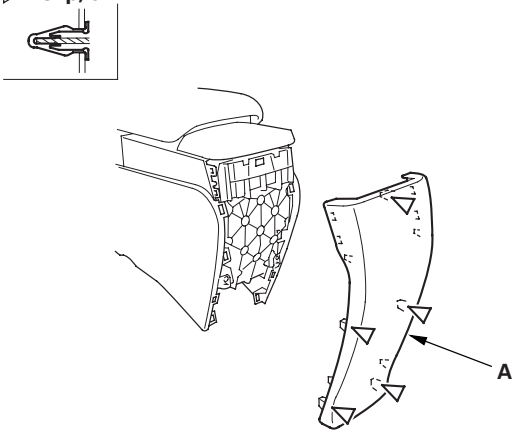
Center Console Armrest Replacement

NOTE: Take care not to scratch the armrest, center console, and related parts.

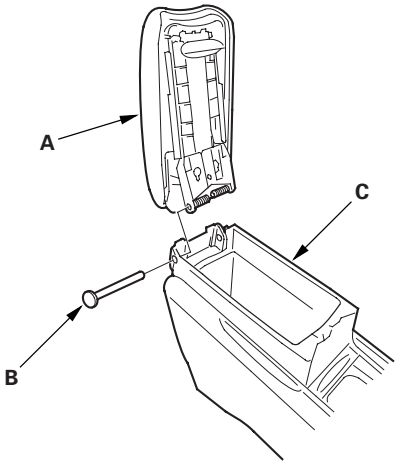
1. Remove the center console (see page 20-92).
2. Gently pull out the center console rear cover (A) to detach the clips.

Fastener Locations

▷ : **Clip, 5**



3. Open the armrest (A), pull the pin (B) off the armrest, then separate the armrest and the center console (C).



4. Install the center console armrest in the reverse order of removal, and if the clips are damaged or stress-whitened, replace them with new ones.

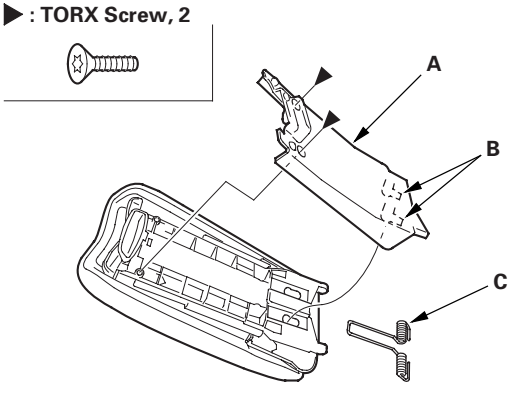
Armrest Lock Replacement

NOTE: Take care not to scratch the armrest and related parts.

1. Remove the center console armrest (see page 20-96).
2. Remove the screws with a TORX T15 bit. Slide the armrest liner (A) downward to release the hooks (B), then remove the armrest liner and armrest spring (C).

Fastener Locations

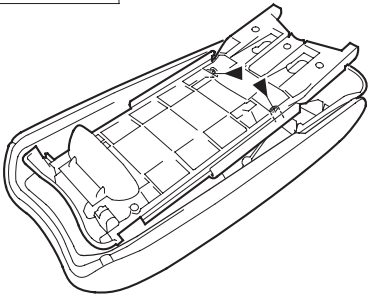
▶ : **TORX Screw, 2**



3. Remove the screws with a TORX T15 bit.

Fastener Locations

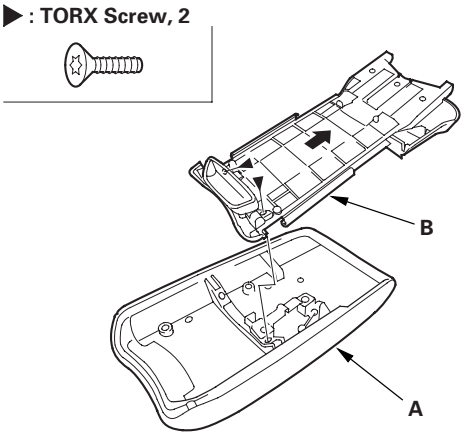
▶ : **TORX Screw, 2**



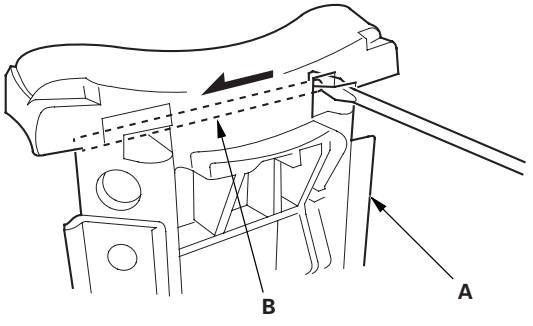
4. Slide the armrest (A) all the way forward, remove the screws with a TORX T15 bit, then remove the armrest backbone (B).

Fastener Locations

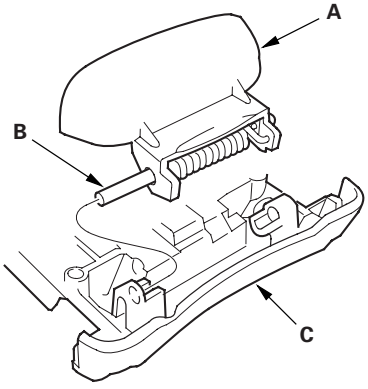
▶ : **TORX Screw, 2**



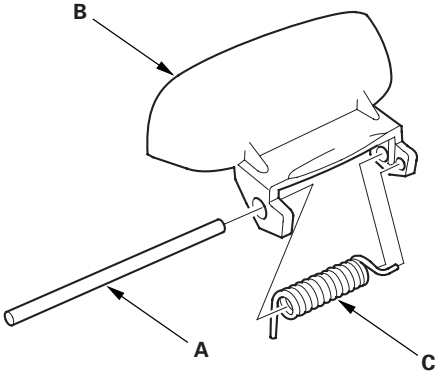
5. From the back of the armrest backbone (A), push the edge of the armrest lock pin (B) with a flat-tip screwdriver, then slide the armrest lock pin fully.



6. Remove the armrest lock (A) with the armrest lock pin (B) from the armrest backbone (C).



7. Remove the armrest lock pin (A), then separate the armrest lock (B) and armrest lock spring (C).



8. Install the armrest lock in the reverse order of removal.

Instrument Panel Removal/Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

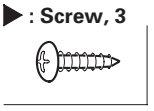
NOTE:
- Take care not to scratch the instrument panel and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

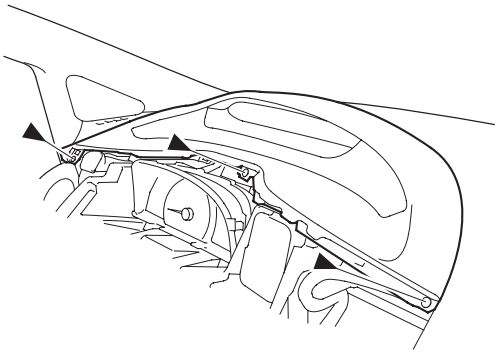
1. Remove these items:

   - Subdisplay visor (see page 20-100)
   - Navigation unit, with navigation system
     – '06-08 models (see page 23-155)
     – '09 model (see page 23-355)
   - Audio unit, without navigation system
     – '06-08 models (see page 23-80)
     – '09 model (see page 23-256)

2. Remove the screws.

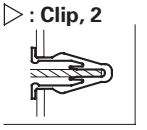
Fastener Locations
▶ : **Screw, 3**

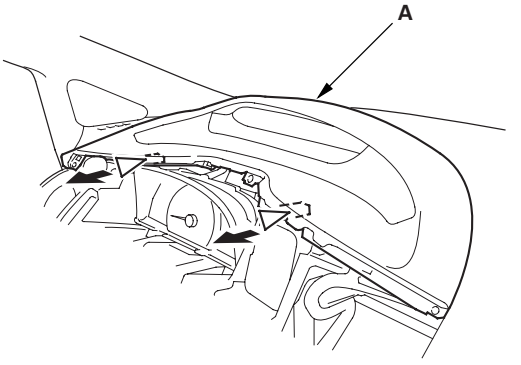




3. Detach the clips along the lower edge of the instrument panel (A).

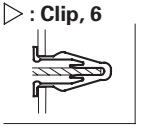
Fastener Locations
▷ : **Clip, 2**

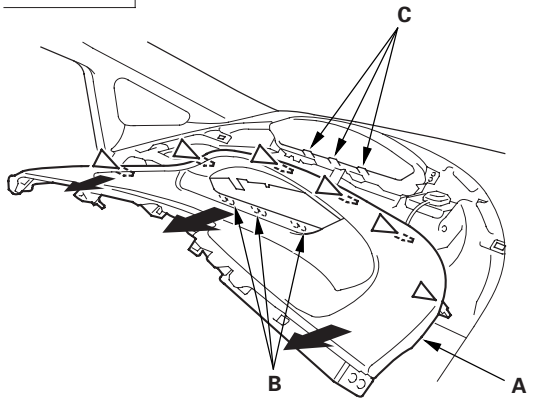




4. Detach the clips along the upper edge of the instrument panel (A). Gently pull out the instrument panel to release the hooks (B) from the holder (C) of the gauge control module.

Fastener Locations
▷ : **Clip, 6**





5. Install the instrument panel in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

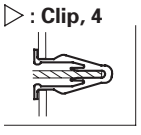
Gauge Control Module (Speedo) Trim Removal/Installation

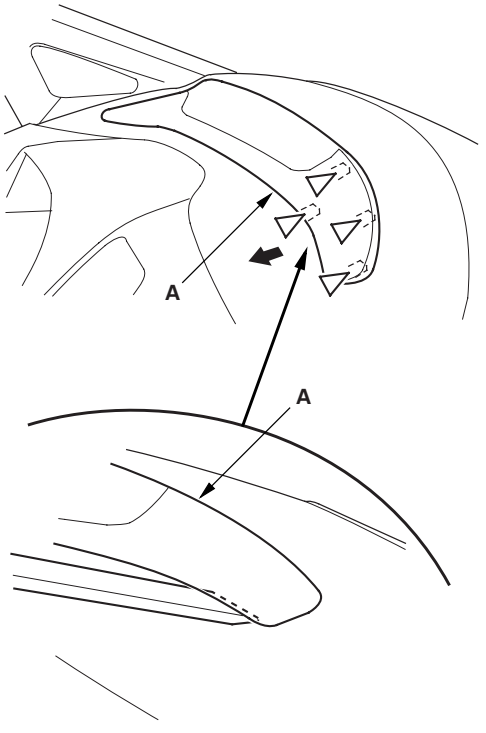
Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE:
- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

1. Pry up on the inside edge of the gauge control module (speedo) trim (A) with a trim tool to detach the clips.

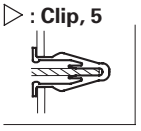
Fastener Locations
▷ : **Clip, 4**

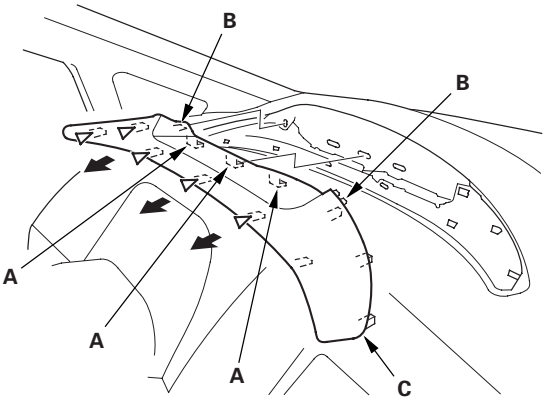




2. Detach the clips and release the hooks (A) with a trim tool, and the pins (B) along the edge of the gauge control module (speedo) trim (C), then remove the trim.

Fastener Locations
▷ : **Clip, 5**





3. Install the trim in the reverse order of removal, and note these items:

- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips into place securely.

Subdisplay Visor Removal/Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

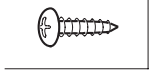
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

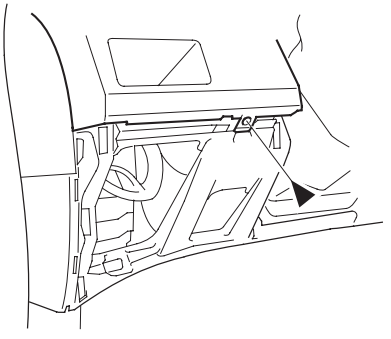
1. Remove the driver's dashboard lower cover (see page 20-102).

2. Tilt the steering column down, and pull it fully out.

3. Remove the screw.

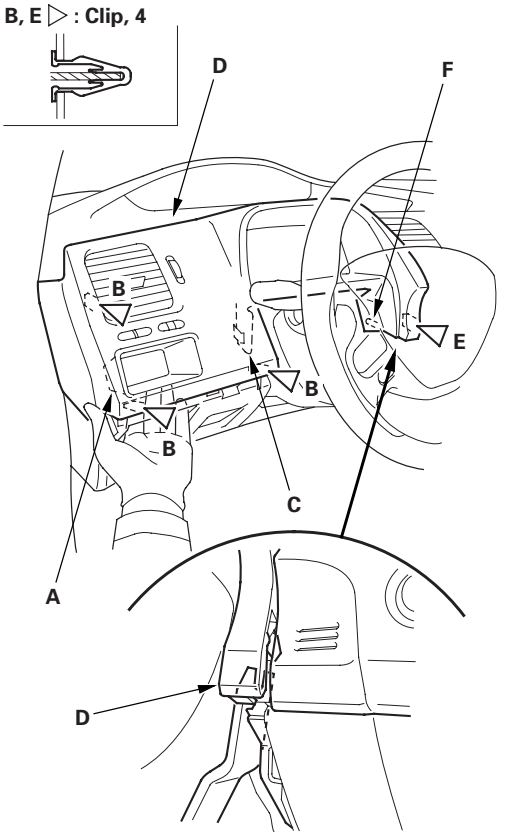
Fastener Location
▶ : **Screw, 1**





4. Pull the back of the driver's pocket (A) by hand from the driver's lower cover opening to release the clips (B) and the hook (C) on the outside.

Fastener Locations
B, E ▷ : Clip, 4

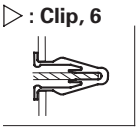


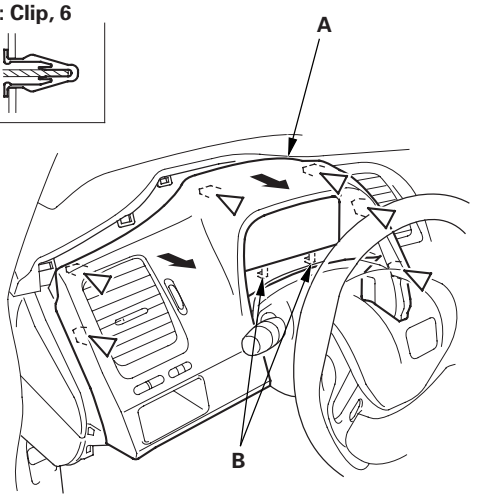
5. Pry up on the inside edge of the subdisplay visor (D) with a trim tool to detach the clip (E), and release the pin (F).

6. Detach the clips along the upper edge of the subdisplay visor (A). Gently pull out the visor to release the hooks (B).

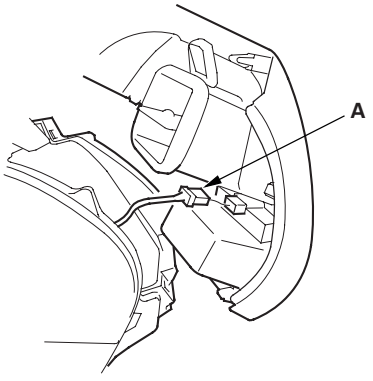
Fastener Locations

▷ : **Clip, 6**





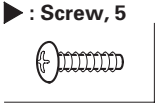
7. Disconnect the illumination control switch connector (A).

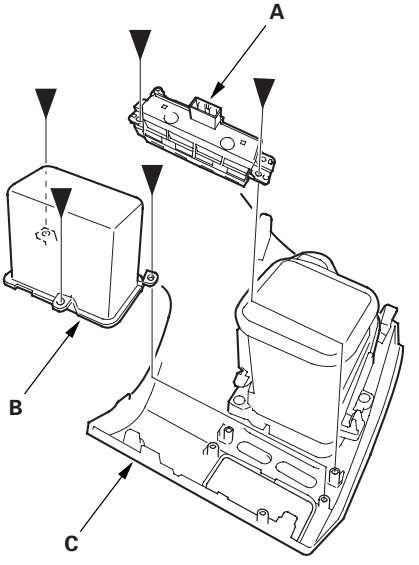


8. If necessary, remove the screws, then remove the illumination control switch (A), and the driver's pocket (B) from the subdisplay visor (C).

Fastener Locations

▶ : **Screw, 5**





9. Install the subdisplay visor in the reverse order of removal, and note these items:

- Make sure the connector is plugged in properly.
- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips into place securely.

Driver's Dashboard Lower Cover Removal/Installation

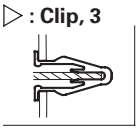
Special Tools Required
KTC trim tool set 07AAC-SEPA240

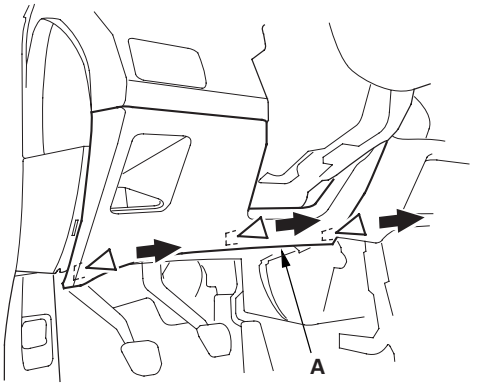
NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the dashboard and related parts.

1. Tilt the steering column fully upward.

2. Gently pull out on the lower edge of the dashboard lower cover (A) to detach the lower clips.

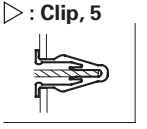
Fastener Locations
▷: **Clip, 3**

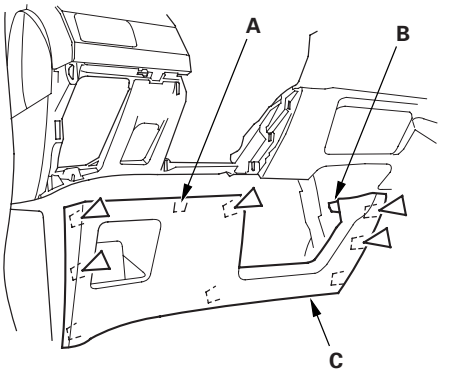




3. Detach the upper clips, and release the hook (A) and the pin (B) by pulling the driver's dashboard lower cover (C) back.

Fastener Locations
▷: **Clip, 5**





4. Install the lower cover in the reverse order of removal, and note these items:

- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips into place securely.

Driver's Dashboard Undercover Removal/Installation

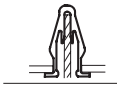
NOTE: Take care not to scratch the dashboard and related parts.

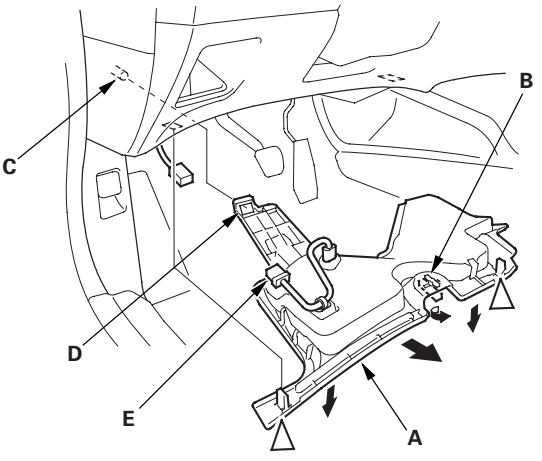
1. Remove the driver's dashboard undercover (A).

   -1 Turn the lock knob (B) 90 °.
   -2 Gently pull down the rear edge to detach the clips.
   -3 Pull the undercover away to release the pin (C) from the holder (D).
   -4 For some models: If equipped with a foot light illumination, disconnect the foot light illumination connector (E).

Fastener Locations

▷ : **Clip, 2**





2. Install the undercover in the reverse order of removal, and note these items:

   • Make sure the foot light illumination connector is plugged in properly (for some models).
   • If the clips are damaged or stress-whitened, replace them with new ones.
   • Push the clips into place securely.

Center Pocket Removal/Installation

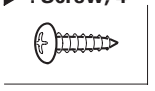
NOTE: Take care not to scratch the dashboard and related parts.

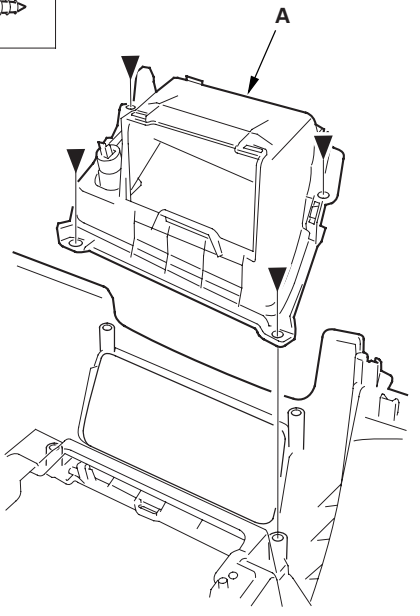
1. Disassemble the dashboard/steering hanger beam (see page 20-114).

2. Remove the screws, then remove the center pocket (A).

Fastener Locations

▶ : **Screw, 4**





3. Install the center pocket in the reverse order of removal.

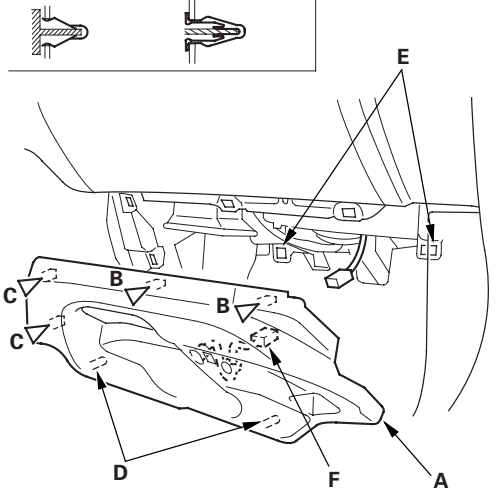
Passenger's Dashboard Undercover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the passenger's dashboard undercover (A).
   1 Gently pull out the rear edge to detach the clips (B, C).
   2 Pull the undercover away to release the pins (D) from the holders (E).
   3 For some models: If equipped with a foot light illumination, disconnect the foot light illumination connector (F).

Fastener Locations

B ▷ : Clip, 2 C ▷ : Clip, 2



2. Install the undercover in the reverse order of removal, and note these items:
   - Make sure the foot light illumination connector is plugged in properly (for some models).
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

Glove Box Removal/Installation

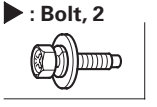
SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

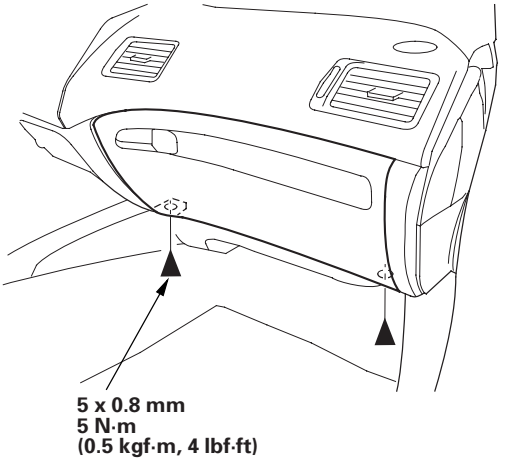
NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the bolts.

Fastener Locations

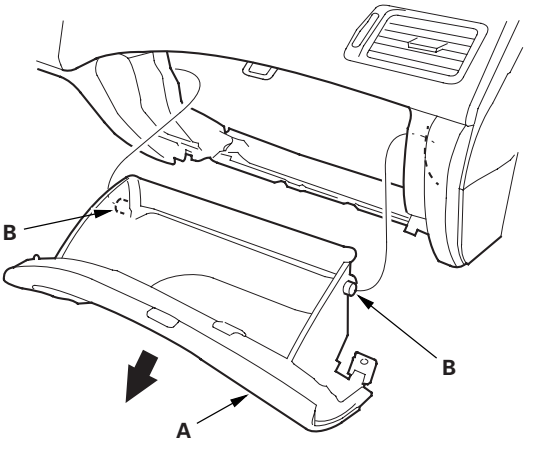
▶ : Bolt, 2





5 x 0.8 mm
5 N·m
(0.5 kgf·m, 4 lbf·ft)

2. While holding the glove box (A), release the glove box stop (B) on each side from the dashboard by pushing them in, then remove the glove box.



3. Install the glove box in the reverse order of removal.

Dashboard Vent Removal/Installation

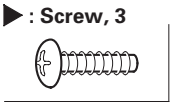
Special Tools Required
KTC trim tool set 07AAC-SEPA240

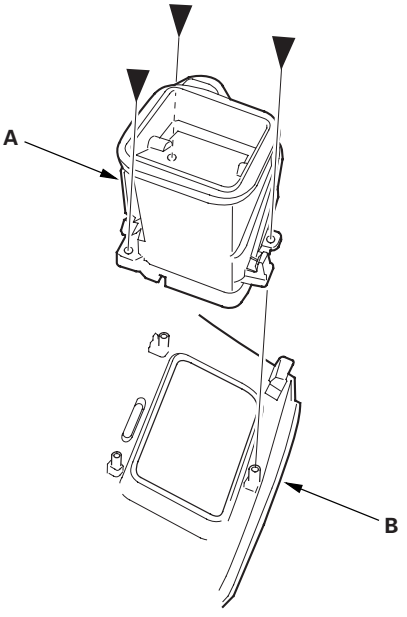
NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the subdisplay visor (see page 20-100).

2. Remove the screws securing the driver's outer vent (A), then remove the driver's outer vent from the subdisplay visor (B).

Fastener Locations
▶ : Screw, 3





3. Install the outer vent in the reverse order of removal.

Driver's Center Vent

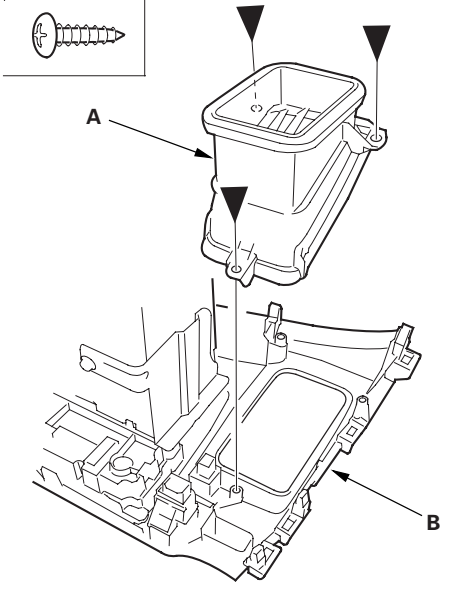
NOTE: Take care not to scratch the dashboard and related parts.

1. Remove these items:

   - Navigation unit, with navigation system
     – '06-08 models (see page 23-155)
     – '09 model (see page 23-355)
   - Audio unit, without navigation system
     – '06-08 models (see page 23-80)
     – '09 model (see page 23-256)

2. Remove the screws securing the driver's center vent (A), then remove the driver's center vent from the center panel (B).

Fastener Locations
▶ : Screw, 3



3. Install the center vent in the reverse order of removal.

(cont'd)

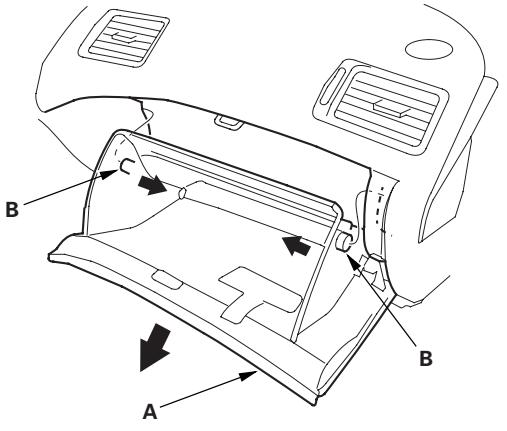
Dashboard Vent Removal/Installation (cont'd)

Passenger's Vent

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

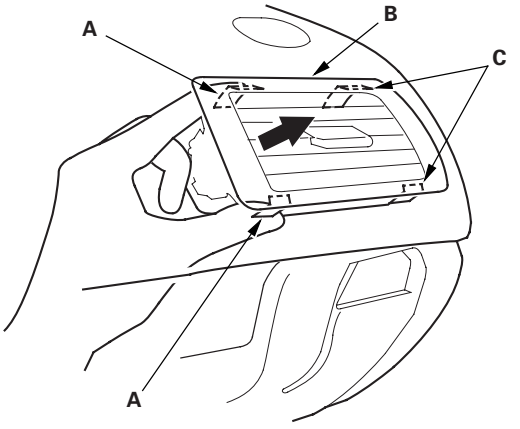
NOTE:
- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Put on gloves to protect your hands.

1. While holding the glove box (A), release the glove box stops (B) on each side from the dashboard by pushing them in.

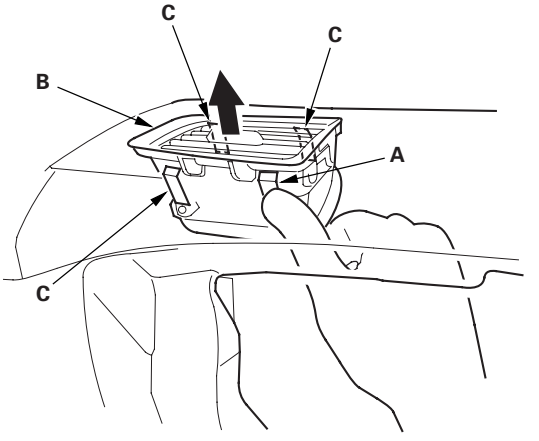


2. From inside the glove box opening, push on the side hooks (A) by hand to release them. Gently pull out the side vent (B) to release the other hooks (C), then remove the passenger's vent.

Outer



Center



3. Install the passenger's vents in the reverse order of removal.

Glove Box Striker Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

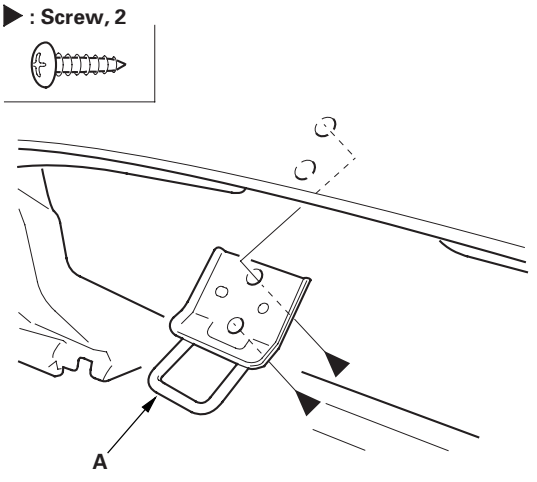
NOTE: Take care not to scratch the dashboard and related parts.

1. While holding the glove box, release the glove box stop on each side from the dashboard by pushing them in.

2. Remove the screws, then remove the glove box striker (A).

Fastener Locations

▶ : Screw, 2



3. Install the striker in the reverse order of removal.

Dashboard Side Trim Removal/ Installation

Special Tools Required

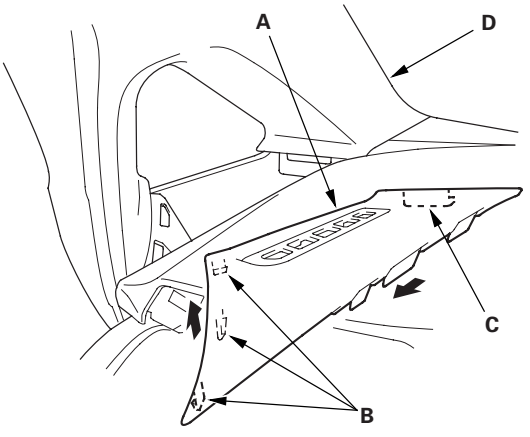
KTC trim tool set 07AAC-SEPA240

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the dashboard and related parts.

1. Remove the dashboard side trim (A).

   –1 Gently pull up the rear edge to release the rear hooks (B).

   –2 Pull the trim away to release the front hook (C) from the A-pillar trim (D).



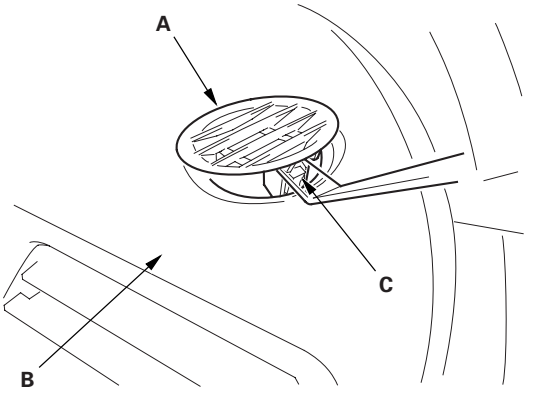
2. Install the side trim in the reverse order of removal.

Side Defogger Vent Trim Removal/ Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to scratch the dashboard and related parts.

1. Insert the trim tool into a gap between the side defogger vent trim (A) and the dashboard (B), and release the hook (C).



2. Install the side defogger vent trim in the reverse order of removal.

Dashboard/Steering Hanger Beam Removal/Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Have an assistant help you when removing and installing the dashboard/steering hanger beam.
- Take care not to scratch the dashboard, the body and other related parts.
- Put on gloves to protect your hands.

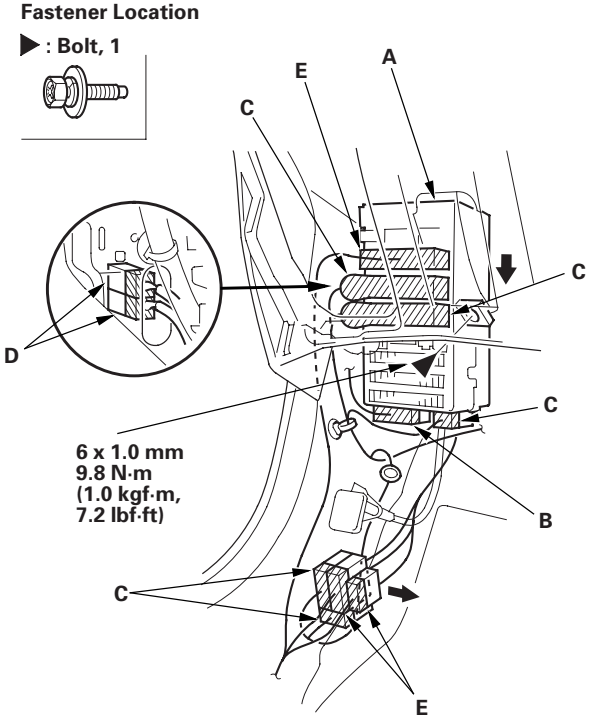
1. Do the battery terminal disconnection procedure (see page 22-68), and wait at least 3 minutes before beginning work.

2. Remove these items:

   - Driver's dashboard lower cover (see page 20-102)
   - Driver's dashboard undercover (see page 20-103)
   - Passenger's dashboard undercover (see page 20-104)
   - Center console (see page 20-92)
   - Glove box (see page 20-104)
   - Kick panel, both sides (see page 20-66)
   - A-pillar trim, both sides (see page 20-69)
   - Steering column (see page 17-10)
   - EPS control unit (see page 17-84)

Driver's side

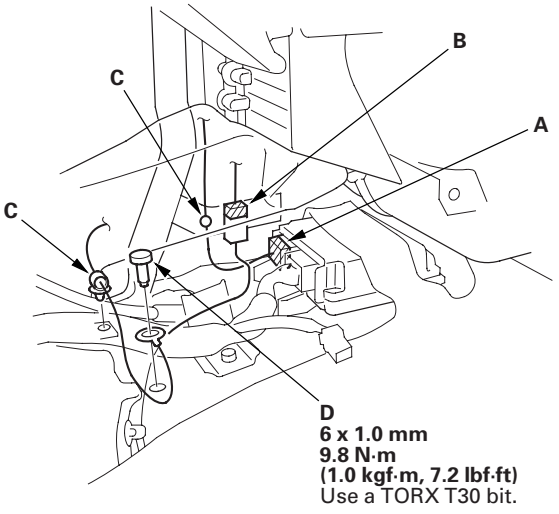
3. Remove the bolt securing the under-dash fuse/relay box (A). Disconnect the roof wire harness connector (B), then lower the box.



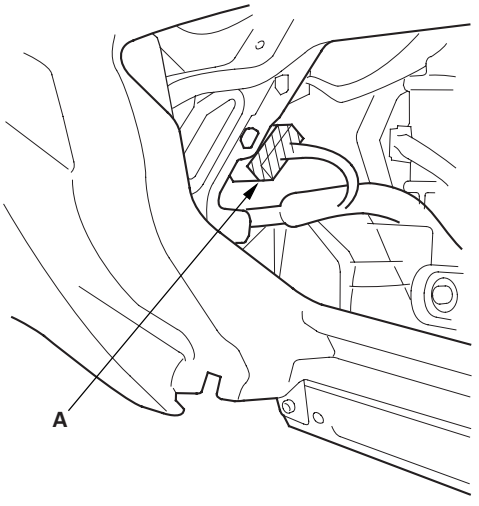
4. From under the dash, disconnect the engine compartment wire harness connectors (C), driver's door wire harness connectors (D), and the floor wire harness connectors (E) from the dashboard wire harness connectors or the under-dash fuse/relay box.

Middle portion

5. Disconnect the SRS unit connector A, the antenna connector (B), and detach the wire harness clips (C). Remove the ground bolt (D) with a TORX T30 bit.



6. Disconnect the A/C subharness connector (A) in the glove box opening.

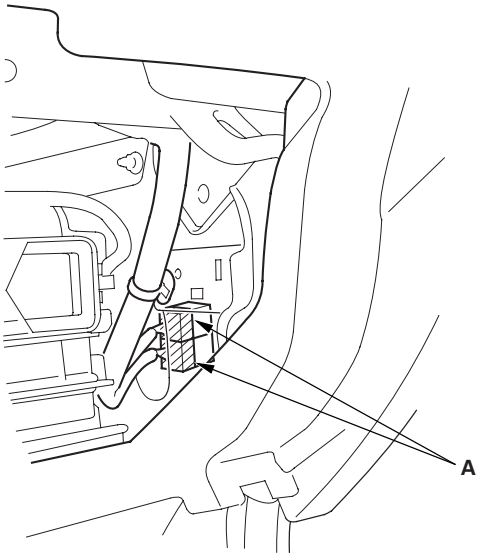


(cont'd)

Dashboard/Steering Hanger Beam Removal/Installation (cont'd)

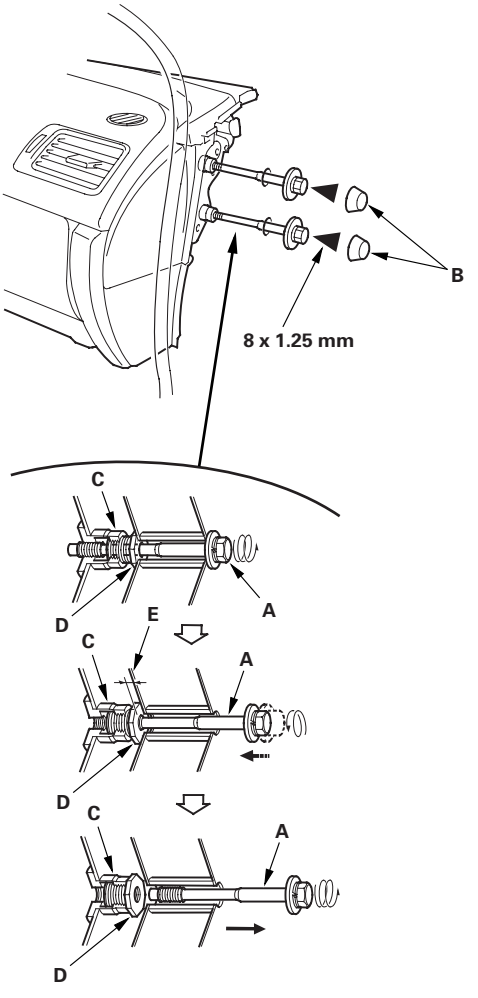
Passenger's side

7. From under the dash, disconnect the passenger's door wire harness connectors (A).



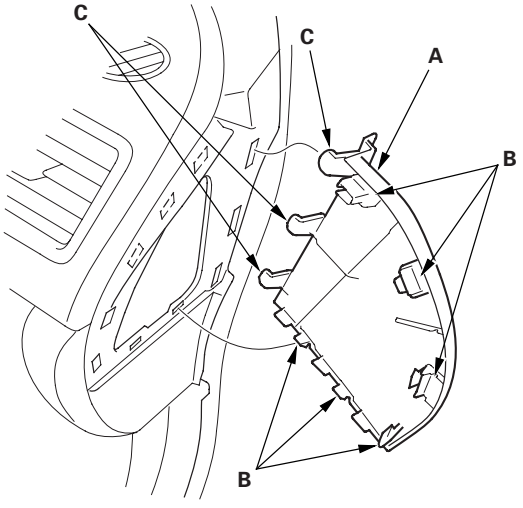
8. Remove the special bolts (A) from outside the passenger's door.

–1 Remove the caps (B).
–2 Loosen the special bolts until they disengage from the threads on the hanger beam sleeves (C). Continue loosening the bolts until they engage the inside threads of the adjusting nuts (D). The thread lock on the special bolts makes the special bolts and the adjusting nuts turn together.
–3 Tighten the special bolts to turn the adjusting nuts until they bottom in the sleeves. This creates a gap (E) between the adjusting nuts and the body.
–4 Loosen the special bolts to disengage them from the adjusting nuts. Remove the special bolts.

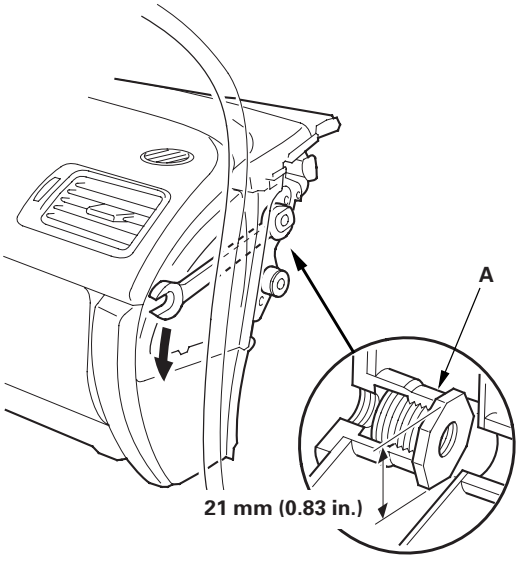


9. If necessary, remove the dashboard side cover (A).

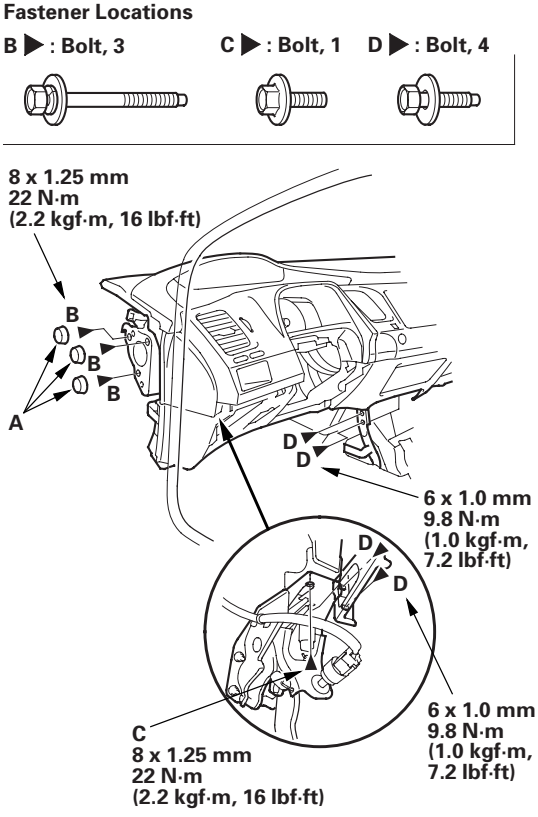
   1. Gently pull out along the rear edge to release the hooks (B).
   2. Gently pull out on the side cover to release the hooks (C), then remove the side cover.



10. If the adjusting nuts (A) are not screwed fully into the sleeve after removing the special bolts, screw the externally threaded nuts into the sleeves with a 21 mm open-end wrench. In this case, the special bolts should be replaced with new ones because the thread lock is worn out.



11. Remove the caps (A), then remove the bolts (B, C, D) from outside the driver's door.

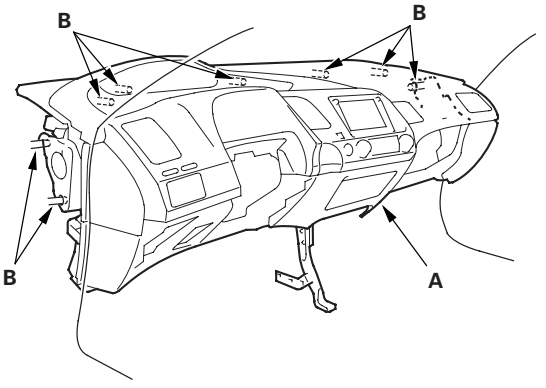


(cont'd)

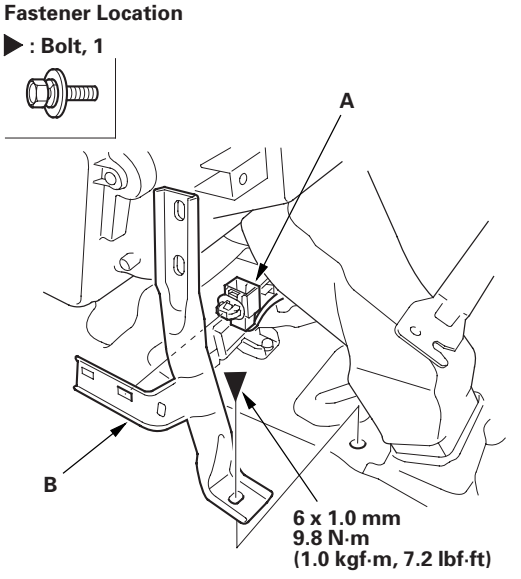
Dashboard/Steering Hanger Beam Removal/Installation (cont'd)

12. Lift up on the dashboard (A) to release it from the guide pins (B). Carefully remove the dashboard through the front door opening. Take care not to scratch the body with the adjusting nuts on the passenger's side.

    NOTE: Do not rest the dashboard on its lower center cover opening, or it may be damaged. Lay it on its front or back.



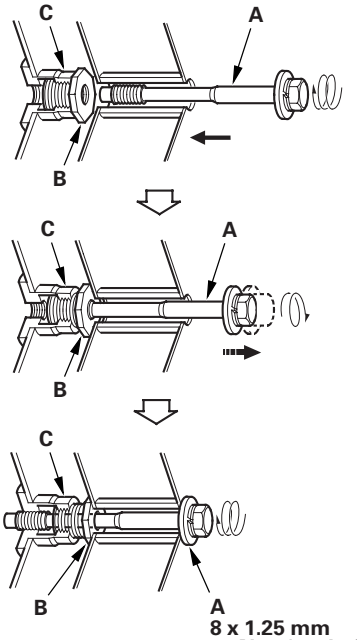
13. Remove the bolt and detach the connector clip (A), then remove the center pipe extension (B).



14. Install the dashboard in the reverse order of removal, and note these items:

- Before tightening the bolts, make sure the wire harnesses are not pinched.
- Make sure the connectors are plugged in properly, and the antenna lead and each cable are connected properly.
- Before reinstalling the dashboard, screw the special bolts (A) into the adjusting nuts (B), and check that they turn together. If they do not turn together, replace the special bolts.
- After setting the dashboard in the body, reinstall all of the mounting bolts but do not tighten them. First tighten the driver's side bracket bolts to the specified torque. Next, loosen the special bolts to turn the adjusting nuts out of the sleeves (C) until the nuts contact the body. Then tighten the special bolts to the specified torque.
- Tighten all remaining mounting bolts to the specified torque.
- Apply medium strength liquid thread lock to the bolts securing the center bracket and the dashboard before reinstallation.
- Check for any DTCs that may have been set during repairs, and clear them.
- Do the battery terminal reconnection procedure (see page 22-68).

Special bolt tightening on passenger's side



8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

Dashboard/Steering Hanger Beam Disassembly/Reassembly

Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Take care not to bend the brackets.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

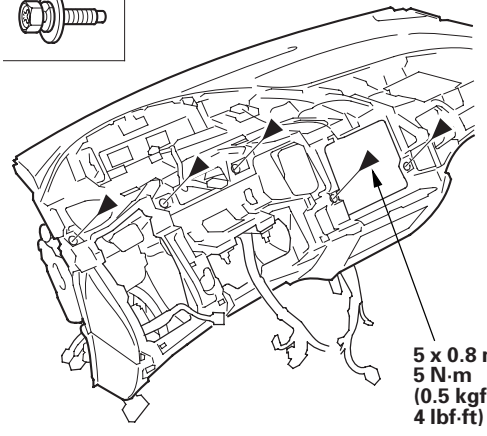
1. Remove the dashboard/steering hanger beam (see page 20-108).

2. Remove these items from the dashboard:

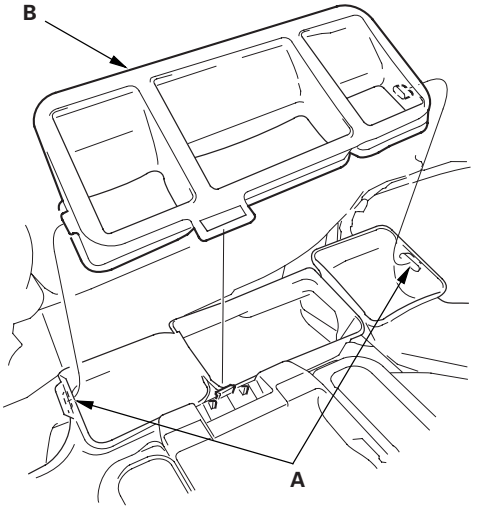
   - Instrument panel (see page 20-98)
   - Gauge control module (speedo) trim (see page 20-99)
   - Subdisplay visor (see page 20-100)
   - Navigation unit, with navigation system
     – '06-08 models (see page 23-155)
     – '09 model (see page 23-355)
   - Audio unit, without navigation system
     – '06-08 models (see page 23-80)
     – '09 model (see page 23-256)
   - Passenger's airbag (see page 24-189)
   - Gauge control module (speedo) (see page 22-277)
   - Gauge control module (tach) (see page 22-277)

3. Remove the bolts.

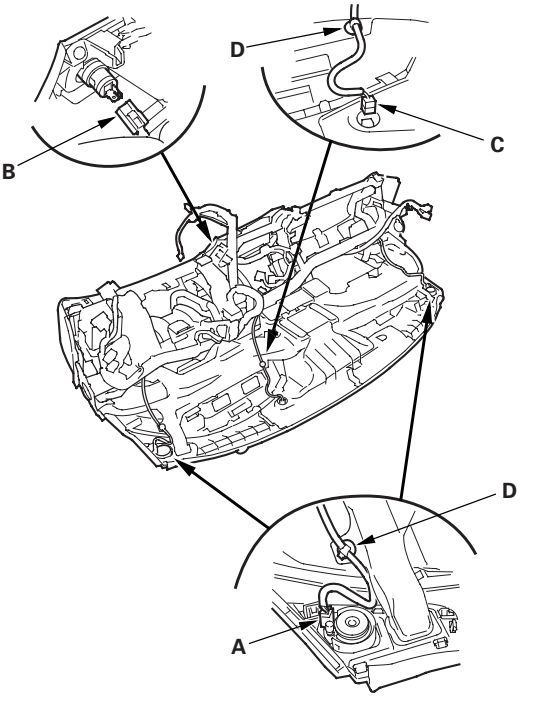
Fastener Locations
▶ : Bolt, 5



4. From the back of the dashboard, release the hooks (A), then remove the center joint duct (B).



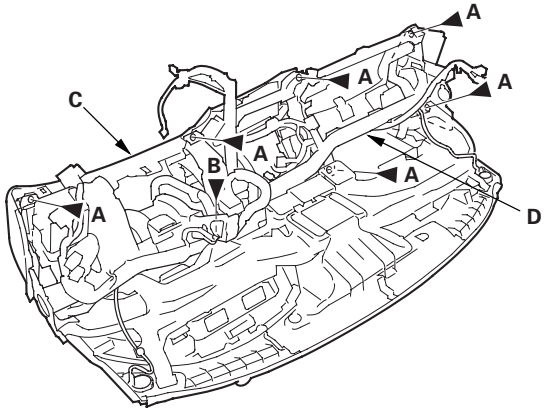
5. From the back of the dashboard, disconnect the tweeter connectors (A), the front accessory power socket connector (B), and the sunlight sensor connector (C), then detach the harness clips (D).



6. From the back of the dashboard, remove the screws (A, B), then separate the dashboard (C) from the steering hanger beam (D).

Fastener Locations

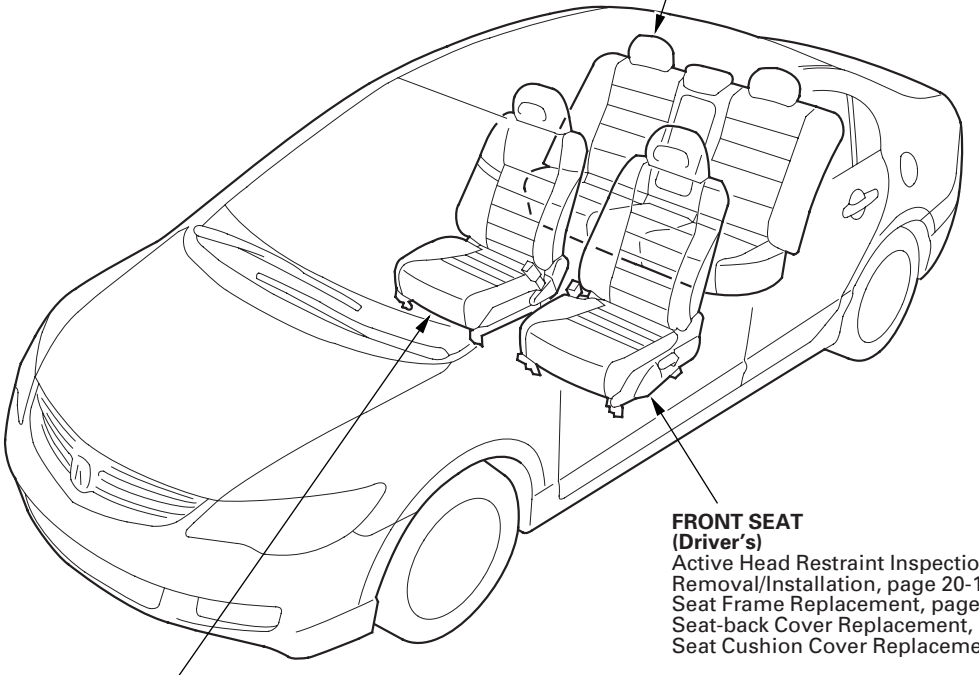
A ▶ : Screw, 6 (Silver) **B ▶ : Screw, 1 (Black)**



7. Assemble the dashboard and steering hanger beam in the reverse order of disassembly, and note these items:

   - Make sure the dashboard wire harness is not pinched.
   - Make sure the connectors are plugged in properly.

Component Location Index



REAR SEAT
Removal/Installation, page 20-131
Seat-back Latch Replacement, page 20-135
Seat-back Release Lever/Cable
Removal/Installation, page 20-136
Armrest Beverage Holder
Replacement, page 20-137
Armrest Replacement, page 20-138
Seat-back Cover Replacement, page 20-139
Seat Side Bolster Cover Replacement, page 20-143
Seat Cushion Cover Replacement, page 20-143
Armrest Cover Replacement, page 20-144

FRONT SEAT
(Driver's)
Active Head Restraint Inspection, page 20-117
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FRONT SEAT
(Passenger's)
Active Head Restraint Inspection, page 20-117
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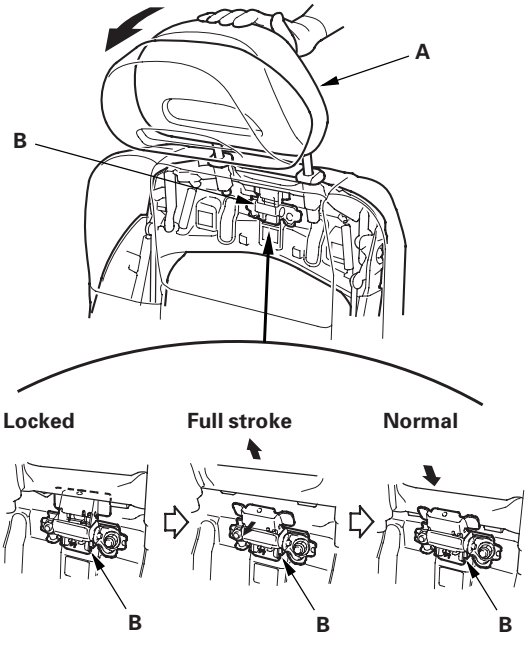
Front Seat Active Head Restraint Inspection

NOTE: If the vehicle has been in a collision, always inspect the active head restraint, even if they appear reusable, by doing the following procedure.

Resetting Head Restraint Position

1. Push the head restraint (A) forward fully from the locked position to release the inertial lock (B).



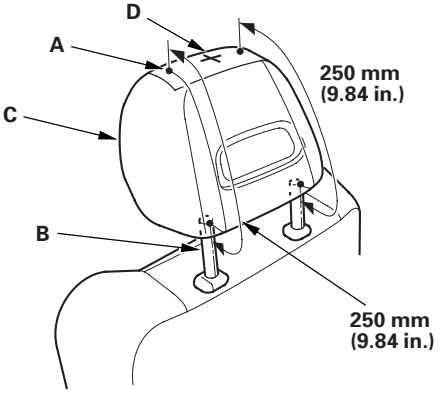
2. Slowly raise the head restraint into the normal position.

Inspection

3. Fold the seat-back forward, then recline the seat-back to the first lock position, and adjust the head restraint to the highest position.

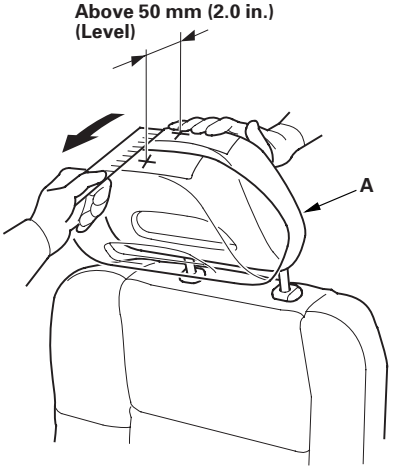
4. Apply masking tape on the top of the head restraint.

5. Make marks (A) on both sides at 250 mm (9.84 in.) upward from the roots of the head restraint frame (B) along the back of the head restraint (C) surface. Make a center of these points as a datum point (D).



6. Push the head restraint (A) forward, and measure the level amount of the head restraint movement. The head restraint should move than 50 mm (2.0 in.) without resistance. If it is less than 50 mm (0.2 in.), or the head restraint does not move smoothly, replace the seat frame assembly:

   - Passenger's seat (see page 20-120)
   - Driver's seat (see page 20-122)



Front Seat Removal/Installation

Special Tools Required
KTC trim tool set 07AAC-SEPA240

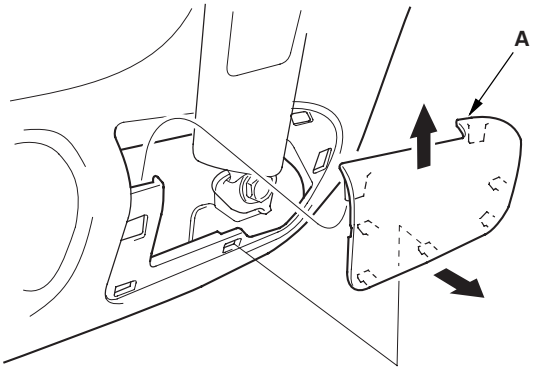
SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the body or tear the seat covers.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

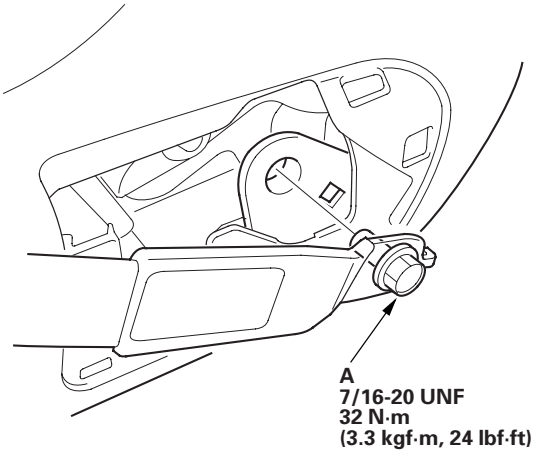
1. Do the battery terminal disconnection procedure (see page 22-68), and wait at least 3 minutes before beginning work.

2. Tilt the steering wheel all the way up, and push it all the way in. Adjust the seat-back recline to a middle position.

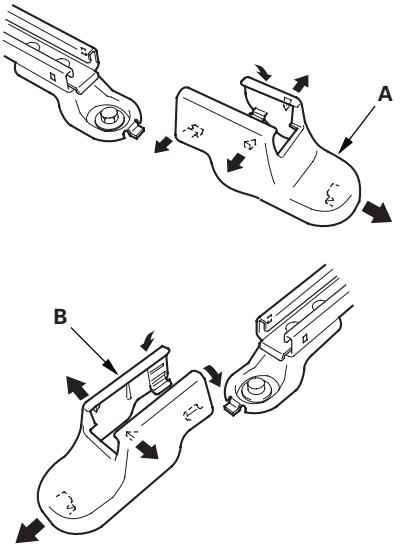
3. Slide the front seat forward fully. Carefully pry up on the bottom edge of the anchor cover (A) to release the hooks, and remove the cover.



4. Remove the lower anchor bolt (A).



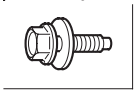
5. Remove the seat track outer end covers (A) and the seat track center end covers (B) from the back of both seat tracks.

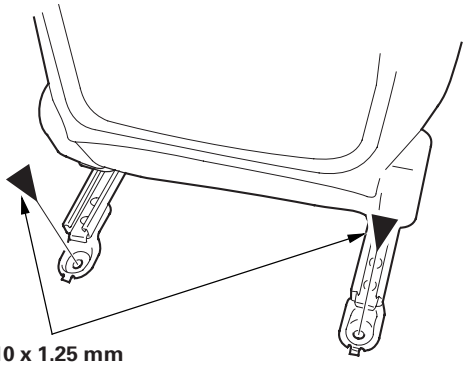


6. Remove the rear seat track bolts.

Fastener Locations

▶ : **Bolt, 2**

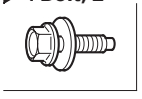


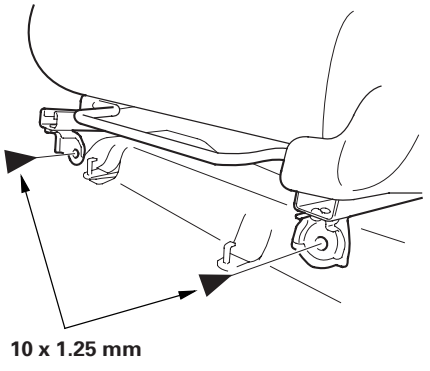


7. Slide the front seat rearward fully, and remove the front seat track bolts.

Fastener Locations

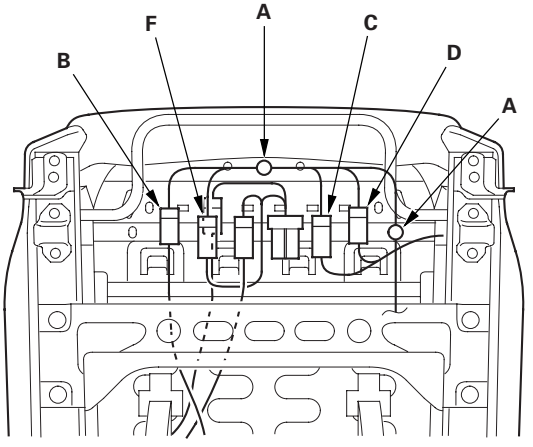
▶ : **Bolt, 2**



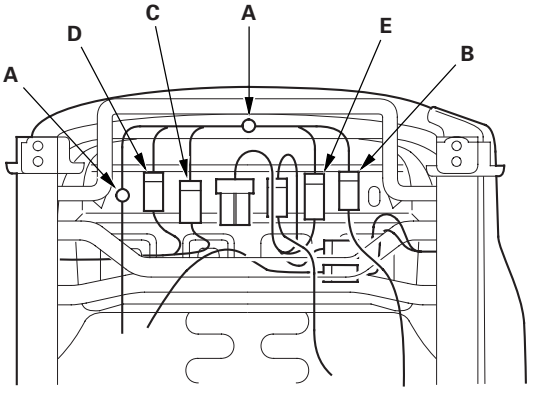


8. Lift up the front seat, then detach the harness clips (A), and disconnect the side airbag connector (B), the seat belt switch connector (C), and the seat belt buckle tensioner connector (D). On the driver's seat, disconnect the seat heater subharness connector (E) or the seat position sensor connector. On the passenger's seat, disconnect the seat heater subharness connector (F) or the ODS unit subharness connector.

Passenger's seat



Driver's seat



(cont'd)

Front Seat Removal/Installation (cont'd)

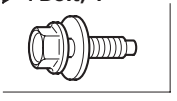
9. With the help of an assistant, carefully remove the front seat through the front door opening.

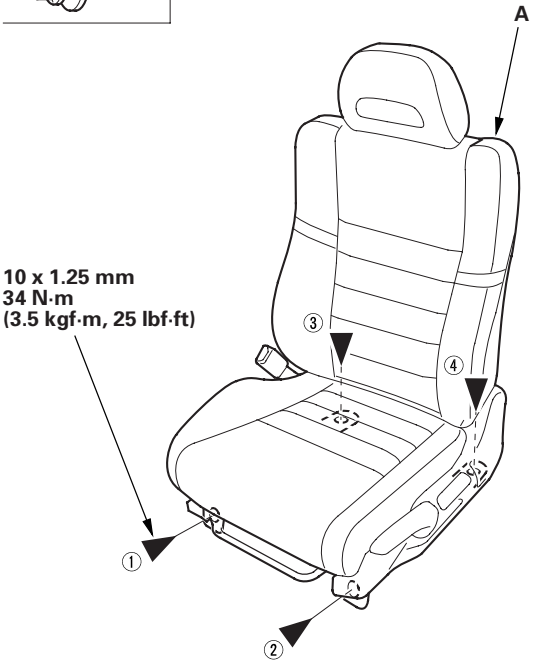
10. Install the seat in the reverse order of removal, and note these items:

    - Apply medium strength liquid thread lock to the seat mounting bolts before reinstallation.
    - Tighten the seat mounting bolts to the specified torque in the sequence shown. Slide the seat (A) all the way back and tighten ① and ②, then slide it forward and tighten ③ and ④. The driver's seat is shown; the passenger's seat is similar.
    - Tighten the bolts by hand first, then tighten them to specification with a torque wrench.
    - Make sure each connector is plugged in properly.
    - Check for any DTCs that may have been set during repairs, and clear them.
    - Do the battery terminal reconnection procedure (see page 22-68).

Fastener Locations

▶ : **Bolt, 4**





Front Seat Frame Replacement

Passenger's Seat

Calibrate the ODS unit after any of these actions (see page 24-27):

- Front passenger's seat replacement (including any seat components)
- Replacement of the front seat weight sensors
- After a vehicle collision

NOTE:
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide locks.
- Apply multipurpose grease to the sliding portions of the seat tracks.
- If the side airbag has deployed, replace the seat frame and related pieces with new ones (see page 24-185).

1. Remove the front seat (see page 20-118).

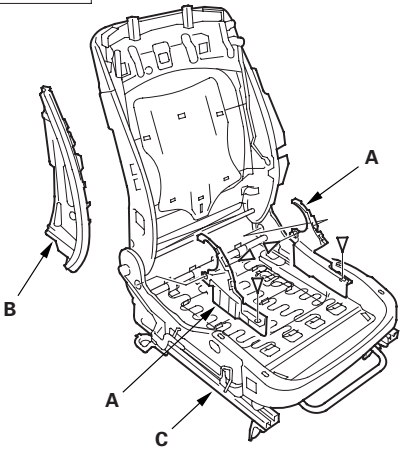
2. Remove these items:

    - Front seat-back cover (see page 20-123)
    - Front seat cushion cover (see page 20-127)
    - ODS unit (see page 24-209)
    - Front seat belt buckle (see page 24-6)

3. Remove the clips, then remove the recline inner covers (A) and module holder (B) from the seat frame (C).

Fastener Locations

▷ : **Clip, 4**



Front Seat Removal/Installation (cont'd)

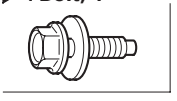
9. With the help of an assistant, carefully remove the front seat through the front door opening.

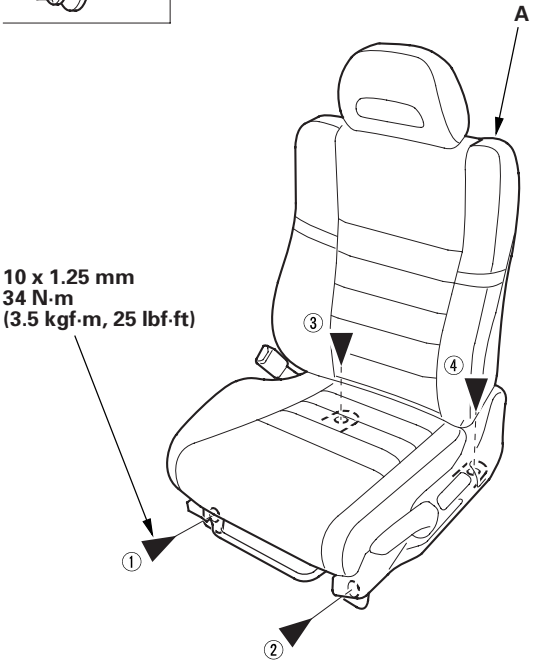
10. Install the seat in the reverse order of removal, and note these items:

    - Apply medium strength liquid thread lock to the seat mounting bolts before reinstallation.
    - Tighten the seat mounting bolts to the specified torque in the sequence shown. Slide the seat (A) all the way back and tighten ① and ②, then slide it forward and tighten ③ and ④. The driver's seat is shown; the passenger's seat is similar.
    - Tighten the bolts by hand first, then tighten them to specification with a torque wrench.
    - Make sure each connector is plugged in properly.
    - Check for any DTCs that may have been set during repairs, and clear them.
    - Do the battery terminal reconnection procedure (see page 22-68).

Fastener Locations

▶ : **Bolt, 4**





Front Seat Frame Replacement

Passenger's Seat

Calibrate the ODS unit after any of these actions (see page 24-27):

- Front passenger's seat replacement (including any seat components)
- Replacement of the front seat weight sensors
- After a vehicle collision

NOTE:
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide locks.
- Apply multipurpose grease to the sliding portions of the seat tracks.
- If the side airbag has deployed, replace the seat frame and related pieces with new ones (see page 24-185).

1. Remove the front seat (see page 20-118).

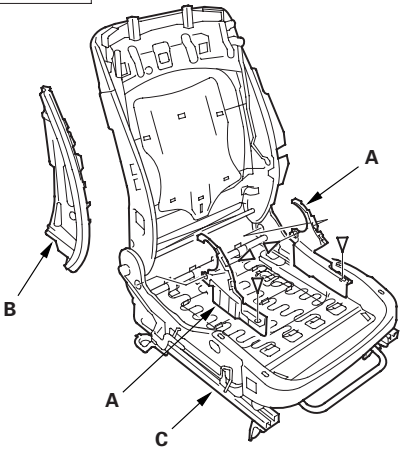
2. Remove these items:

    - Front seat-back cover (see page 20-123)
    - Front seat cushion cover (see page 20-127)
    - ODS unit (see page 24-209)
    - Front seat belt buckle (see page 24-6)

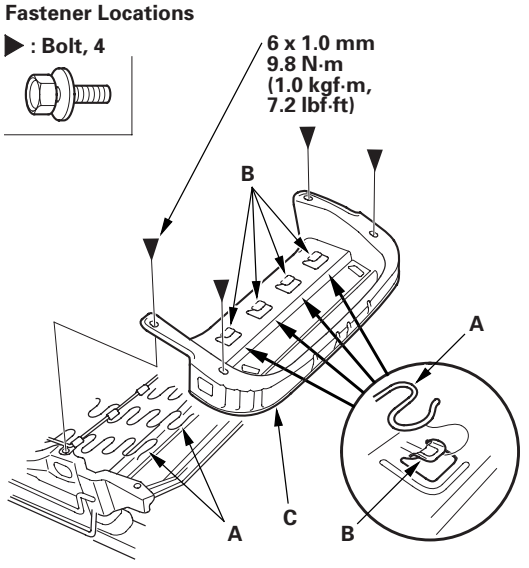
3. Remove the clips, then remove the recline inner covers (A) and module holder (B) from the seat frame (C).

Fastener Locations

▷ : **Clip, 4**

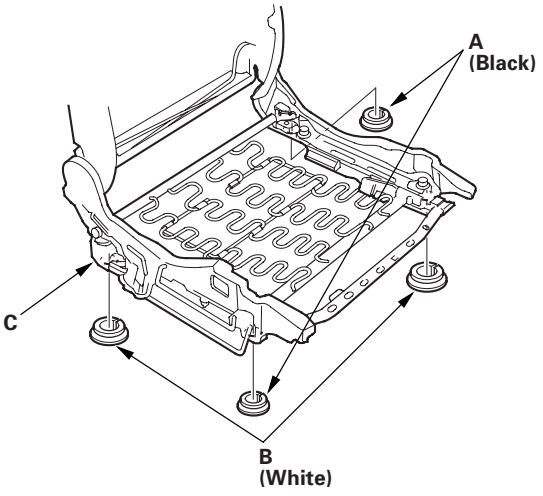


4. Remove the bolts, and release the seat cushion springs (A) from the hooks (B), then remove the seat cushion frame (C).



5. Remove the front seat weight sensors (see page 24-207).

6. If necessary, remove the bushing (A, B) from the seat cushion frame (C).



7. Install the new seat frame in the reverse order of removal, and note these items:

- Make sure the ODS unit connector is plugged in properly.
- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips into place securely.
- Make sure the seat wiring harnesses are routed properly and are not pinched.
- Calibrate the ODS unit, if necessary (see page 24-27).

Front Seat Frame Replacement (cont'd)

Driver's Seat

Check the operation of the driver's seat position sensor after any of these actions (see page 24-29):

- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

NOTE:
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide lock.
- Apply multipurpose grease to the sliding portions and pivot portions of the seat tracks.
- If the side airbag has deployed, replace the seat frame and related pieces with new ones (see page 24-185).

1. Remove the front seat (see page 20-118).

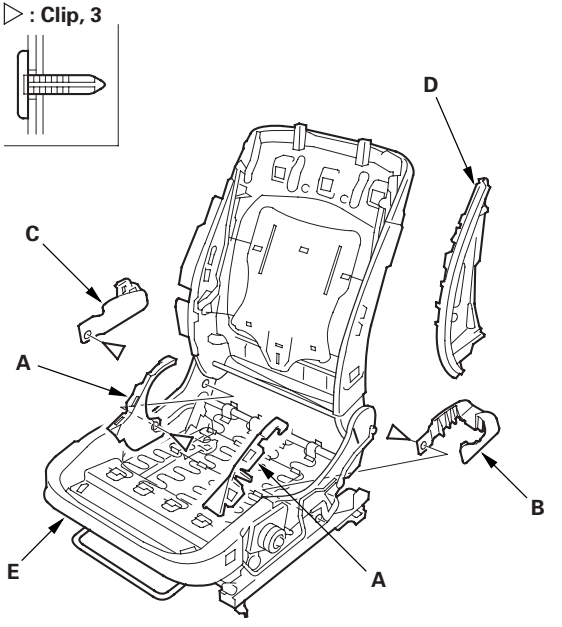
2. Remove these items:

   - Front seat-back cover/pad (see page 20-123)
   - Front seat cushion cover/pad (see page 20-127)
   - Driver's seat position sensor (see page 24-211)
   - Front seat belt buckle (see page 24-6)

3. Remove the clips, then remove the recline inner covers (A), the outer upper rail cover (B), the inner upper rail cover (C) and the module holder (D) from the seat frame (E).

Fastener Locations

▷ : **Clip, 3**



4. Install the new seat frame in the reverse order of removal, and note these items:

   - Make sure the driver's seat position sensor connector is plugged in properly.
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.
   - Make sure the seat wiring harnesses are routed properly and not pinched.

Front Seat-back Cover Replacement

Special Tools Required
KTC trim tool set 07AAC-SEPA240

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

- Check the operation of the driver's seat position sensor after any of these actions (see page 24-29):
  – Driver's seat position sensor replacement
  – Cover plate (front side of driver's seat slide rail) replacement
- Calibrate the ODS unit after any of these actions (see page 24-27):
  – Front passenger's seat replacement (including any seat components)
  – Replacement of the front seat weight sensors
  – After a vehicle collision

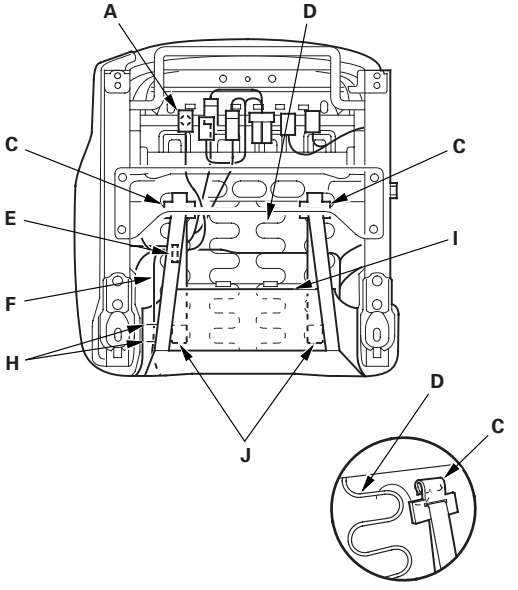
NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to tear or damage the seat covers.
- On the passenger's seat, do not touch the OPDS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor caution it to fail.
- Put on gloves to protect your hands.

1. Remove the front seat (see page 20-118).

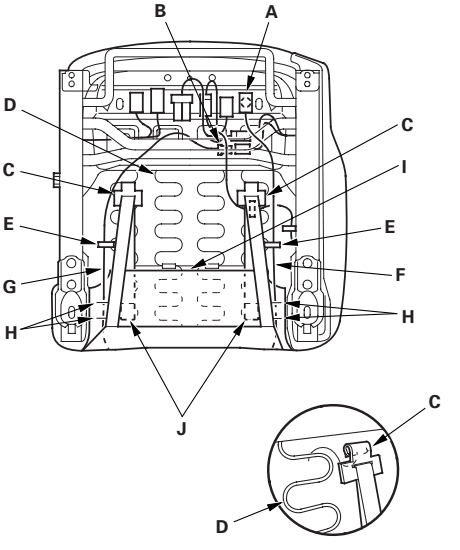
2. Remove the head restraint.

3. From under the seat cushion, detach the side airbag connector clip (A). On the driver's seat, disconnect the seat-back heater connector (B).

Passenger's seat



Driver's seat



4. Release the hooks (C) from the seat cushion frame spring (D). Remove the wire ties (E), and pull the side airbag harness (F) and the seat-back heater harness (G) (driver's seat) out through the slits (H) in the seat cushion cover (I). Turn over the seat cushion cover, and release the hooks (J).

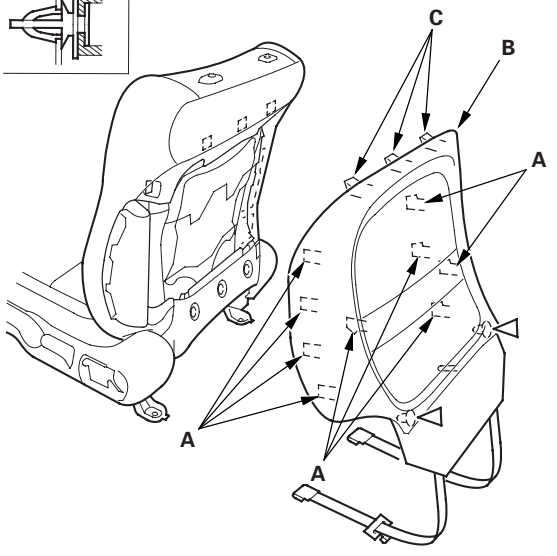
(cont'd)

Front Seat-back Cover Replacement (cont'd)

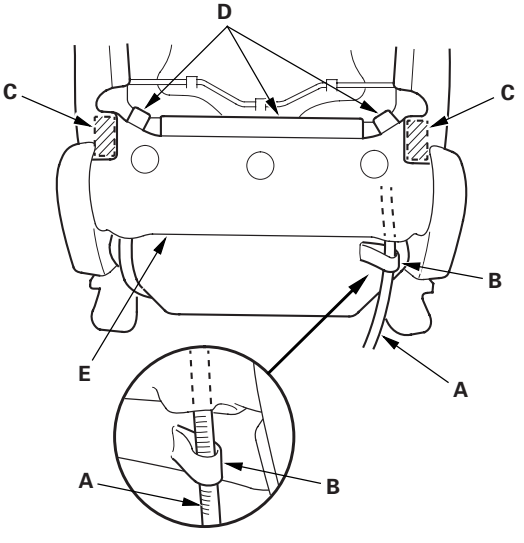
5. Detach the clips and the hooks (A) by pulling out the bottom of the back cover (B), then gently pull down the panel to release the hooks (C) from the seat frame, and remove the cover.

Fastener Locations

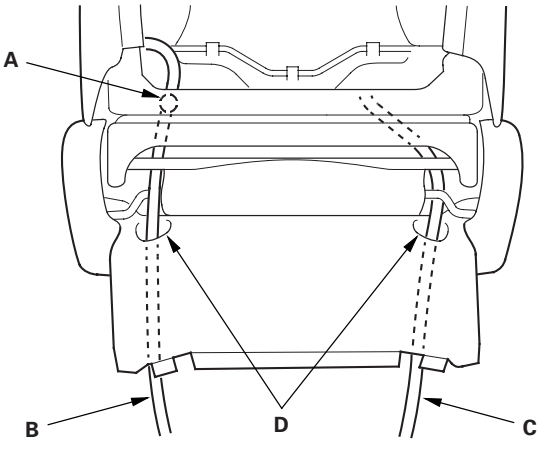
▷ : **Clip, 2**



6. Pull the side airbag harness (A) out through the loop (B), and release the Velcro fastener (C) and the hooks (D), then pull the seat-back cover (E) back.

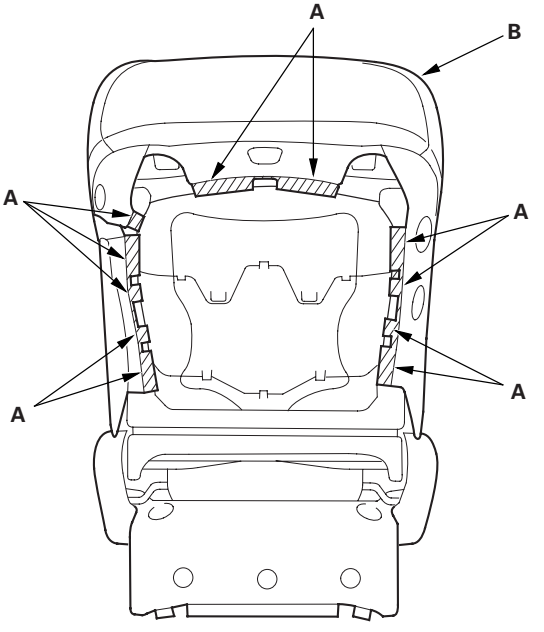


7. Detach the harness clip (A), and pull the side airbag harness (B) and seat-back heater harness (C) (driver's seat) out through the harness holes (D) in the seat-back cover and seat frame. Driver's seat is shown; passenger's seat is similar.

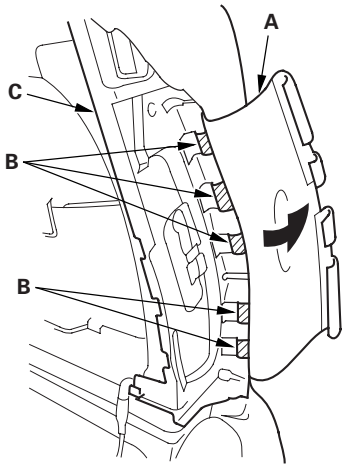


8. Remove the side airbag (see page 24-191).

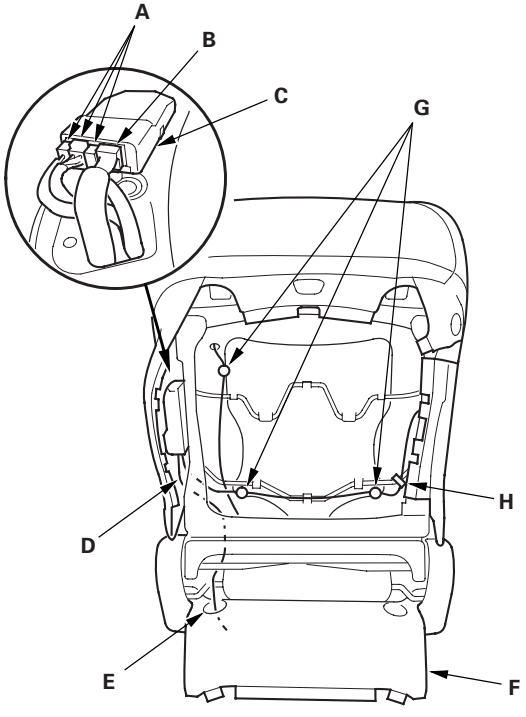
9. Release the hook strips (A), then loosen the seat-back cover (B). Driver's seat is shown; passenger's seat is similar.



10. Turn over the reinforcing cloth (A), then release the hooks (B) from the side airbag module holder (C). Passenger's seat is shown; driver's seat is similar.

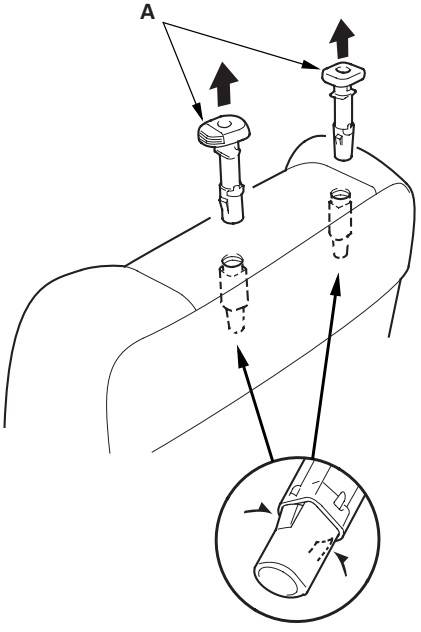


11. Passenger's seat: Disconnect the OPDS sensor connectors (A) and the ODS unit subharness connector (B) from the ODS unit (C), and pull them in through the hole in the seat frame. Pull the ODS unit subharness (D) out through the harness hole (E) in the seat-back cover (F). Detach the harness clips (G), and remove the wire tie (H).

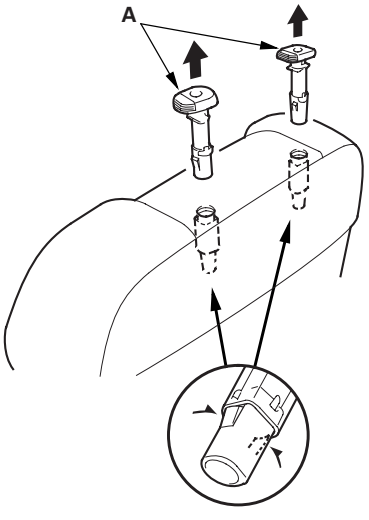


12. Pinch the tabs on the ends of the head restraint guides (A), and remove them from the seat-back.

'06-07 models



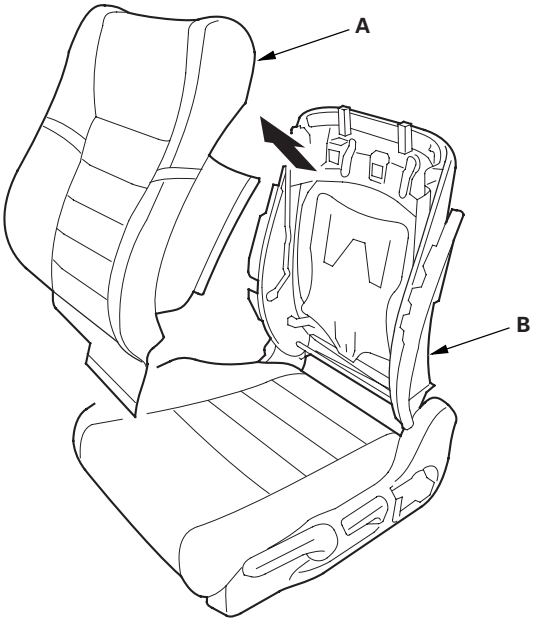
'08-09 model



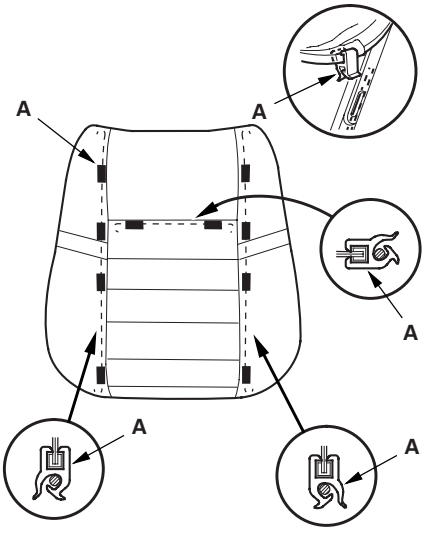
(cont'd)

Front Seat-back Cover Replacement (cont'd)

13. Remove the seat-back cover/pad (A) from the seat frame (B).

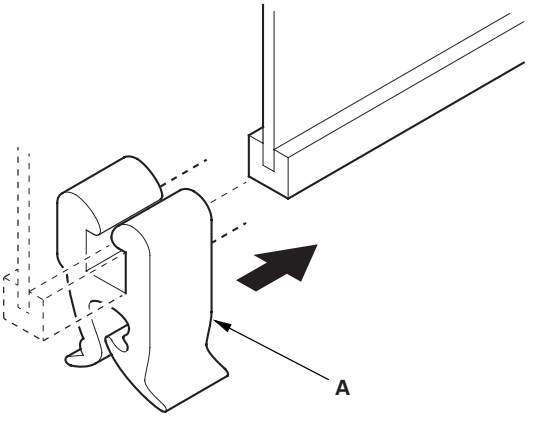


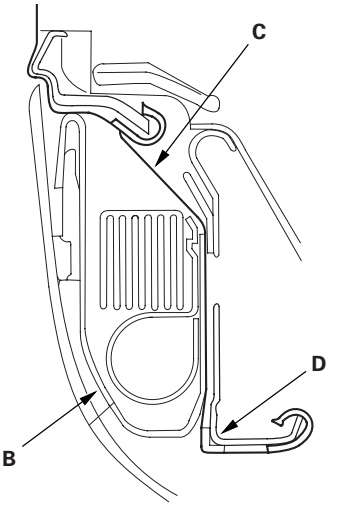
14. Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.



15. Install the cover in the reverse order of removal, and note these items:

- Reinitialize the ODS unit (see page 24-26).
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, the hooks, and the hook strips.
- Replace any clips (A) you removed with new ones.
- Before installing the side airbag (B), make sure the reinforcing cloth (C) is fixed on the seat-back frame (D) securely.
- Make sure the side airbag harness, and the seat heater harness (some driver's seat) or the ODS unit subharness (passenger's seat) are routed properly.





Front Seat Cushion Cover Replacement

Special Tools Required
KTC trim tool set : 07AAC-SEPA240

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

- Check the operation of the driver's seat position sensor after any of these actions (see page 24-29):
  – Driver's seat position sensor replacement
  – Cover plate (front side of driver's seat slide rail) replacement
- Calibrate the ODS unit after any of these actions (see page 24-27):
  – Front passenger's seat replacement (including any seat components)
  – Replacement of the front seat weight sensors
  – After a vehicle collision

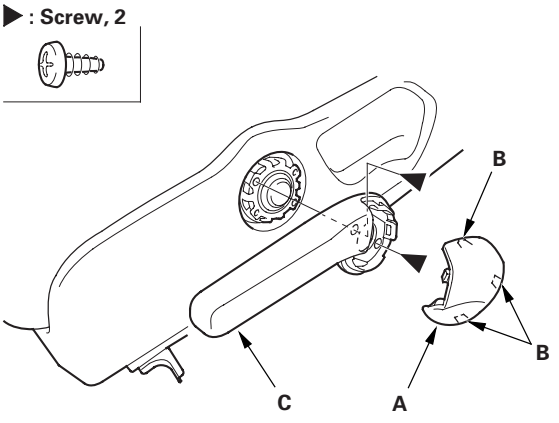
NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to tear or damage the seat covers.
- Put on gloves to protect your hands.

1. Remove the front seat (see page 20-118).

2. Remove the front seat belt buckle (see page 24-6).

3. Pull back the cap (A) to release the hooks (B), and remove the screws, then remove the height adjuster handle (C).

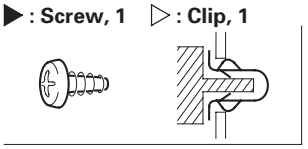
Fastener Locations
▶ : Screw, 2



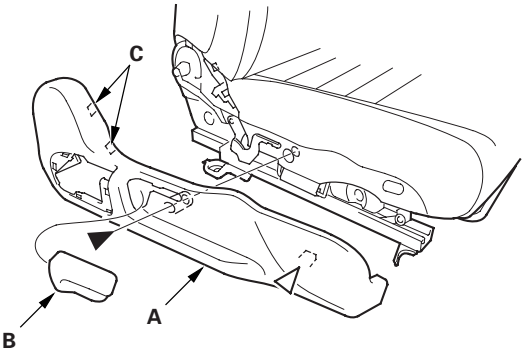
4. Remove the recline cover (A).

–1 Remove the recline knob (B) and the screw.
–2 Gently pull out the cover, then detach the clip, and release the hooks (C).

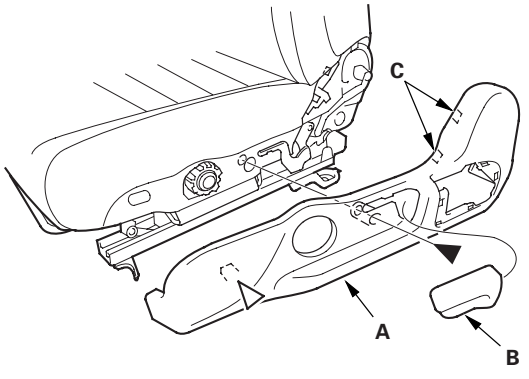
Fastener Locations
▶ : Screw, 1 ▷ : Clip, 1



Passenger's seat



Driver's seat



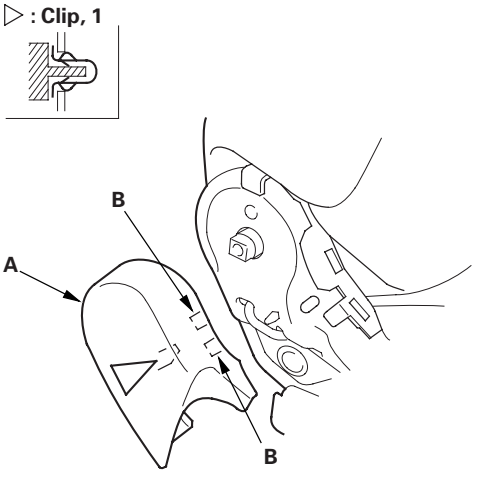
(cont'd)

Front Seat Cushion Cover Replacement (cont'd)

5. Gently pull out the center cover (A), then detach the clip, and release the hooks (B). Driver's seat is shown; passenger's seat is similar.

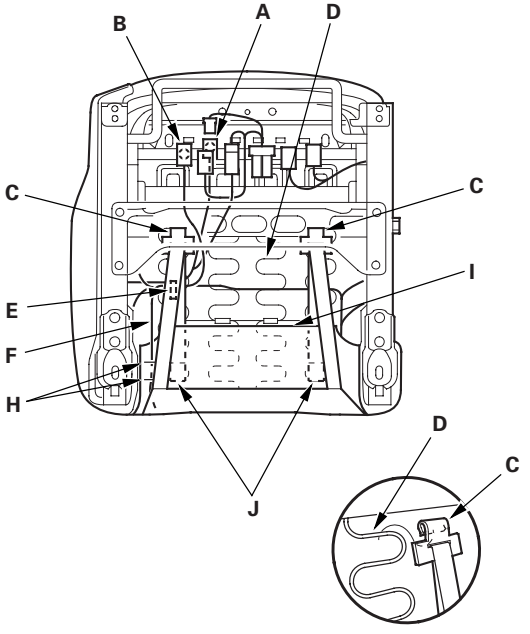
Fastener Location

▷ : Clip, 1

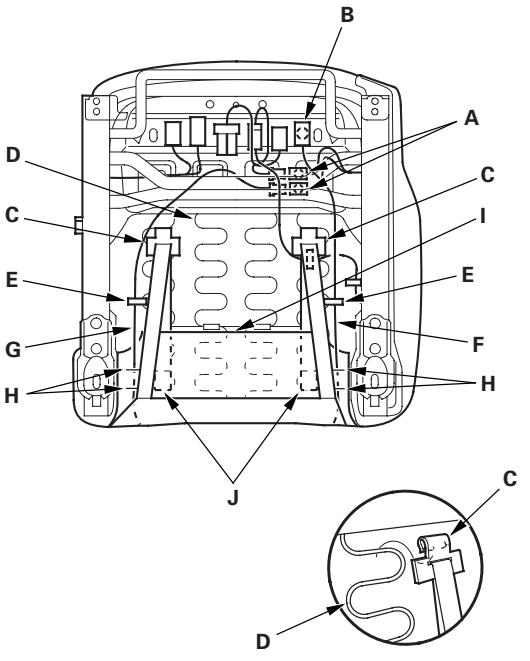


6. If equipped, disconnect the seat heater connector(s) (A) and side airbag connector (B) from under the seat cushion.

Passenger's seat

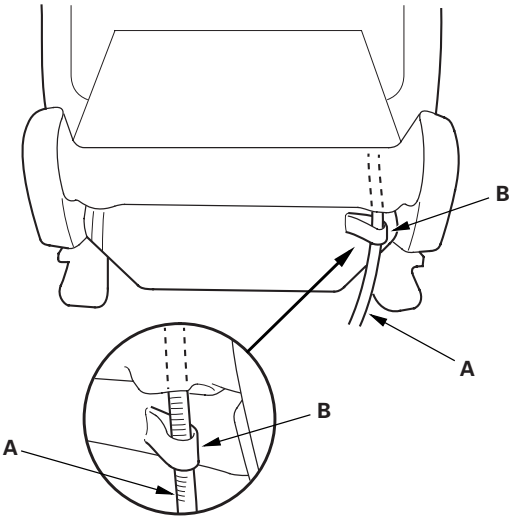


Driver's seat



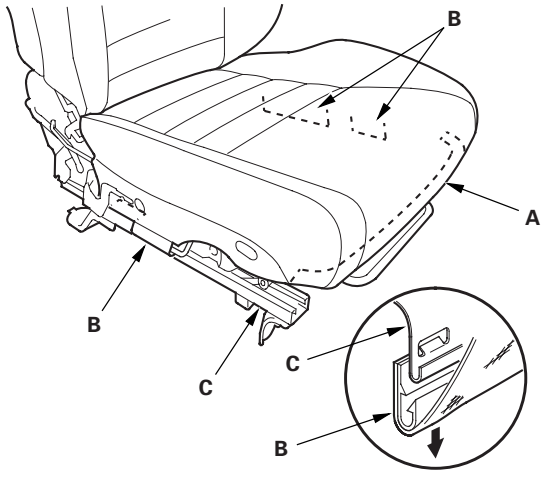
7. Release the hooks (C) from the seat cushion frame spring (D). Remove the wire ties (E), and pull the side airbag harness (F) and seat-back heater harness (G) (driver's seat) out through the slits (H) in the seat cushion cover (I). Turn over the seat cushion cover, and release the hooks (J).

8. Pull the side airbag harness (A) out through the loop (B).

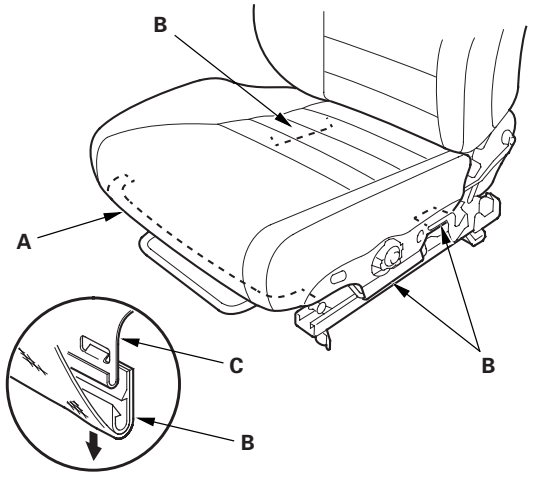


9. Release the hook strips (A, B) from the seat frame (C).

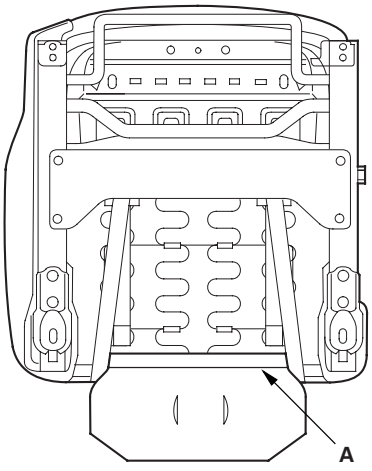
Passenger's seat



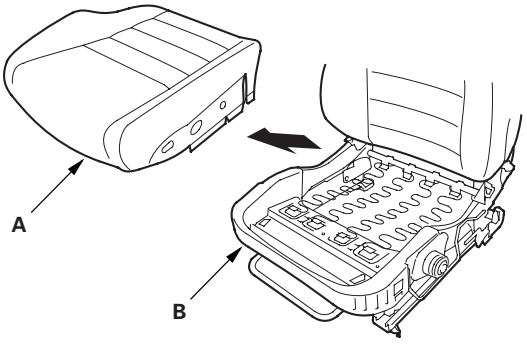
Driver's seat



10. Release the hook (A) from under the seat cushion.



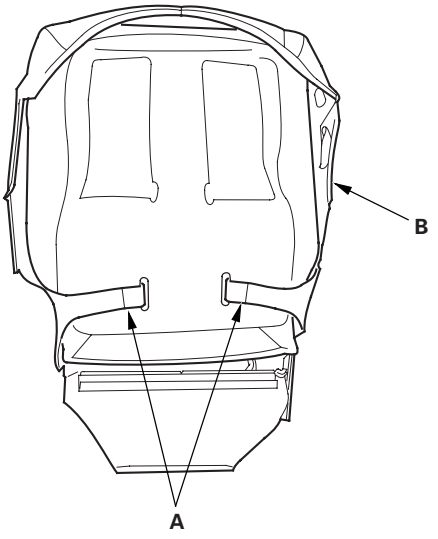
11. Remove the seat cushion cover/pad (A) from the seat frame (B).



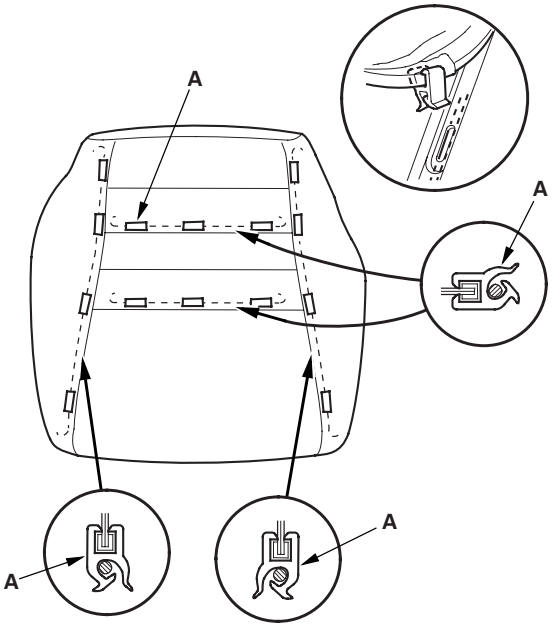
(cont'd)

Front Seat Cushion Cover Replacement (cont'd)

12. Release the hooks (A) from under the seat cushion (B).

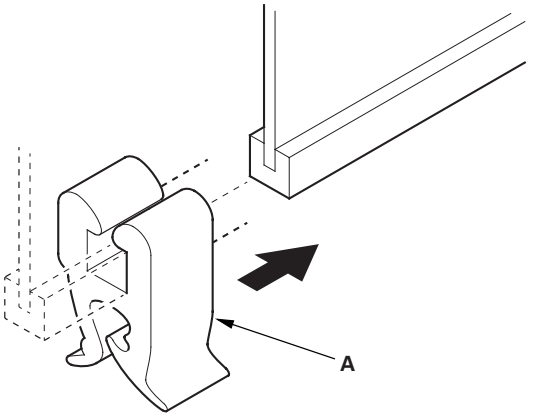


13. Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.



14. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, the hooks, and the hook strips.
- Replace any clips (A) you removed with new ones.



Rear Seat Removal/Installation

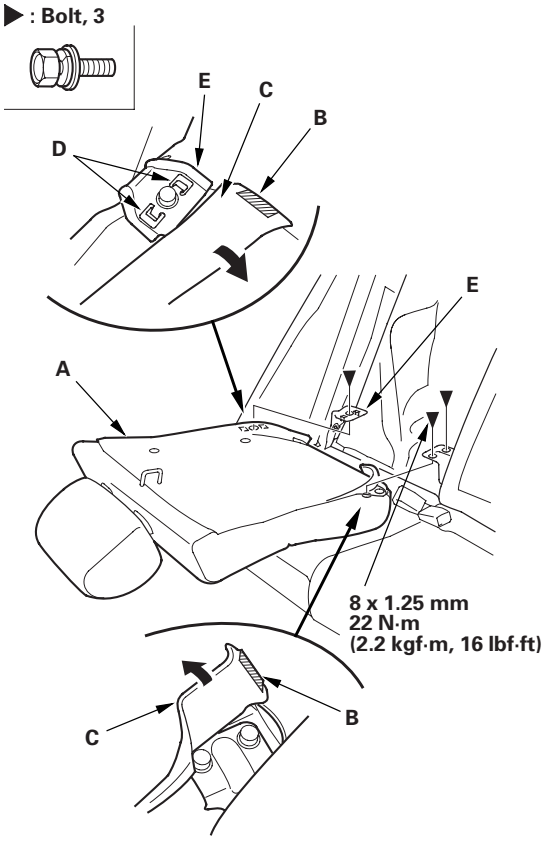
Seat-back

NOTE: Take care not to scratch the body or tear the seat covers.

1. Remove the right seat-back (A).
   1. Fold the right seat-back down.
   2. Release the Velcro fasteners (B), and pull back the seat-back cover (C), then remove the bolts.
   3. Release the hooks (D) of the pivot bracket (E).

Fastener Locations

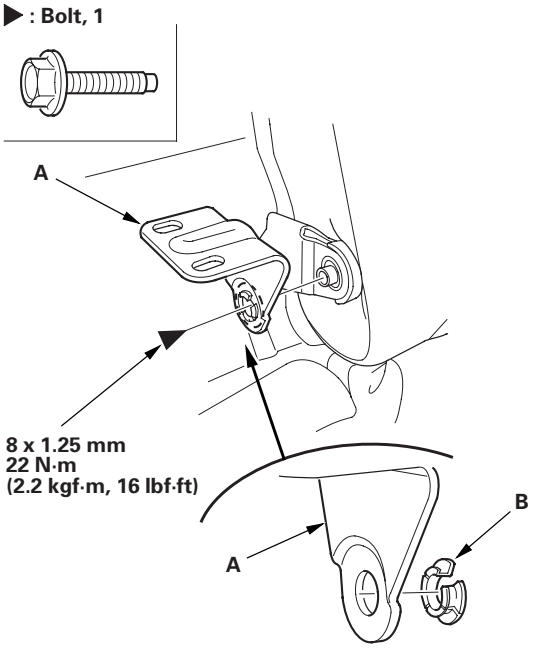
▶ : Bolt, 3



2. Remove the bolt, then remove the center pivot bracket (A).

Fastener Location

▶ : Bolt, 1



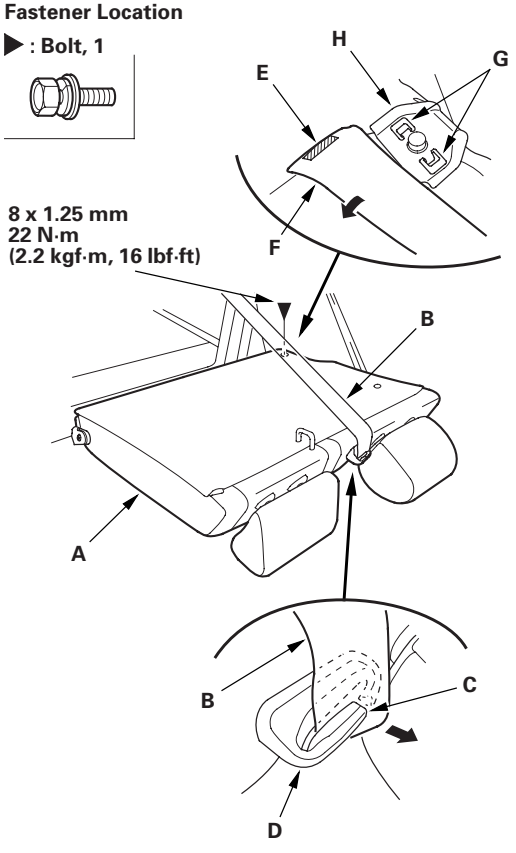
3. If necessary, remove the bushing (B).

(cont'd)

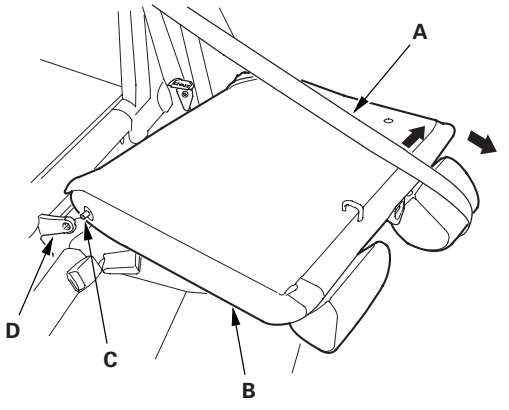
Rear Seat Removal/Installation (cont'd)

4. Remove the left seat-back (A).

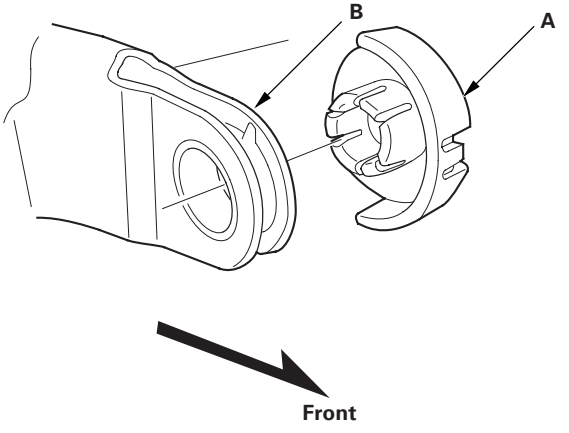
   1. Fold the left seat-back down.
   2. Pull the rear center seat belt (B) out through the slit (C) in the seat belt guide (D).
   3. Release the Velcro fastener (E), and pull back the seat-back cover (F), then remove the bolt.
   4. Release the hooks (G) of the pivot bracket (H).



5. Extend the rear center seat belt (A) to remove the left seat-back (B), then release the pivot shaft (C) from the center pivot bracket (D).

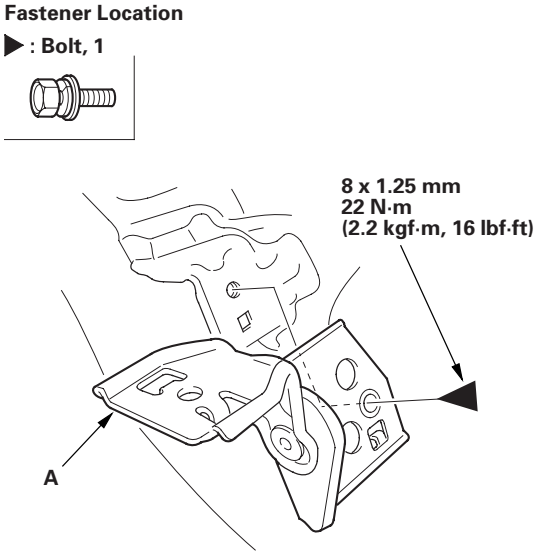


6. If necessary, remove the bushing (A) from the center pivot bracket (B).



7. Remove the seat cushion and seat side bolster.

8. Remove the bolt, then remove the pivot bracket (A).



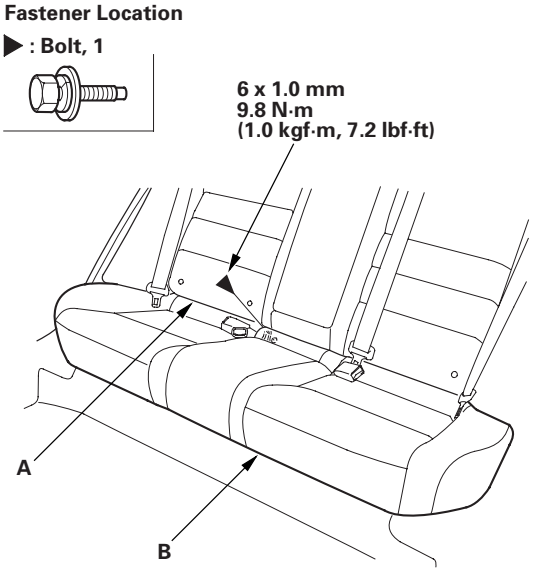
9. Install the seat-back in the reverse order of removal, and note these items:

   - Guide the belt over the front of the seat-back as you install the seat-back.
   - Before attaching the rear seat-back, make sure there are no twists or kinks in the rear center seat belt.

Seat Cushion

NOTE: Take care not to scratch the body or tear the seat covers.

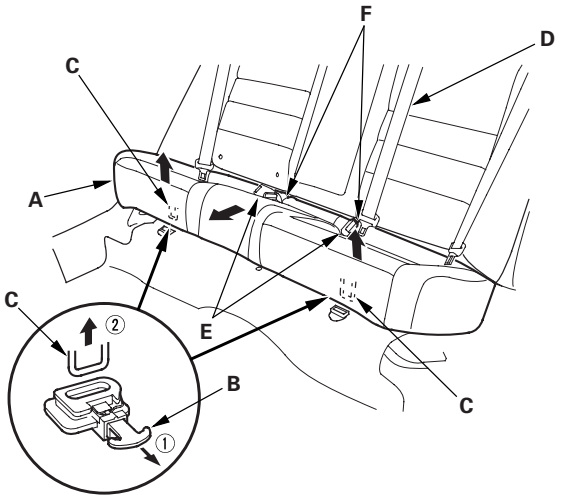
1. Remove the bolt between the seat-back (A) and the seat cushion (B).



(cont'd)

Rear Seat Removal/Installation (cont'd)

2. While pushing down on the seat cushion (A), pull the seat hook handles (B) to release the hooks (C).



3. Pull back the seat cushion to release the center seat belt (D) and seat belt buckles (E) from their slits (F), and remove it.

4. Install the seat cushion in the reverse order of removal, and note these items:

   - Before attaching the seat cushion, make sure there are no twists or kinks in the seat belts.
   - When installing the seat cushion, slip the seat belt buckles through the slits in the seat cushion.

Seat Side Bolster

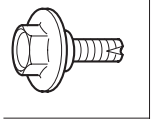
NOTE: Take care not to scratch the body or tear the seat covers.

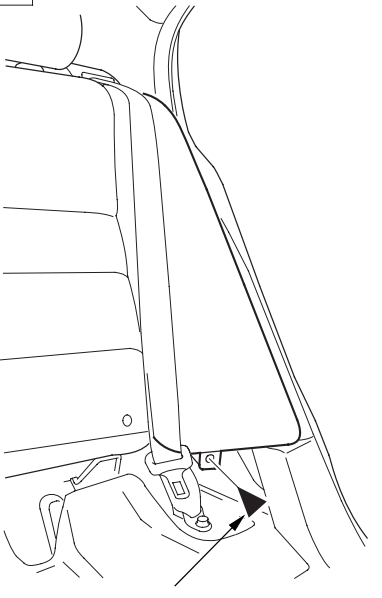
1. Remove the seat cushion.

2. Remove the bolt.

Fastener Location

▶ : Bolt, 1

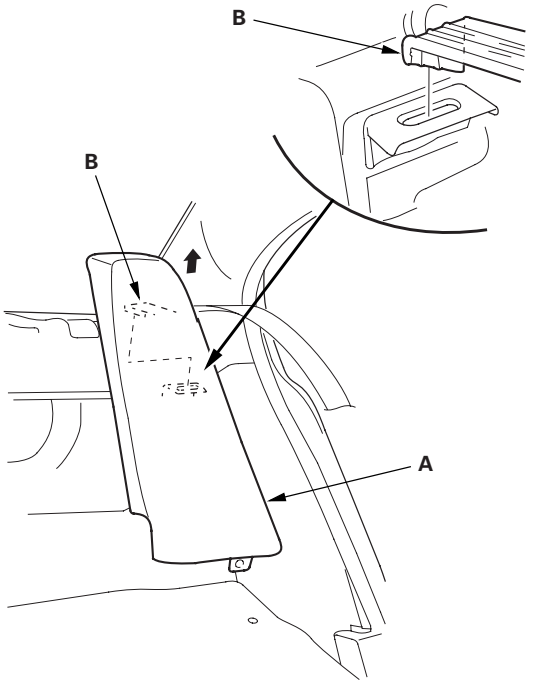




6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

3. Fold the seat-back down.

4. Lift the seat side bolster (A) up to release the hook (B), then remove the seat side bolster.



5. Install the side bolster in the reverse order of removal, and note these items:

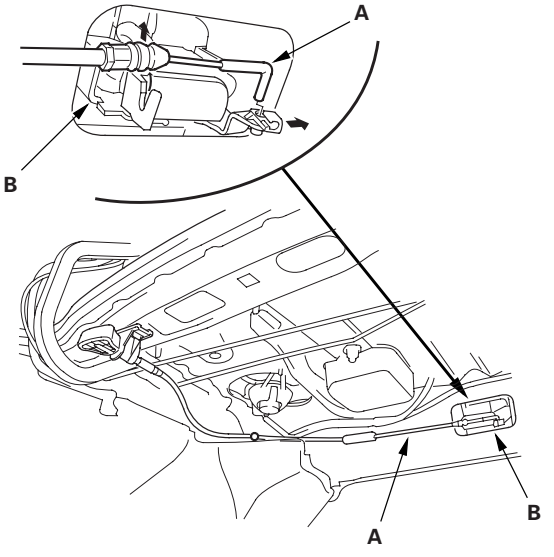
   - Guide the belts over the front of the seat side bolster as you install the bolster.
   - Before attaching the seat side bolster, make sure there are no twists or kinks in the seat belts.

Rear Seat-back Latch Replacement

NOTE: Take care not to bend or scratch the interior trim.

1. Remove the rear shelf (see page 20-78).

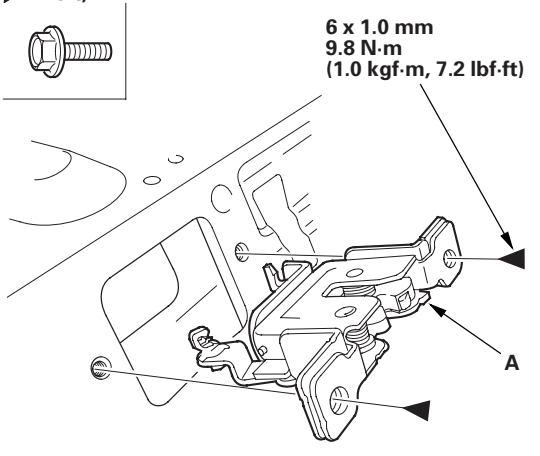
2. From the trunk compartment, disconnect the seat-back release cable (A) from the seat-back latch (B).



3. Remove the bolts, then remove the seat-back latch (A).

Fastener Locations

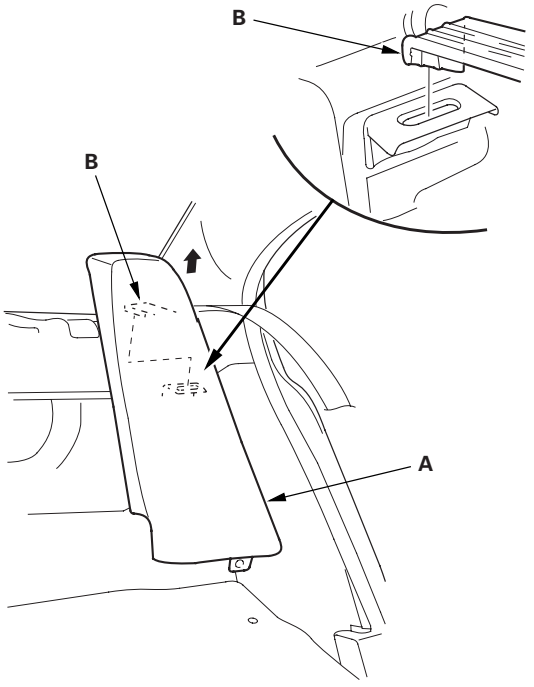
▶ : Bolt, 2



(cont'd)

3. Fold the seat-back down.

4. Lift the seat side bolster (A) up to release the hook (B), then remove the seat side bolster.



5. Install the side bolster in the reverse order of removal, and note these items:

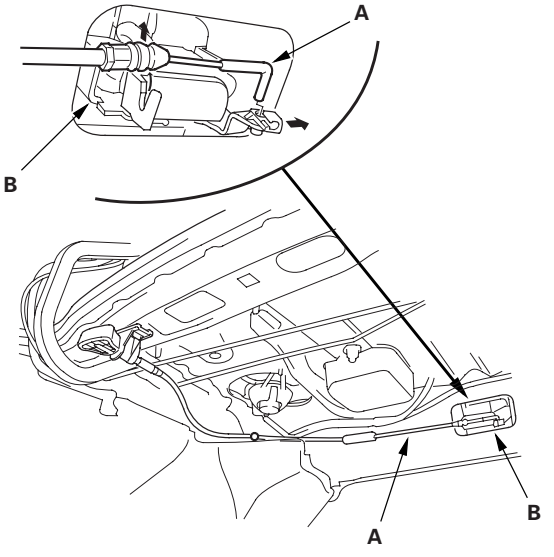
   - Guide the belts over the front of the seat side bolster as you install the bolster.
   - Before attaching the seat side bolster, make sure there are no twists or kinks in the seat belts.

Rear Seat-back Latch Replacement

NOTE: Take care not to bend or scratch the interior trim.

1. Remove the rear shelf (see page 20-78).

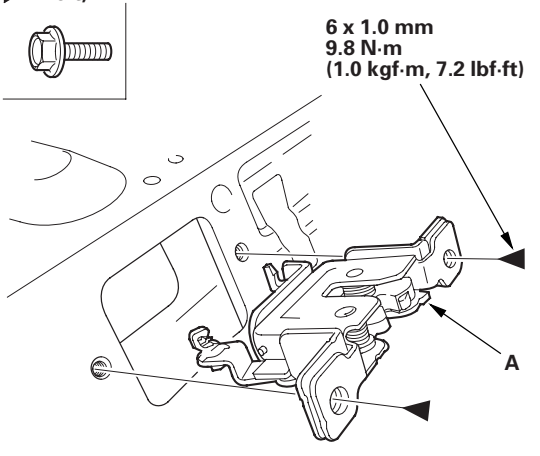
2. From the trunk compartment, disconnect the seat-back release cable (A) from the seat-back latch (B).



3. Remove the bolts, then remove the seat-back latch (A).

Fastener Locations

▶ : Bolt, 2



(cont'd)

Rear Seat-back Latch Replacement (cont'd)

4. Install the latch in the reverse order of removal, and note these items:

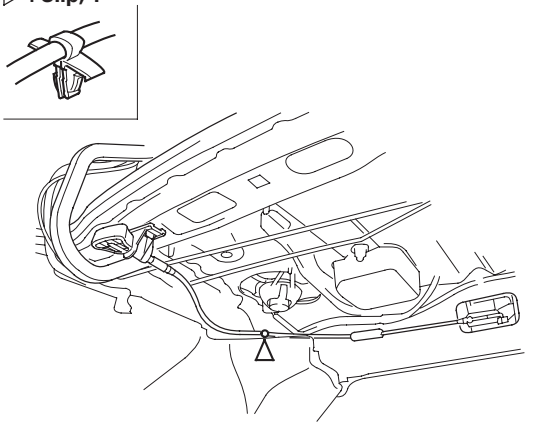
   - Make sure the release cable is connected securely.
   - Make sure the seat-back locks securely and unlocks properly.

Rear Seat-back Release Lever/Cable Removal/Installation

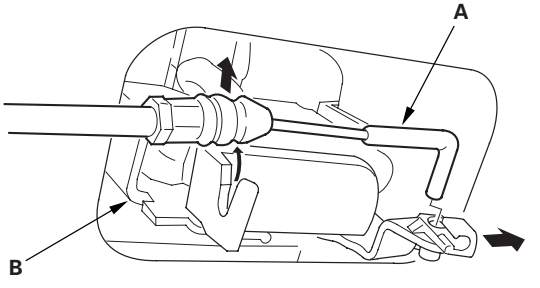
NOTE: Take care not to bend or scratch the interior trim.

1. Open the trunk lid.
2. From the trunk compartment, detach the cable clip.

Fastener Location
▷ : Clip, 1



3. Disconnect the seat-back release cable (A) from the seat-back latch (B).



Rear Seat-back Latch Replacement (cont'd)

4. Install the latch in the reverse order of removal, and note these items:

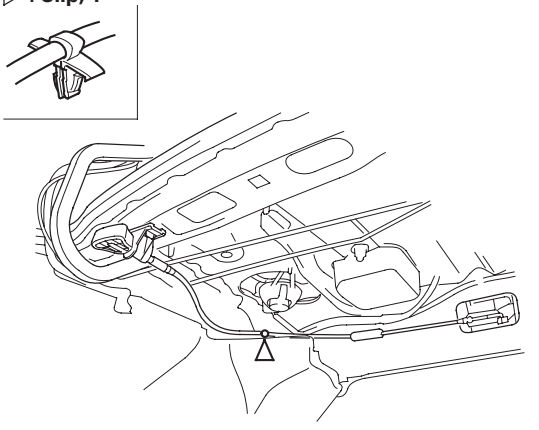
   - Make sure the release cable is connected securely.
   - Make sure the seat-back locks securely and unlocks properly.

Rear Seat-back Release Lever/Cable Removal/Installation

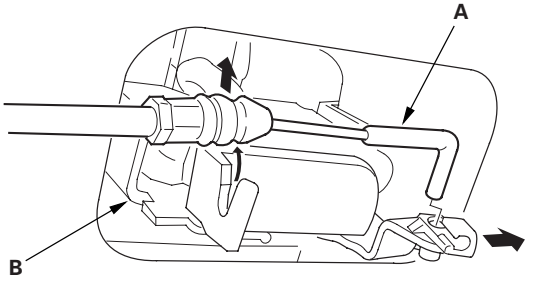
NOTE: Take care not to bend or scratch the interior trim.

1. Open the trunk lid.
2. From the trunk compartment, detach the cable clip.

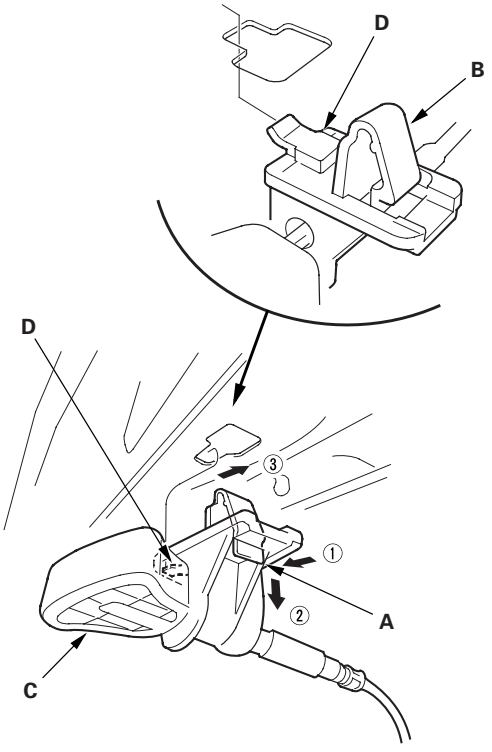
Fastener Location
▷ : Clip, 1



3. Disconnect the seat-back release cable (A) from the seat-back latch (B).



4. Push the tab (A) to release the hook (B), and rotate the seat-back release lever (C) clockwise to release the hook (D).



5. Install the release lever/cable in the reverse order of removal, and note these items:

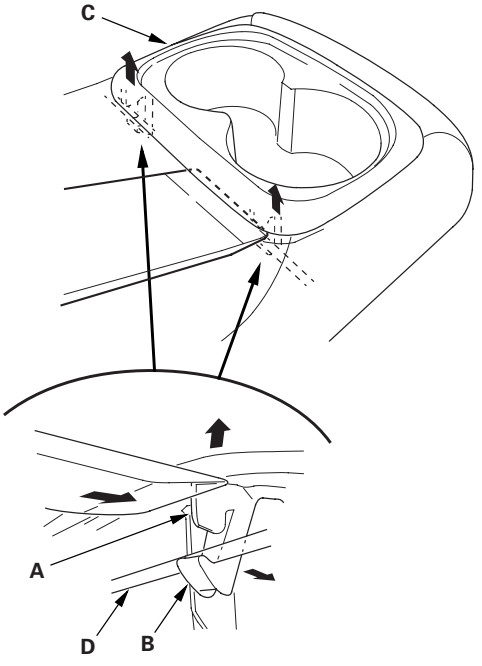
   - Make sure the release cable is connected securely.
   - Make sure the seat-back locks securely and unlocks properly.

Rear Seat Armrest Beverage Holder Replacement

Special Tools Required
KTC trim tool set 07AAC-SEPA240

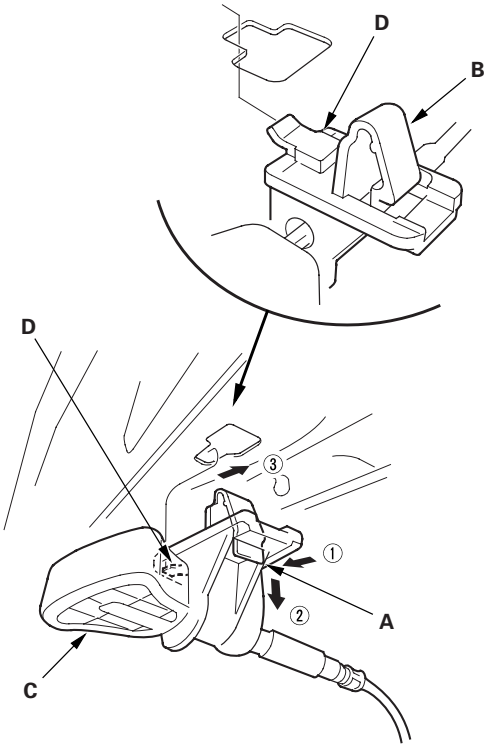
NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to tear or damage the seat covers.

1. Using a trim tool, push on the bottom ribs (A) of the rear hooks (B) to pull up the beverage holder (C), then release the hooks from the wire (D).



(cont'd)

4. Push the tab (A) to release the hook (B), and rotate the seat-back release lever (C) clockwise to release the hook (D).



5. Install the release lever/cable in the reverse order of removal, and note these items:

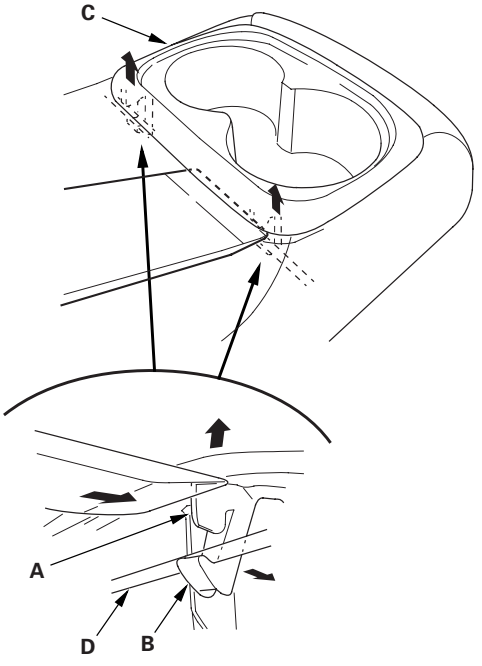
   - Make sure the release cable is connected securely.
   - Make sure the seat-back locks securely and unlocks properly.

Rear Seat Armrest Beverage Holder Replacement

Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE:
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to tear or damage the seat covers.

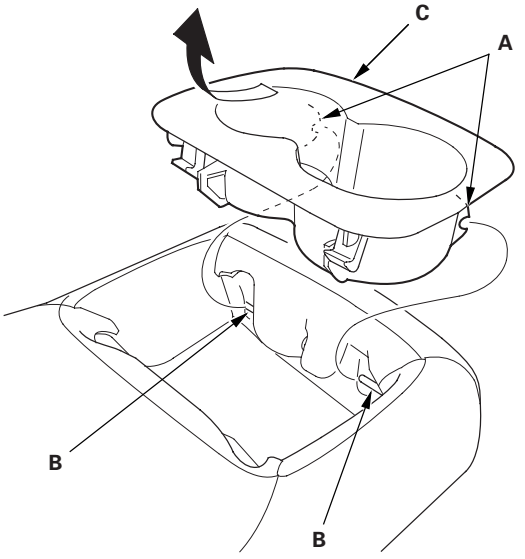
1. Using a trim tool, push on the bottom ribs (A) of the rear hooks (B) to pull up the beverage holder (C), then release the hooks from the wire (D).



(cont'd)

Rear Seat Armrest Beverage Holder Replacement (cont'd)

2. Release the front hooks (A) from the wire (B), then remove the beverage holder (C).

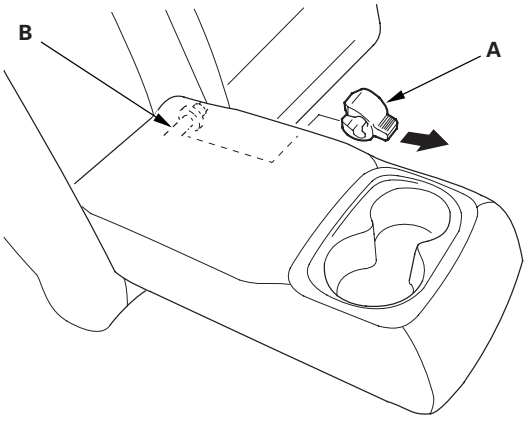


3. Install the beverage holder in the reverse order of removal. Make sure the front hooks are installed securely to the wire, then push down on the beverage holder and install the rear hooks into the wire securely.

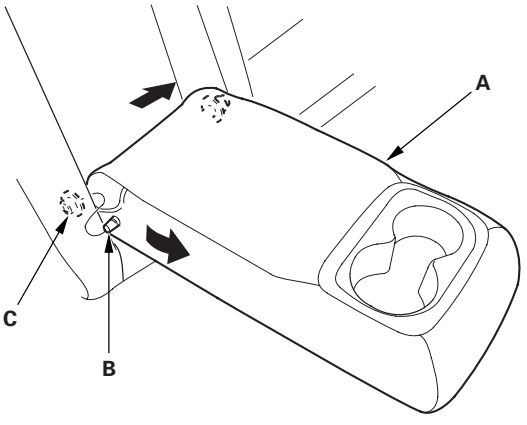
Rear Seat Armrest Replacement

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the clip (A) from the left portion of the armrest pivot (B).

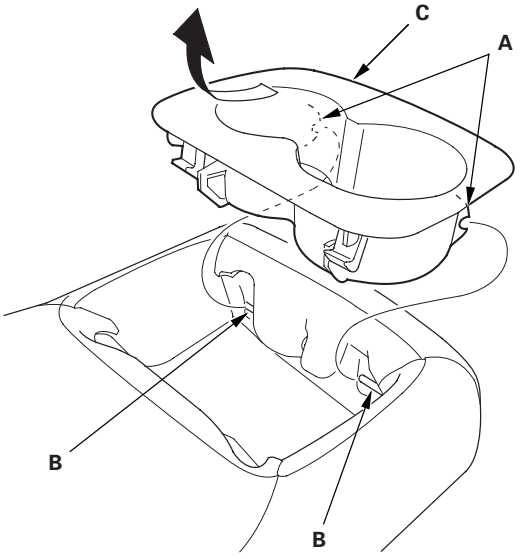


2. Slide the armrest (A) toward the driver's side of the vehicle, and remove the pivot shaft (B) from the collar (C) on the right side of the vehicle by pulling back on the armrest.



Rear Seat Armrest Beverage Holder Replacement (cont'd)

2. Release the front hooks (A) from the wire (B), then remove the beverage holder (C).

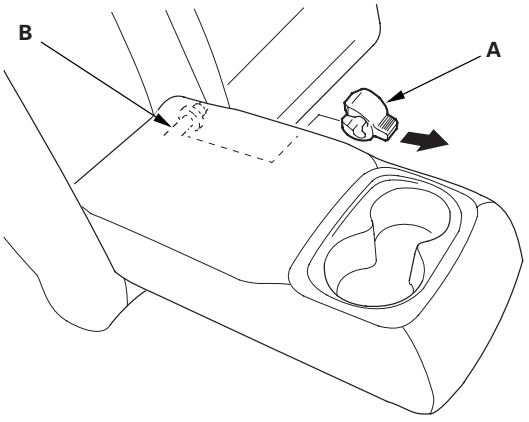


3. Install the beverage holder in the reverse order of removal. Make sure the front hooks are installed securely to the wire, then push down on the beverage holder and install the rear hooks into the wire securely.

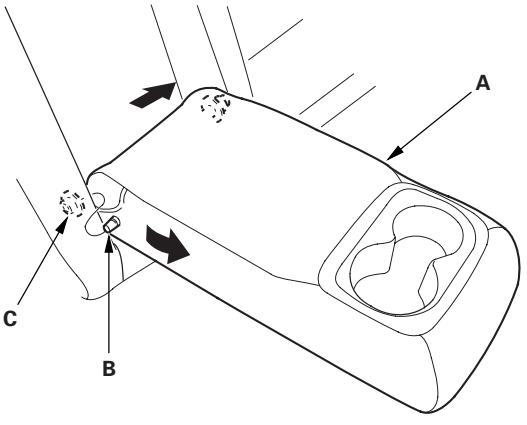
Rear Seat Armrest Replacement

NOTE: Take care not to tear the seams or damage the seat covers.

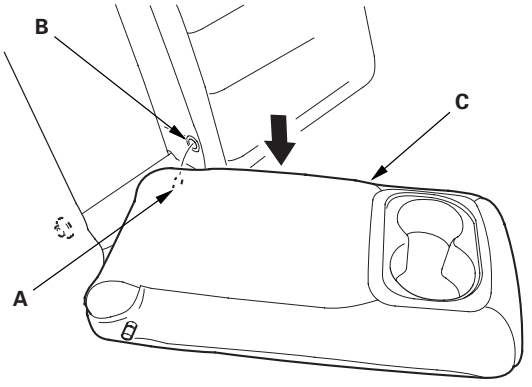
1. Remove the clip (A) from the left portion of the armrest pivot (B).



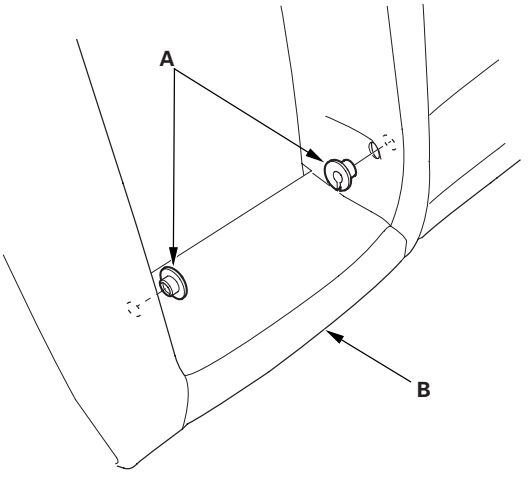
2. Slide the armrest (A) toward the driver's side of the vehicle, and remove the pivot shaft (B) from the collar (C) on the right side of the vehicle by pulling back on the armrest.



3. Remove the pivot shaft (A) from the collar (B) on the left, then remove the armrest (C).



4. Remove the collars (A) from the seat-back (B).



5. Install the armrest in the reverse order of removal.

Seat-back

NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

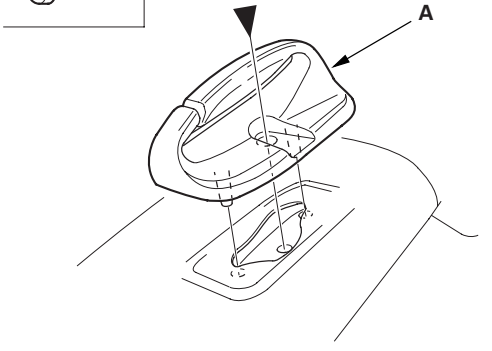
1. Remove the seat-back (see page 20-131).

2. Remove these items:
   - Armrest (see page 20-138)
   - Head restraint

3. Left seat-back: Remove the screw, then remove the center belt guide (A).

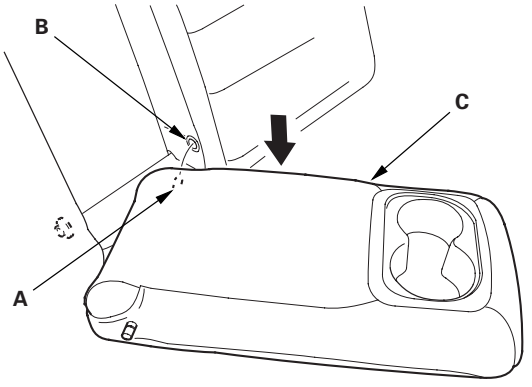
Fastener Location

▶ : Screw, 1

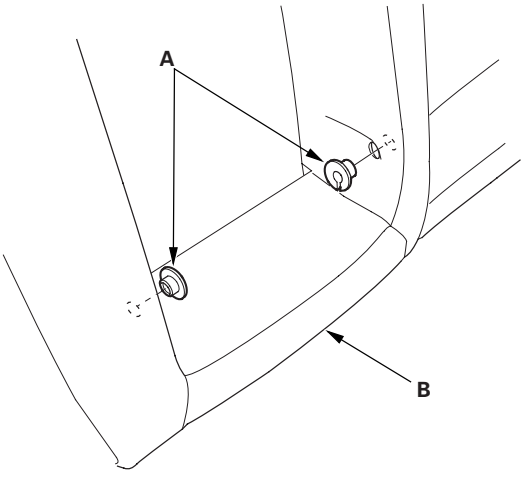


(cont'd)

3. Remove the pivot shaft (A) from the collar (B) on the left, then remove the armrest (C).



4. Remove the collars (A) from the seat-back (B).



5. Install the armrest in the reverse order of removal.

Seat-back

NOTE:
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

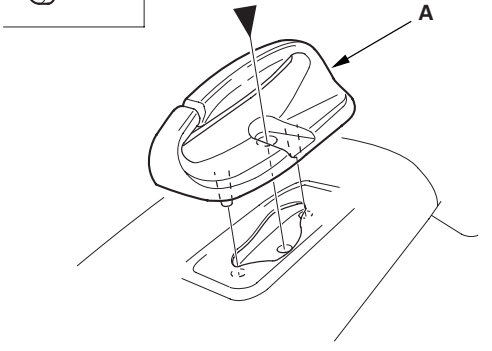
1. Remove the seat-back (see page 20-131).

2. Remove these items:
   - Armrest (see page 20-138)
   - Head restraint

3. Left seat-back: Remove the screw, then remove the center belt guide (A).

Fastener Location

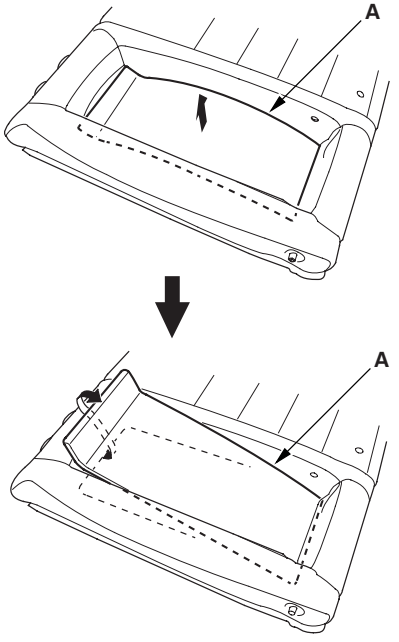
▶ : Screw, 1



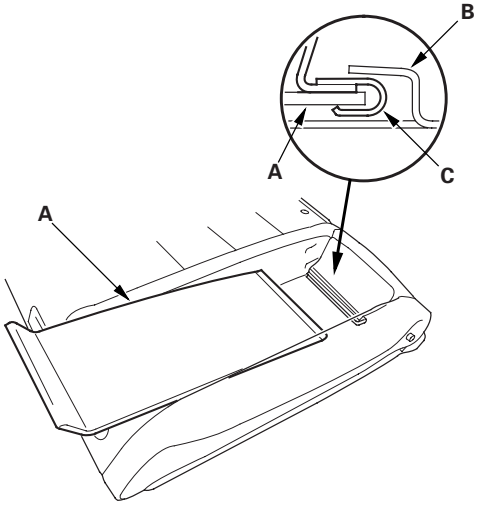
(cont'd)

Rear Seat-back Cover Replacement (cont'd)

4. Left seat-back: Pull out the center portion of the armrest back panel (A) to release upper edge of the armrest back panel.



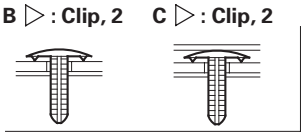
5. Left seat-back: Pull out the armrest back panel (A) to release the hook (B) of the seat-back frame and hook (C) of the seat-back cover.



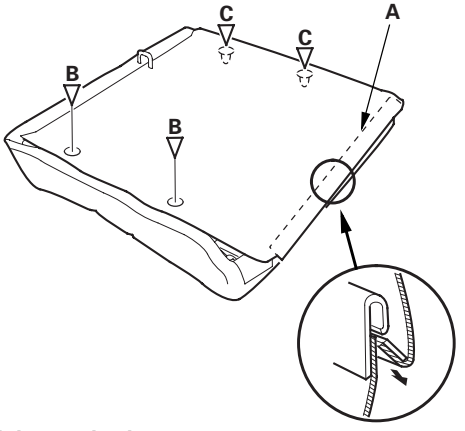
6. Release the lower hook strip (A) and the clips (B, C).

Fastener Locations

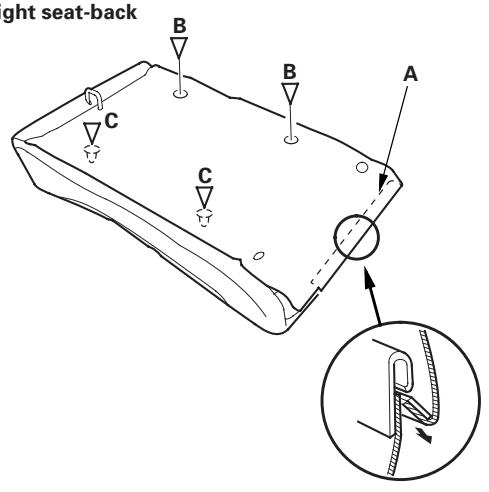
B ▷ : Clip, 2 C ▷ : Clip, 2



Left seat-back

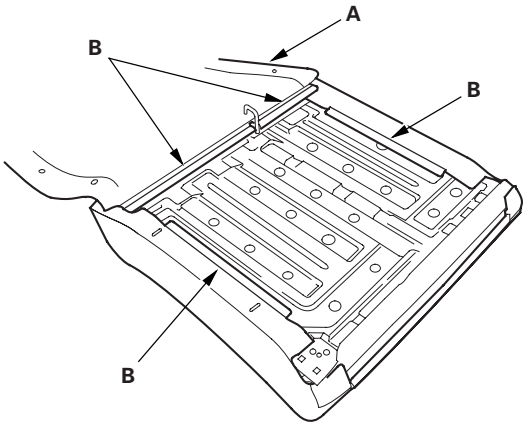


Right seat-back

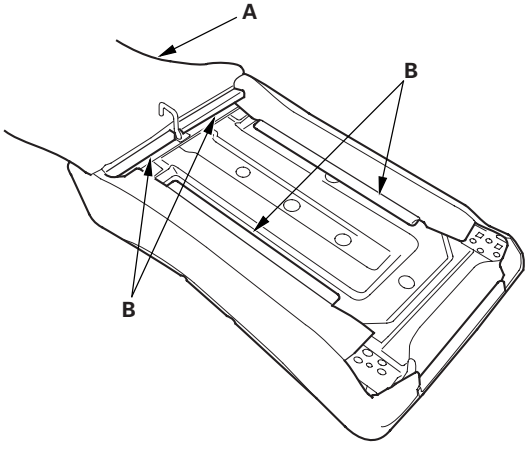


7. Pull back the seat-back cover (A), then release the hook strips (B).

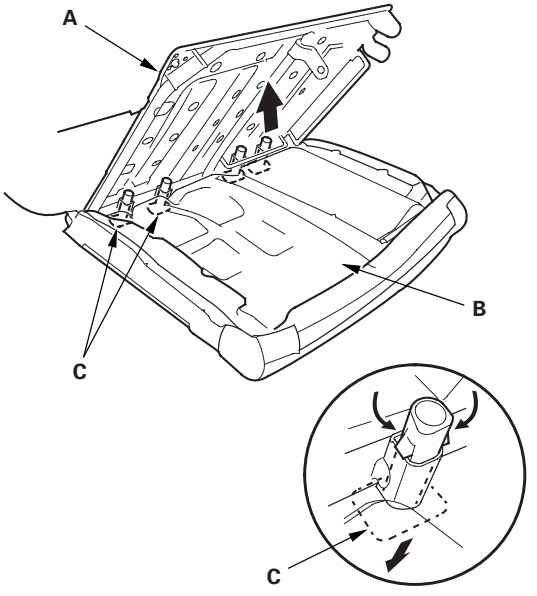
Left seat-back



Right seat-back



8. Pull out the seat-back frame (A) from the pad (B), then pinch the tabs on the ends of the head restraint guides (C), and remove them from the seat-back. The left seat-back is shown; the right seat-back is similar.



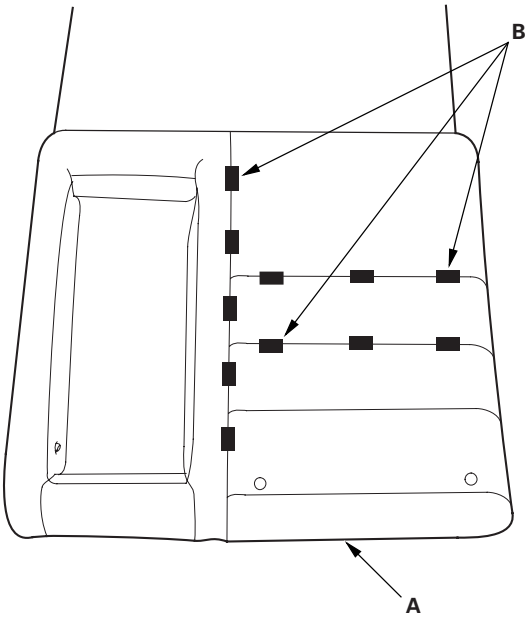
9. Remove the seat-back cover and pad from the seat-back frame.

(cont'd)

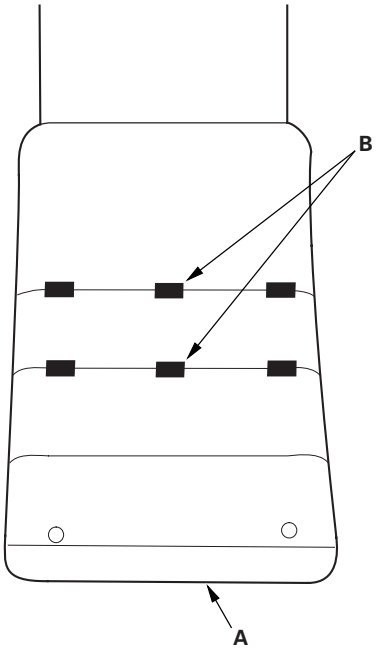
Rear Seat-back Cover Replacement (cont'd)

10. Pull back the edge of the seat-back cover (A) all the way around, and release the upholstery rings (B), then remove the seat-back cover.

Left seat-back

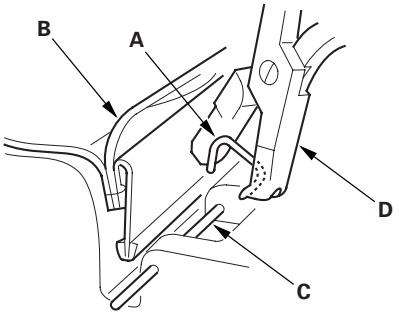


Right seat-back



11. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the upholstery rings, the hooks, and the hook strips.
- Replace all of the upholstery rings (A) fastening the seat-back cover (B) and the pad wire (C) with new ones using commercially available upholstery ring pliers (D).

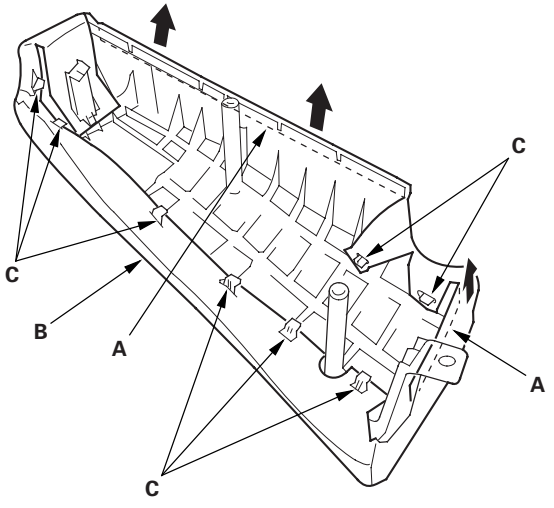


Rear Seat Side Bolster Cover Replacement

NOTE: Take care not to tear or damage the seat covers.

1. Remove the seat side bolster (see page 20-134).

2. Release all the hook strips (A), fold back the seat side bolster cover (B), and release the cover from the hooks (C).



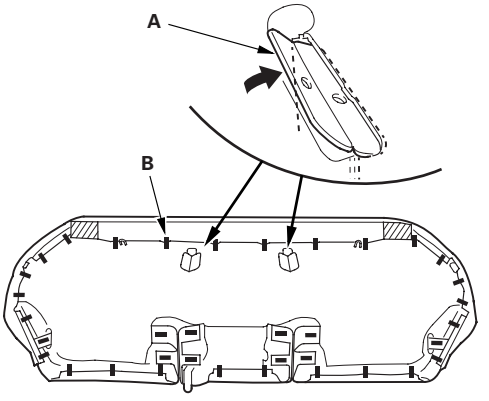
3. Install the cover in the reverse order of removal, and to prevent wrinkles when installing a side bolster cover, make sure the material is stretched evenly over the pad before securing the hook strips.

Rear Seat Cushion Cover Replacement

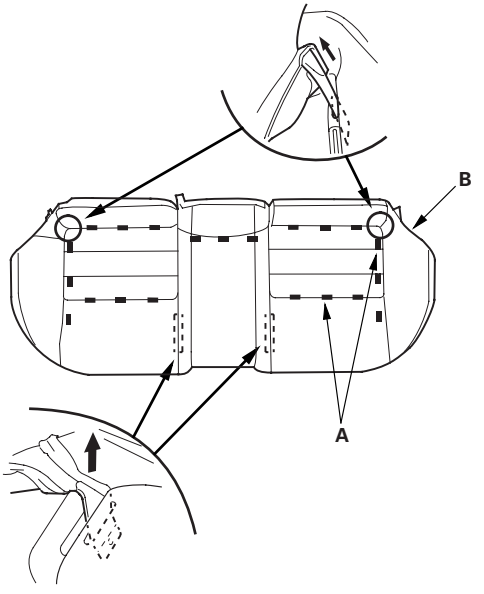
NOTE:
- Take care not to tear or damage the seat covers.
- Put on gloves to protect your hands.

1. Remove the seat cushion (see page 20-133).

2. From the back of the seat-back, pass both lower retainers (A) through the slots in the seat cushion pad, and release all the upholstery rings (B), and fold back the seat cushion cover.



3. Pull back the edge of the seat cushion cover all the way around, and release the upholstery rings (A), from the seat cushion cover (B) through the hole in the seat cushion pad, then remove the seat cushion cover.

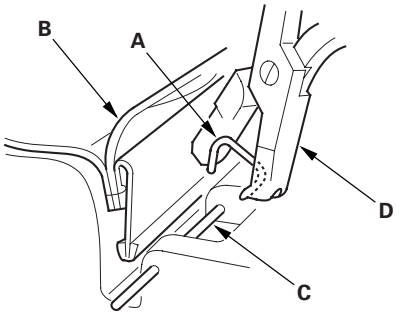


(cont'd)

Rear Seat Cushion Cover Replacement (cont'd)

4. Install the cover in the reverse order of removal, and note these items:

   - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the retainers and upholstery rings.
   - Replace all of the upholstery rings (A) fastening the seat-back cover (B) and the pad wire (C) with new ones using commercially available upholstery ring pliers (D).



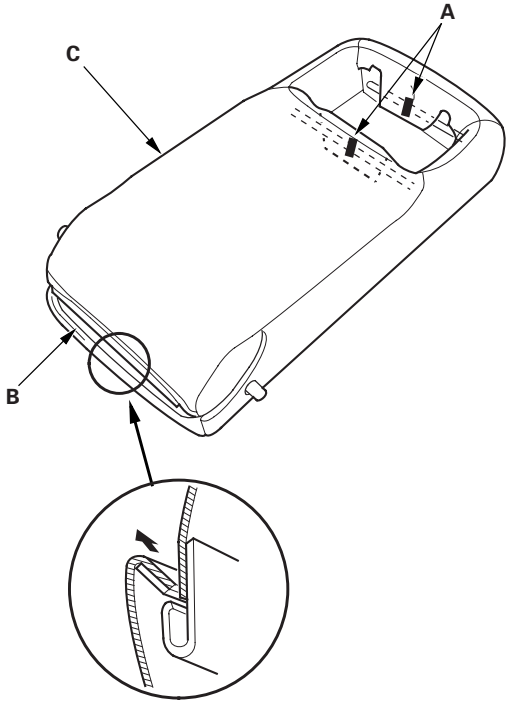
Rear Seat Armrest Cover Replacement

NOTE: Take care not to tear or damage the seat covers.

1. Remove the armrest from the seat-back (see page 20-138).

2. Remove the armrest beverage holder from the armrest (see page 20-137).

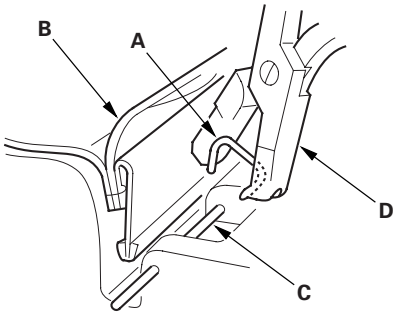
3. Release the clips (A) and the hook strip (B), and pull back the armrest cover (C) all the way around.



Rear Seat Cushion Cover Replacement (cont'd)

4. Install the cover in the reverse order of removal, and note these items:

   - To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the retainers and upholstery rings.
   - Replace all of the upholstery rings (A) fastening the seat-back cover (B) and the pad wire (C) with new ones using commercially available upholstery ring pliers (D).



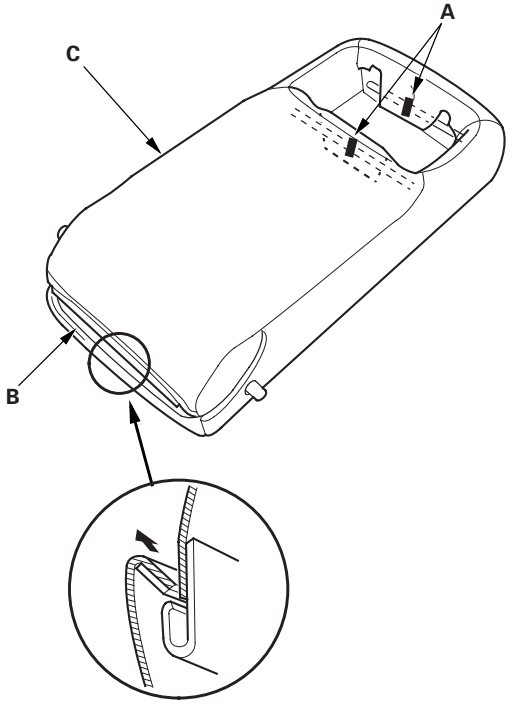
Rear Seat Armrest Cover Replacement

NOTE: Take care not to tear or damage the seat covers.

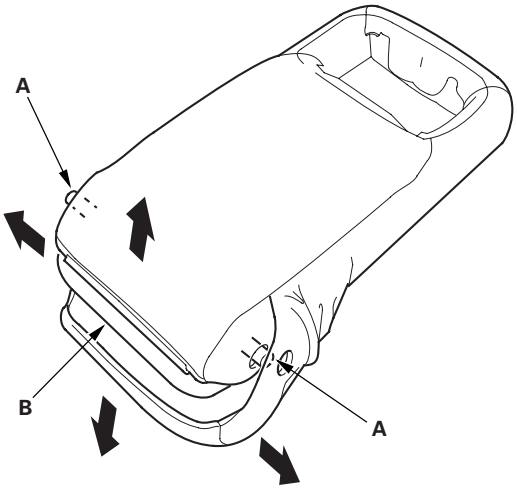
1. Remove the armrest from the seat-back (see page 20-138).

2. Remove the armrest beverage holder from the armrest (see page 20-137).

3. Release the clips (A) and the hook strip (B), and pull back the armrest cover (C) all the way around.



4. Release the armrest cover from the armrest pivot portions (A), then remove it from the pad (B).



5. Install the cover in the reverse order of removal. To prevent wrinkles when installing an armrest cover, make sure the material is stretched evenly over the pad before securing the clips and the hook strips.

Front Bumper Removal/Installation

NOTE:
- Have an assistant help you when removing and installing the front bumper.
- Take care not to scratch the front bumper and body.
- Put on gloves to protect your hands.

1. Remove these items:
   - Front fender trim (see page 20-162)
   - Front grille cover (see page 20-163)

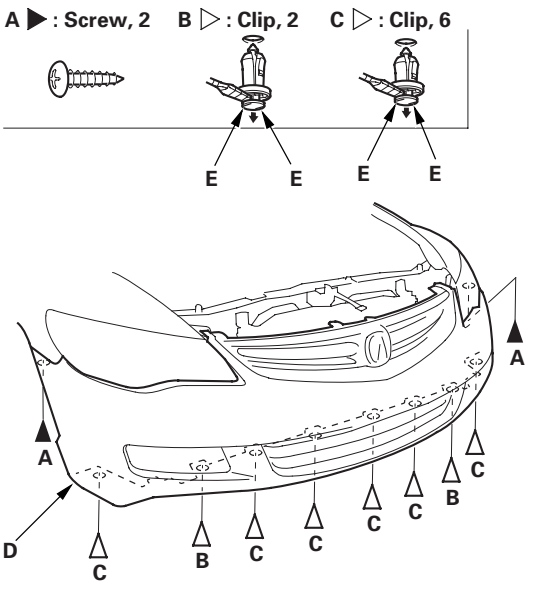
2. Remove the screws (A) and the clips (B, C) securing the front bumper (D).

   NOTE: To release the clips, pry up on the center pin at the notch (E).

'06-08 models

Fastener Locations

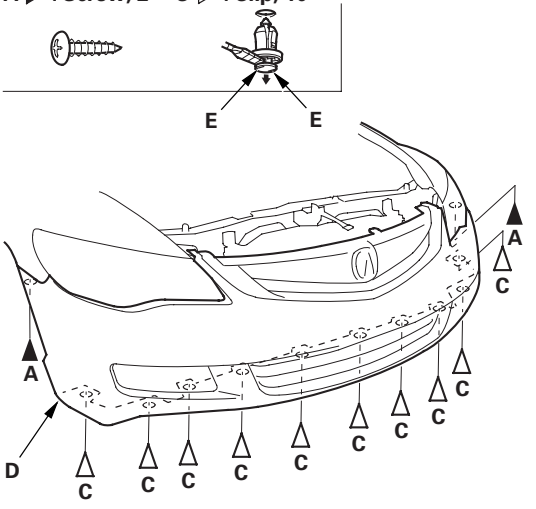
A ▶ : Screw, 2 B ▷ : Clip, 2 C ▷ : Clip, 6



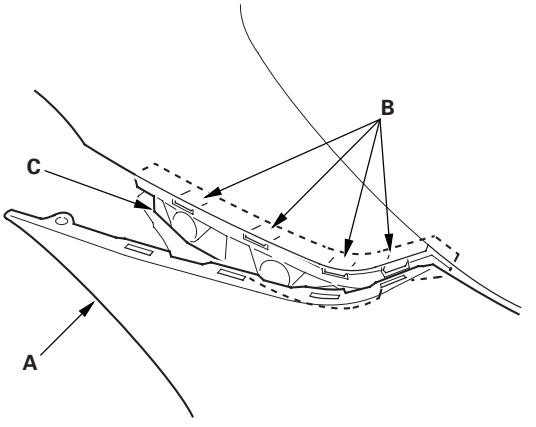
'09 model

Fastener Locations

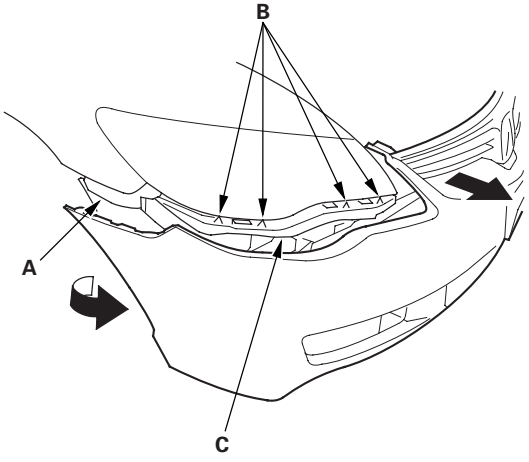
A ▶ : Screw, 2 C ▷ : Clip, 10



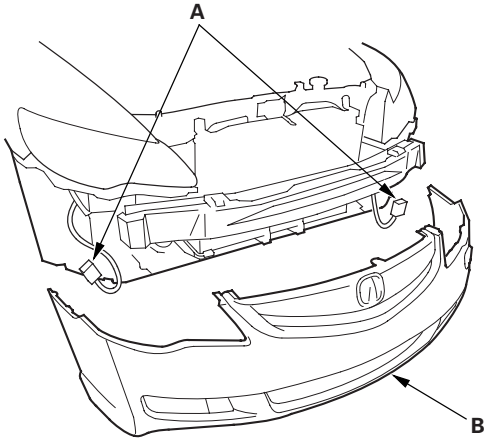
3. Pull on the front bumper (A) at the wheel arch areas to release it from the hooks (B) on the side spacers (C).



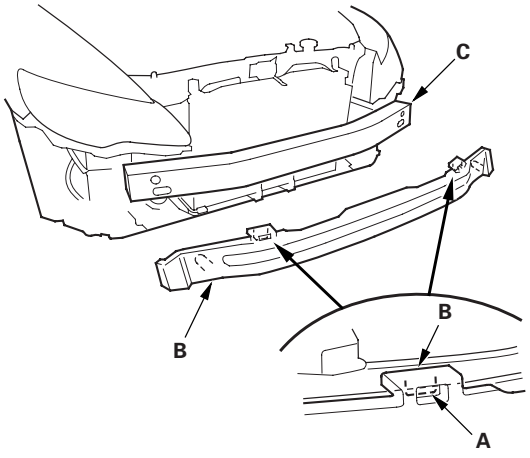
4. With the help of an assistant, while pulling the wheel arch portion away from the side spacer (A), pull the front bumper to release the bumper from the hooks (B) on the corner upper beam (C).



5. If equipped, disconnect the front fog light connectors (A) while holding the front bumper (B), then remove the bumper.



6. Release the hooks (A), then remove the front bumper absorber (B) from the front bumper beam (C).



7. Install the bumper in the reverse order of removal, and note these items:

   - Make sure the front bumper engages the hooks (of both corner upper beams and side spacers) on each side securely.
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips and the hooks into place securely.

Front Bumper Lower Grille Replacement

'09 Model

NOTE:
- Take care not to scratch the front bumper.
- Put on gloves to protect your hands.

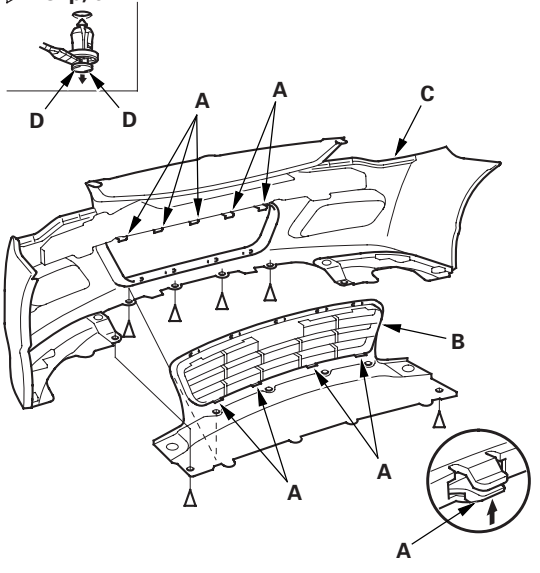
1. Remove the front bumper (see page 20-146).

2. Detach the clips and release the hooks (A), then remove the front bumper lower grille (B) from the front bumper (C).

   NOTE: To release the clips, pry up on the center pin at the notch (D).

Fastener Locations

▷ : **Clip, 6**



3. Install the grille in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips and the hooks into place securely.

Front Bumper Lower Side Plate Replacement

'09 Model

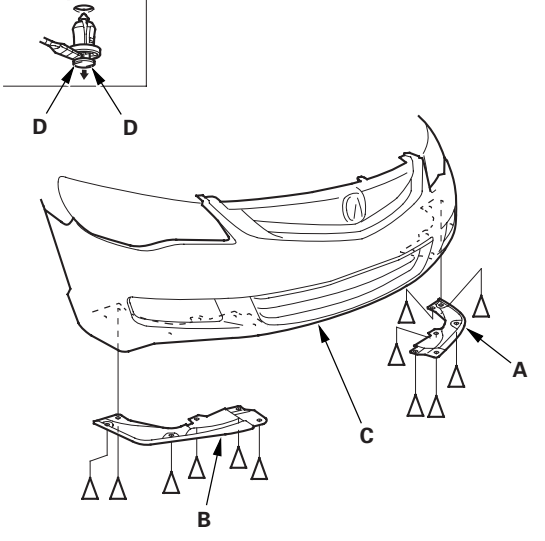
NOTE:
- Take care not to scratch the front bumper.
- Put on gloves to protect your hands.

1. Detach the clips, then remove the left front bumper lower side plate (A) and the right front bumper lower side plate (B) from the front bumper (C).

   NOTE: To release the clips, pry up on the center pin at the notch (D).

Fastener Locations

▷ : **Clip, 12**



2. Install the plate in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

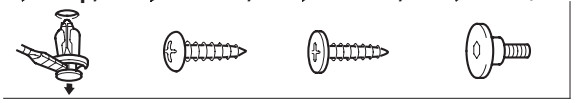
Rear Bumper Removal/Installation

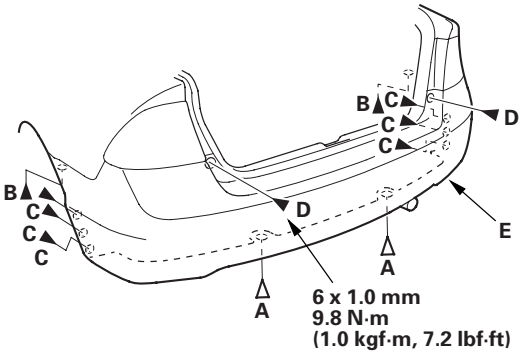
NOTE:
- Have an assistant help you when removing and installing the rear bumper.
- Take care not to scratch the rear bumper or the body.
- Put on gloves to protect your hands.

1. Remove the clips (A), screws (B, C), and bolts (D) securing the rear bumper (E).

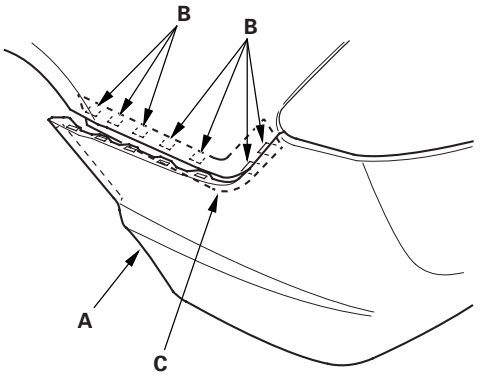
Fastener Locations

A△: Clip, 2 B▶: Screw, 2 C▶: Screw, 6 D▶: Bolt, 2

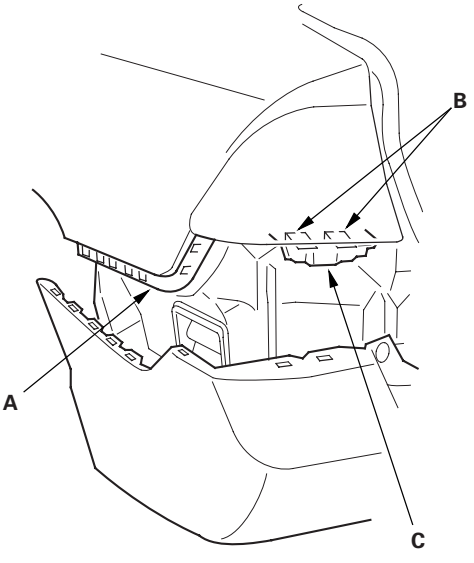




2. Pull on the rear bumper (A) at the wheel arch areas to release it from the hooks (B) on the side spacers (C).



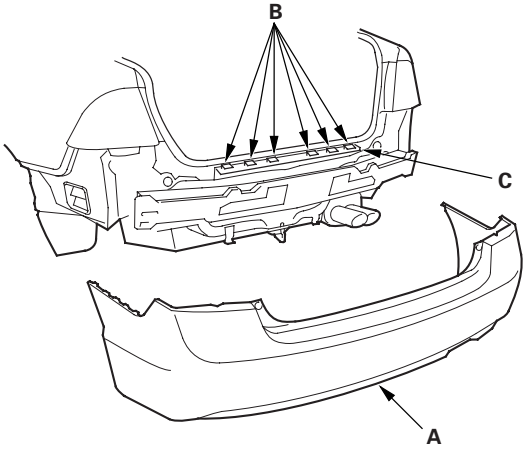
3. With the help of an assistant, while pulling the wheel arch portion away from the side spacer (A), pull the rear bumper to release the bumper from the hooks (B) on the side bracket (C).



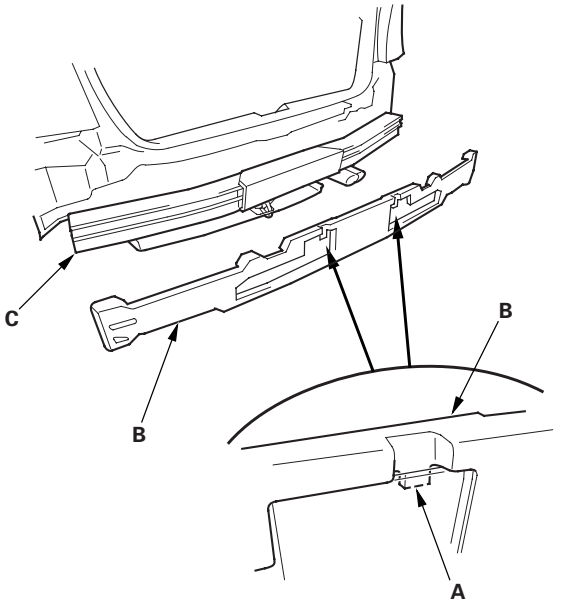
(cont'd)

Rear Bumper Removal/Installation (cont'd)

4. With the help of an assistant, pull the rear bumper (A) to release the bumper from the hooks (B) on the upper bracket (C).



5. Release the hooks (A), then remove the rear bumper absorber (B) from the rear bumper beam (C).



6. Install the bumper in the reverse order of removal, and note these items:

- Make sure the rear bumper engages the hooks (of both the side bracket and side spacers) on each side securely.
- If the clips are damaged or stress-whitened, replace them with new ones.
- Push the clips and the hooks into place securely.

Rear Bumper Lower Cover Replacement

NOTE: Take care not to scratch the rear bumper.

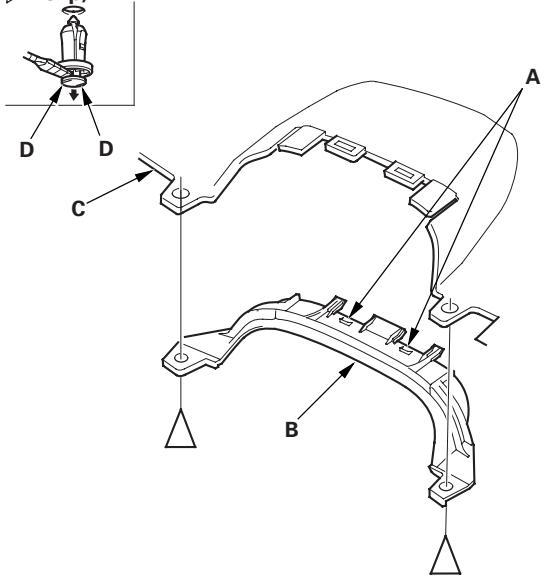
1. Remove the rear bumper (see page 20-149).

2. Release the clips and the tabs (A), then remove the rear bumper lower cover (B) from the rear bumper (C).

   NOTE: To remove the clips, pry the inner pin up at the edge near the line (D) on its head.

Fastener Locations

▷ : **Clip, 2**



3. Install the cover in the reverse order of removal, and note these items:

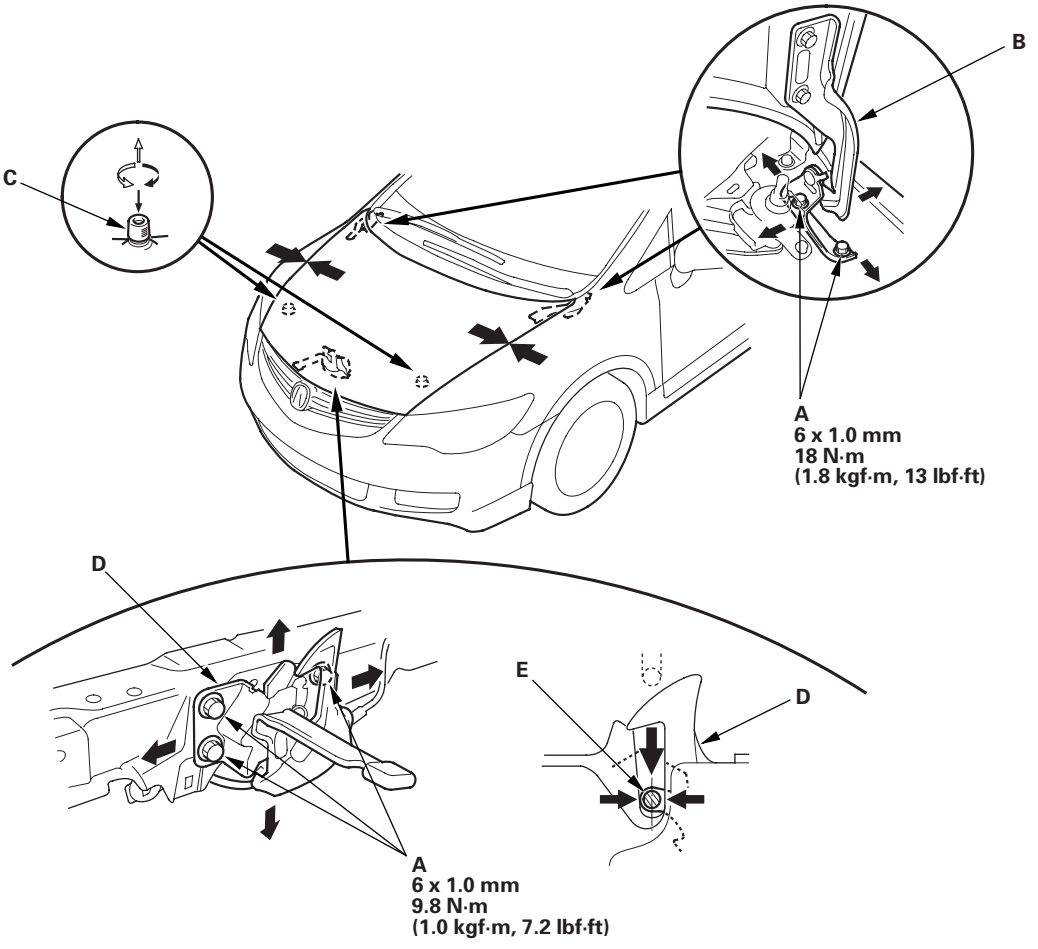
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips and the tabs into place securely.

Hood Adjustment

1. Remove these items:

   - Front fender trim (see page 20-162)
   - Front grille cover (see page 20-163)
   - Cowl covers (see page 20-163)

2. Slightly loosen each bolt (A).



3. Adjust the hood alignment in this sequence:

   - Adjust the hood right and left, as well as forward and rearward, by using the elongated holes in the hood hinges (B).
   - Turn the hood edge cushions (C), as necessary, to make the hood fit flush with the body at the front and side edges.

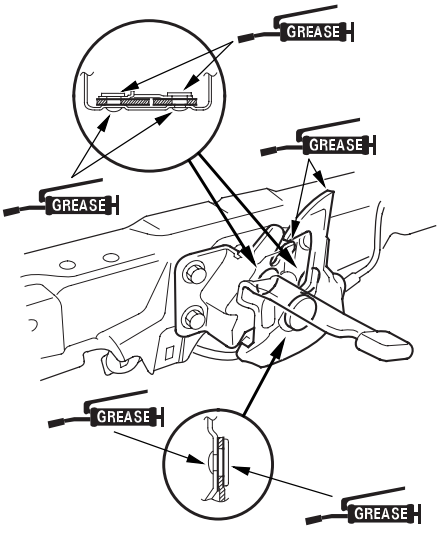
4. Adjust the hood latch (D) to obtain the proper position at the forward edge, and move the hood latch right or left until the striker (E) is centered in the hood latch.

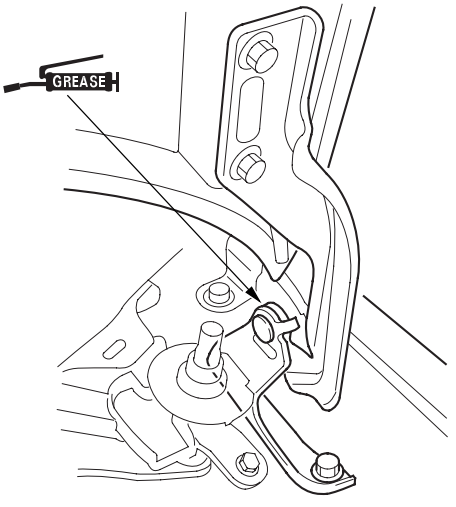
5. Tighten the bolts to the specified torque.

6. Check that the hood opens properly and closes securely.

7. Apply touch-up paint to the hinge mounting bolts and around the hinges, and let the paint dry.

8. Apply multipurpose grease to the hood latch and hood hinges as indicated by the arrows.





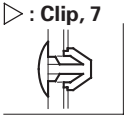
9. Reinstall all of the removed parts.

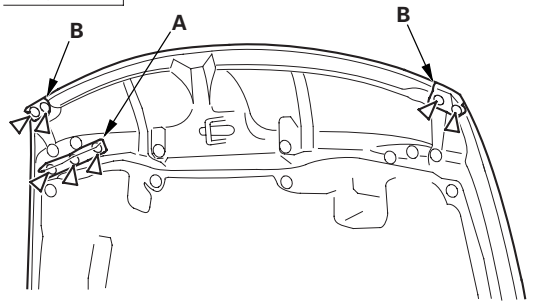
Hood Seal Replacement

1. Detach the clips with a clip remover, then remove the hood seal (A) and hood corner seals (B). Take care not to scratch the hood.

Fastener Locations

▷: **Clip, 7**



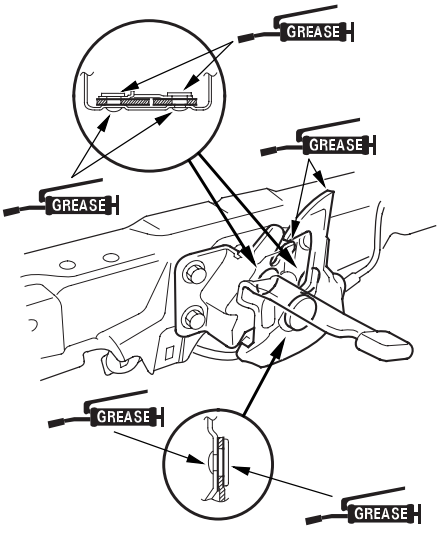


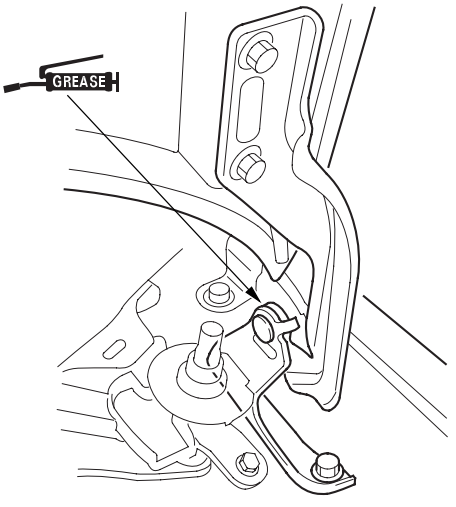
2. Install the seals in the reverse order of removal, and if the clips are damaged or stress-whitened, replace them with new ones.

6. Check that the hood opens properly and closes securely.

7. Apply touch-up paint to the hinge mounting bolts and around the hinges, and let the paint dry.

8. Apply multipurpose grease to the hood latch and hood hinges as indicated by the arrows.





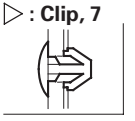
9. Reinstall all of the removed parts.

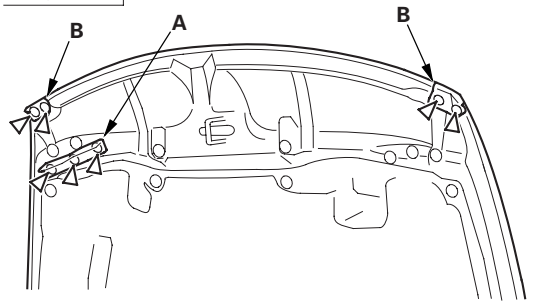
Hood Seal Replacement

1. Detach the clips with a clip remover, then remove the hood seal (A) and hood corner seals (B). Take care not to scratch the hood.

Fastener Locations

▷: **Clip, 7**





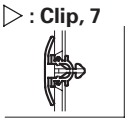
2. Install the seals in the reverse order of removal, and if the clips are damaged or stress-whitened, replace them with new ones.

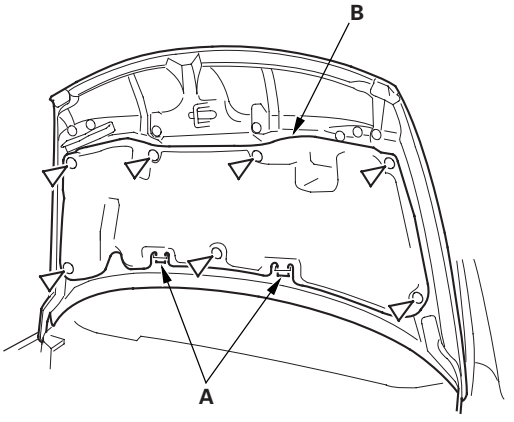
Hood Insulator Replacement

1. Detach the clips with a clip remover. Release the hooks (A), then remove the hood insulator (B). Take care not to scratch the hood.

Fastener Locations

▷ : **Clip, 7**





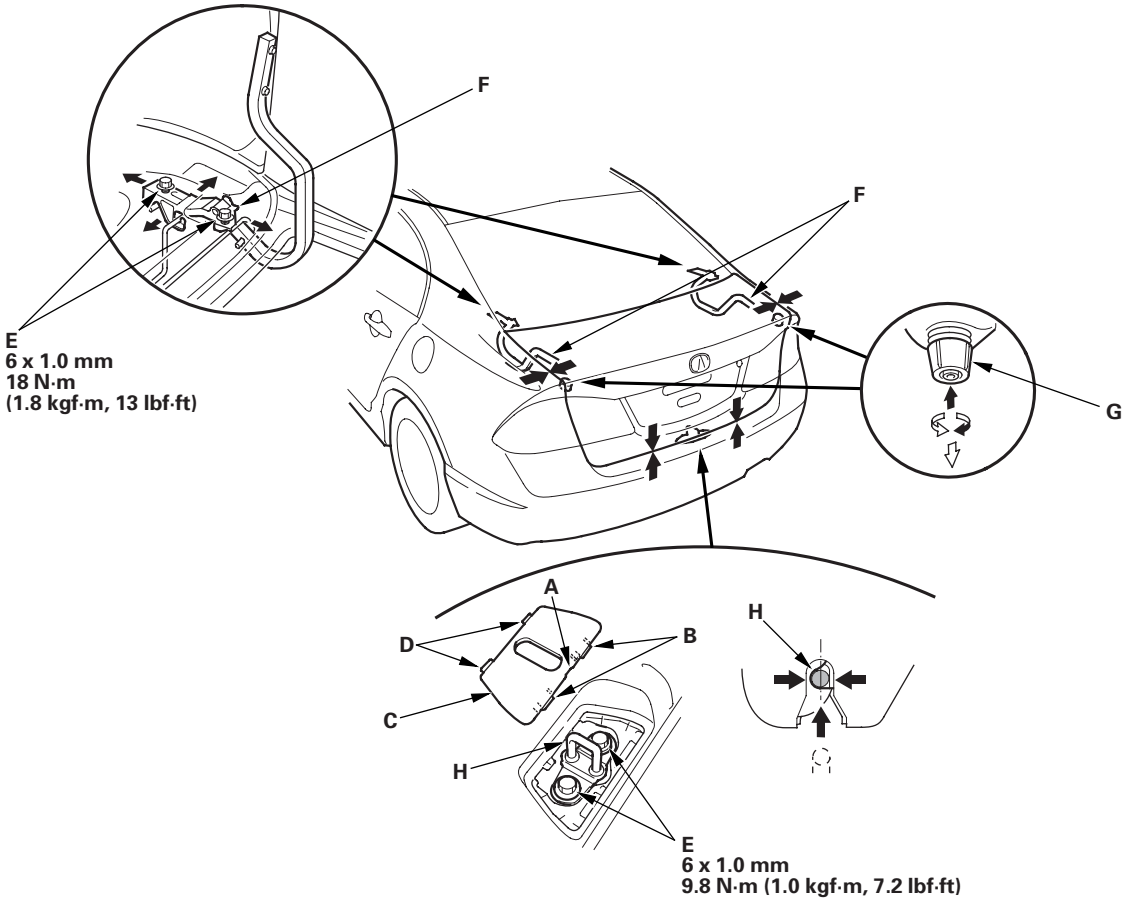
2. Install the insulator in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips and the hooks into place securely.

Trunk Lid Adjustment

1. Remove the rear shelf (see page 20-78).

2. Pry up on the notch (A) to release the rear hooks (B) and pivot the striker trim cap (C) on the front hooks (D), then remove the cap. Slightly loosen each bolt (E).



3. Adjust the trunk lid alignment in the following sequence:

   - Adjust the trunk lid hinges (F) right and left, as well as forward and rearward, by using the elongated holes. Take care not to hit the rear window when loosening the bolts.
   - Turn the trunk lid edge cushions (G), in or out as necessary, to make the trunk lid fit flush with the body at the rear and side edges.
   - Adjust the fit between the trunk lid and the trunk lid opening by moving the striker (H).

4. Tighten the bolts to the specified torque.

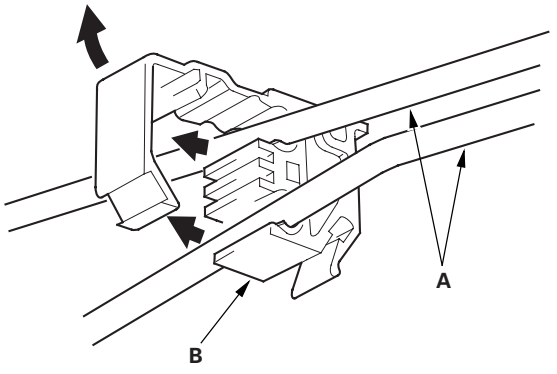
5. Make sure the trunk lid opens properly and locks securely.

6. Reinstall all removed parts.

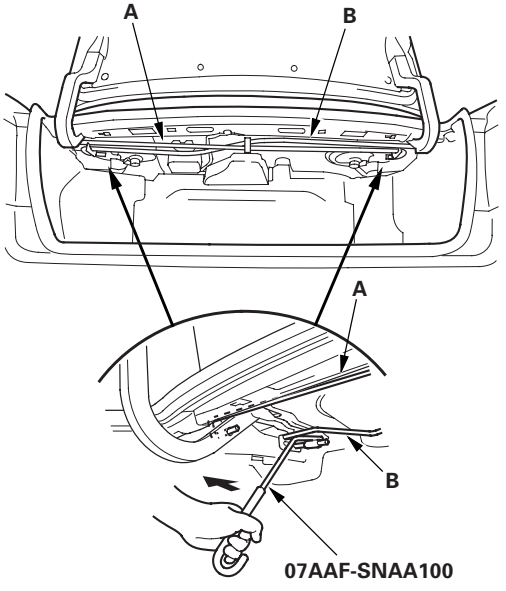
Trunk Lid Torsion Bar Replacement

Special Tool Required
Torsion bar assembly tool 07AAF-SNAA100

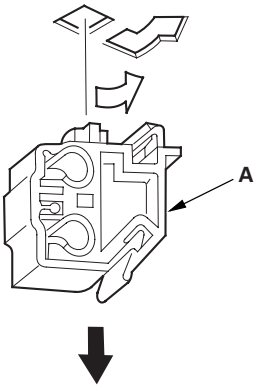
1. Remove the torsion bars (A) from the torsion bar center clip (B).



2. Put on gloves to protect your hands. Remove the torsion bars with the torsion bar assembly tool from both trunk lid hinges. First remove the left torsion bar (A), then remove the right torsion bar (B).

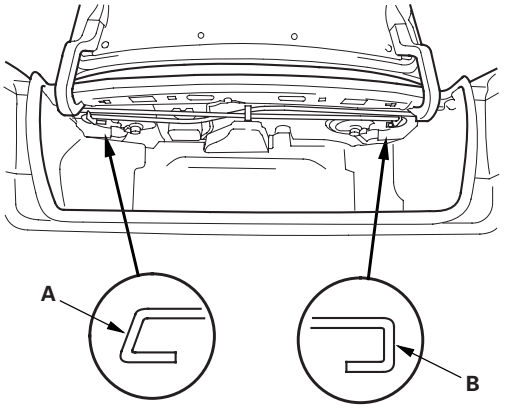


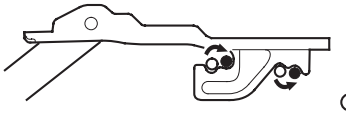
3. Remove the torsion bar center clip (A) from the body.



4. Install the torsion bar in the reverse order of removal, and note these items:

- The shapes of the left torsion bar (A) and the right torsion bar (B) are shown. Install the torsion bars properly.
- Adjust the torsion bars forward or rearward with the torsion bar assembly tool.
- The torsion bars were installed at the factory in the normal position, as shown.
- Make sure the trunk lid opens properly and locks securely.

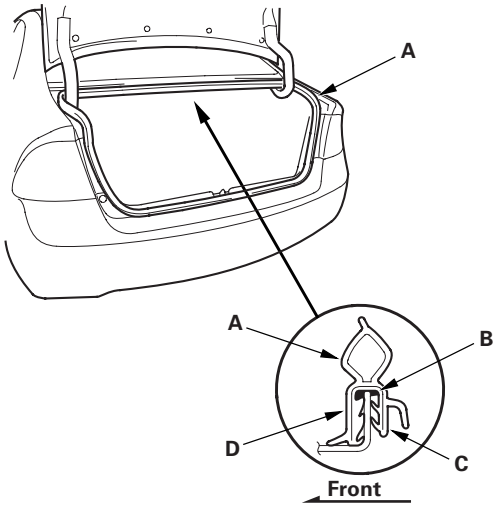




○ =Normal position
● =Higher tension

Trunk Lid Weatherstrip Replacement

1. Remove the trunk lid weatherstrip (A) by pulling it off.



2. Apply clear weatherstrip sealant (B) into the channel of the trunk lid weatherstrip all the way around.

3. Locate the painted alignment mark (C or D) on the trunk lid weatherstrip. Align the painted mark in the center of the trunk lid opening, and install the trunk lid weatherstrip all the way around in the direction shown. Make sure there are no wrinkles in the weatherstrip.

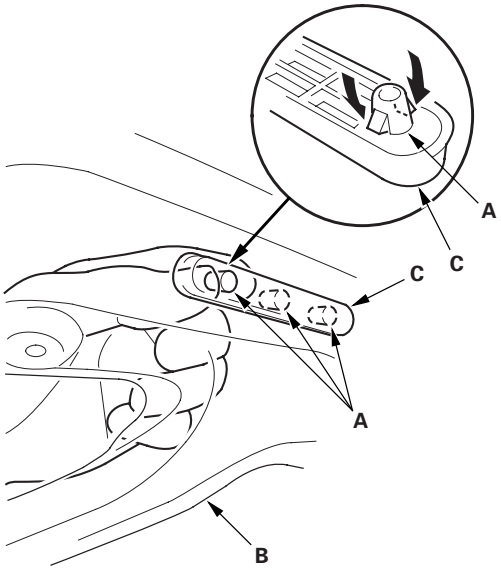
4. Check for water leaks (see step 9 on page 20-29).

Trunk Lid Cushion Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the trunk lid trim (see page 20-82).

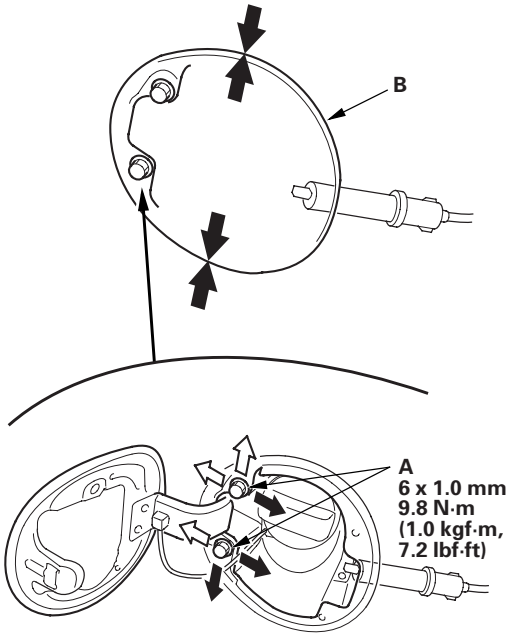
2. Detach the clips (A) by pushing it from the hole in the trunk lid (B), then remove the trunk lid cushion (C). Take care not to scratch the trunk lid.



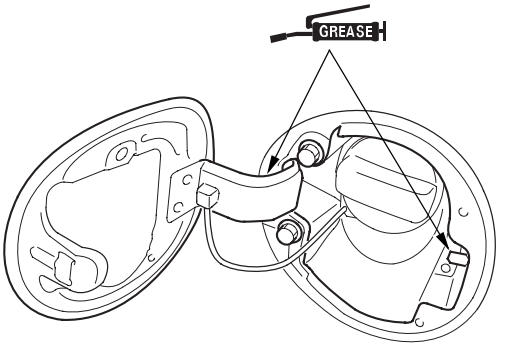
3. Install the cushion in the reverse order of removal.

Fuel Fill Door Adjustment

1. Slightly loosen the hinge mounting bolts (A).



2. Adjust the fuel fill door (B) in or out until it's flush with the body, and up or down as necessary to equalize the gaps.
3. Tighten the hinge mounting bolts.
4. Check that the fuel fill door opens properly and locks securely, and check that the rear of the door is flush with the body.
5. Apply multipurpose grease to each location indicated by the arrows.

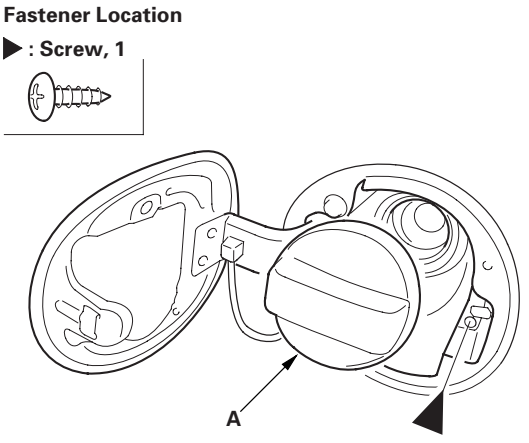


6. Apply touch-up paint to the hinge mounting bolts and around the hinges.

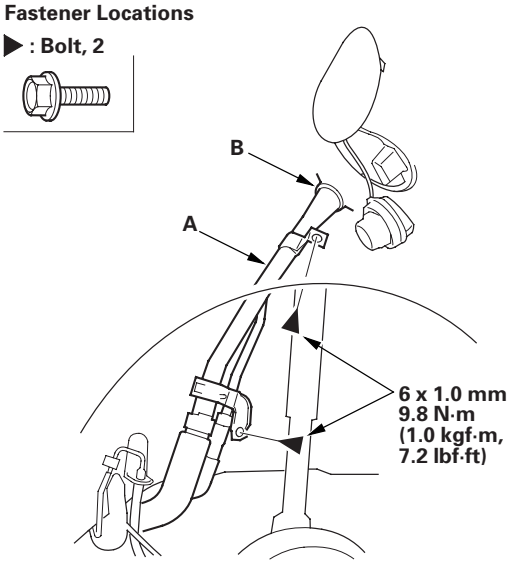
Fuel Cap Adapter Replacement

NOTE: Take care not to scratch the body.

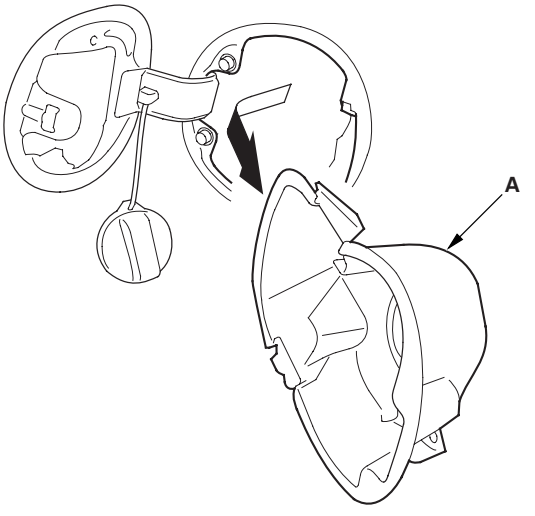
1. Remove the screw. Remove the fuel cap (A) by turning it counterclockwise.



2. Remove the bolts, and lower the fuel filler pipe (A), then remove it from the fuel cap adapter (B).



3. Turn the fuel cap adapter (A), then remove it.



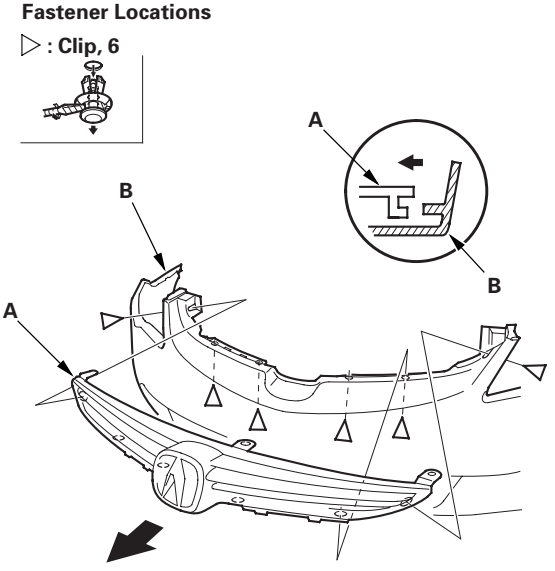
4. Install the adapter in the reverse order of removal.

Front Grille Replacement

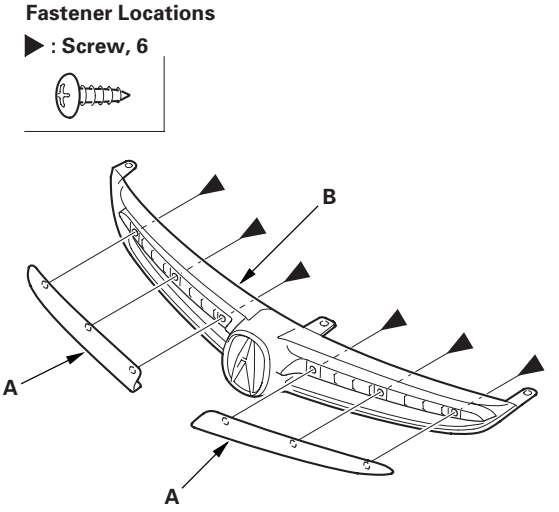
'06-08 Models

NOTE: Take care not to scratch the bumper and the grille.

1. Remove the front bumper (see page 20-146).
2. Remove the clips, then pull the front bumper grille (A) forward from the front bumper (B).



3. If necessary, remove the front "A" emblem from the front grille (see page 20-170).
4. If necessary, remove the screws, then remove the front grille moldings (A) from the front grille base (B).



5. Install the grille in the reverse order of removal.

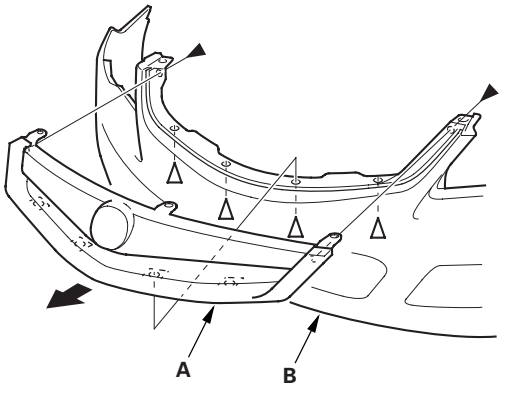
’09 Model

NOTE: Take care not to scratch the bumper and the grille.

1. Remove the front bumper (see page 20-146).
2. Remove the screws, and remove the front grille (A) from the front bumper (B).

Fastener Locations

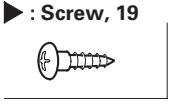
▶ : **Screw, 2** ▷ : **Clip, 4**

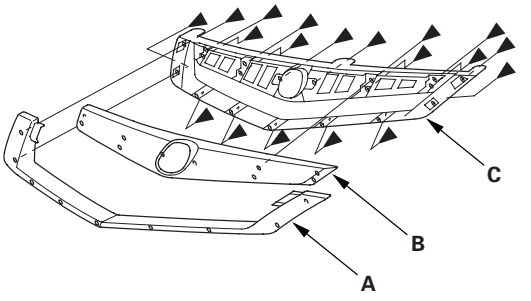


3. Remove the screws, then separate the front grille lower molding (A), the front grille upper molding (B), and the front grille base (C).

Fastener Locations

▶ : **Screw, 19**





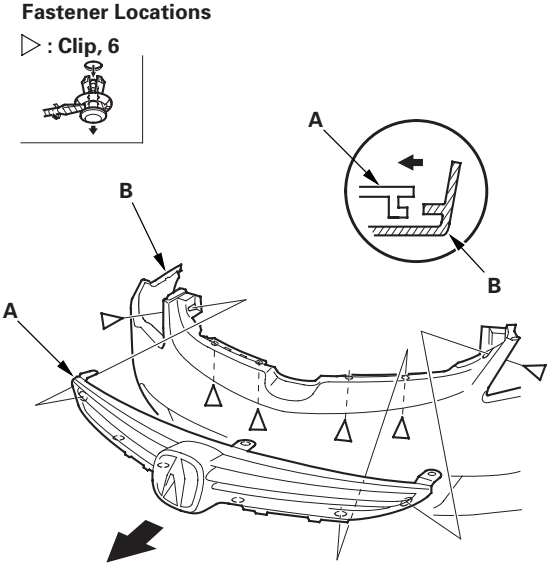
4. Replace the emblem, if necessary (see page 20-170).
5. Install the grille in the reverse order of removal.

Front Grille Replacement

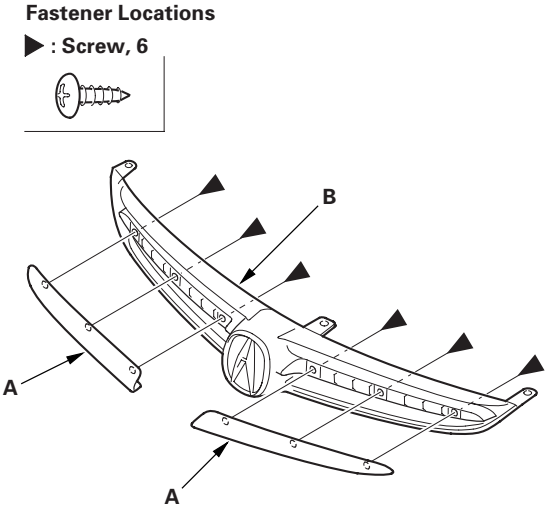
'06-08 Models

NOTE: Take care not to scratch the bumper and the grille.

1. Remove the front bumper (see page 20-146).
2. Remove the clips, then pull the front bumper grille (A) forward from the front bumper (B).



3. If necessary, remove the front "A" emblem from the front grille (see page 20-170).
4. If necessary, remove the screws, then remove the front grille moldings (A) from the front grille base (B).



5. Install the grille in the reverse order of removal.

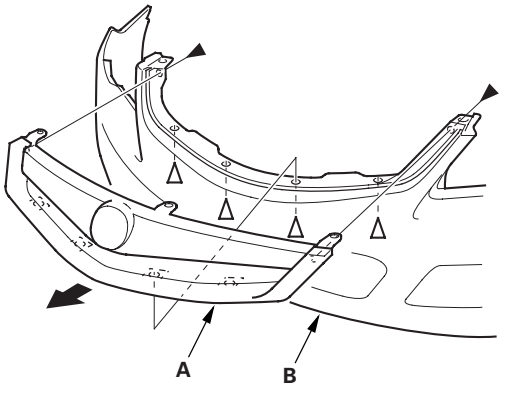
’09 Model

NOTE: Take care not to scratch the bumper and the grille.

1. Remove the front bumper (see page 20-146).
2. Remove the screws, and remove the front grille (A) from the front bumper (B).

Fastener Locations

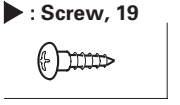
▶ : **Screw, 2** ▷ : **Clip, 4**

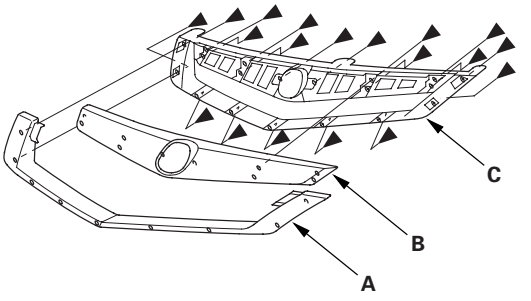


3. Remove the screws, then separate the front grille lower molding (A), the front grille upper molding (B), and the front grille base (C).

Fastener Locations

▶ : **Screw, 19**





4. Replace the emblem, if necessary (see page 20-170).
5. Install the grille in the reverse order of removal.

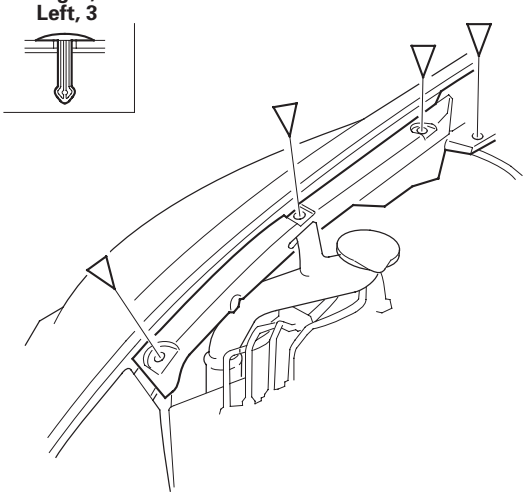
Front Fender Trim Replacement

NOTE: Take care not to scratch the fender trim or the body.

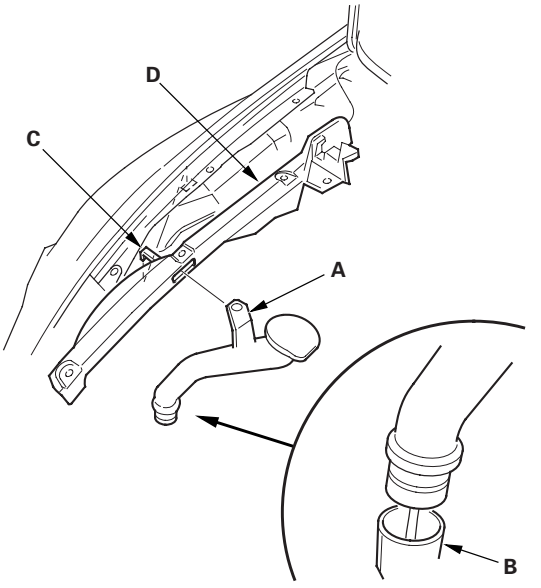
1. Remove the clips with a clip remover.

Fastener Locations

▷ : **Clip**
Right, 4
Left, 3

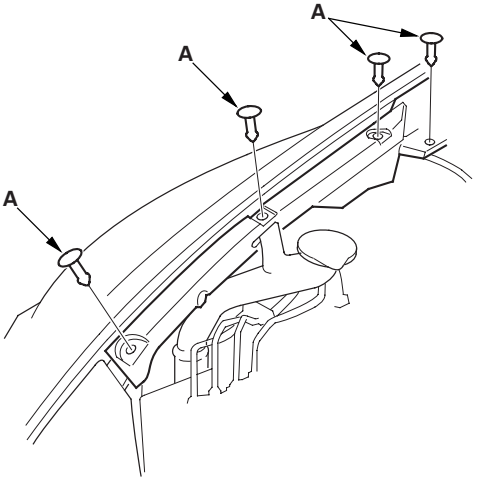


2. Disconnect the washer mouth (A) from the washer tank (B). Release the hook (C), then remove the front fender trim (D) and the washer mouth.



3. Install the fender trim in the reverse order of removal, and note these items:

- Replace the clips (A) with new ones.
- Push the clips into place securely.



Front Grille Cover Replacement

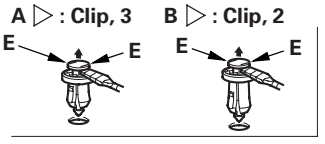
NOTE:
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the front bumper or the body.

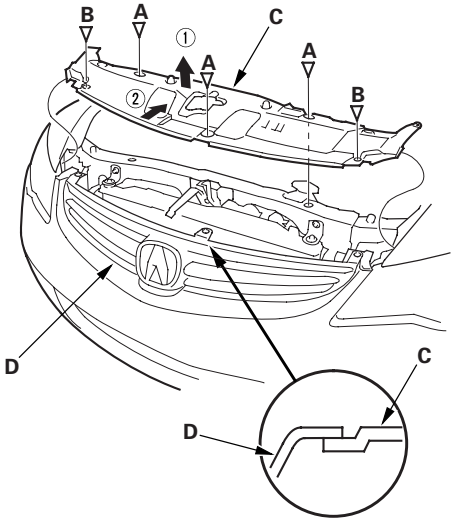
1. Remove the front fender trim from both sides (see page 20-162).

2. Remove the clips (A, B) by carefully pulling the rear of the front grille cover (C) up, then remove the cover by releasing the front edge of the cover from the front grille (D). Take care not to scratch the body.

   NOTE: To release the clips, pry up on the center pin at the notch (E).

Fastener Locations





3. Install the cover in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clip portions into place securely.

Cowl Cover Replacement

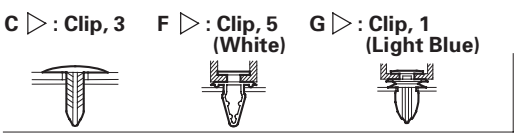
NOTE: Take care not to scratch the body.

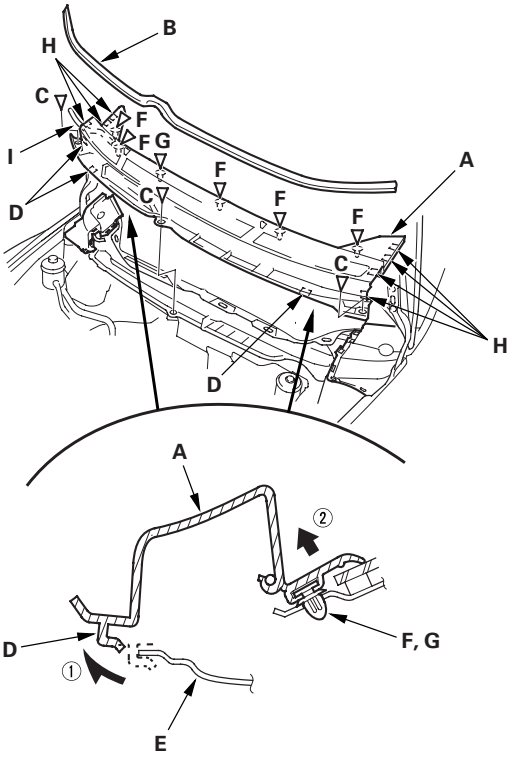
1. Turn the ignition switch to ON (II), then turn on the wiper switch. When the wiper arms reach about 90 °, quickly turn the ignition switch to LOCK (0).

2. Remove the center cowl cover (A).

   1. Remove the hood rear seal (B) by pu lling it out.
   2. Remove the clips (C).
   3. Release three front hooks (D) from the edge of the under-cowl panel (E).
   4. Detach the clips (F, G) by carefully pulling the cover upward, then remove the cover by releasing the hooks (H). Take care not to scratch the body.

Fastener Locations



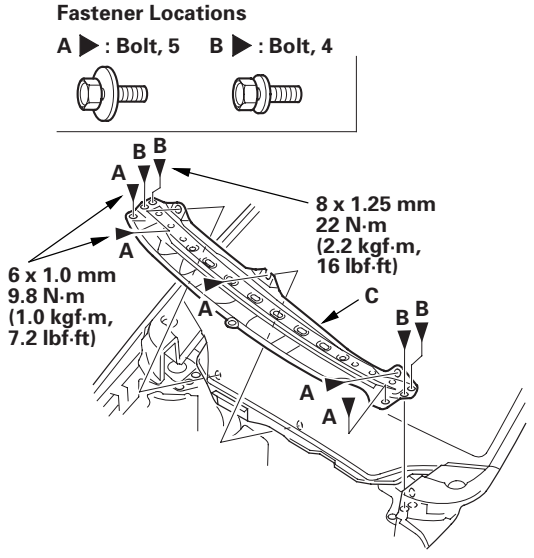


3. Disconnect the windshield washer tube (I).

(cont'd)

Cowl Cover Replacement (cont'd)

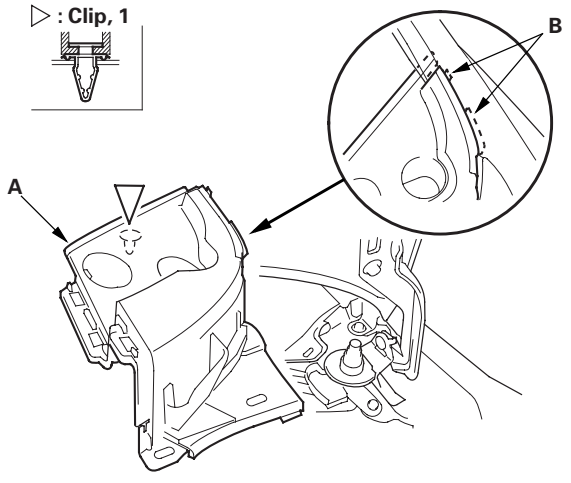
4. If necessary, remove the bolts (A, B), then remove the under-cowl panel (C).



5. Remove these items:

   - Windshield wiper arms (see page 22-233)
   - Front fender trim, both sides (see page 20-162)

6. Detach the clip by carefully pulling the side cowl cover (A) up, then remove the cover by releasing the hooks (B) from the front fender. Take care not to scratch the body. Repeat this step for the other side cowl cover, and disconnect the windshield washer tube.



7. Install the parts in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Make sure the washer tubes are connected securely.
   - Make sure the windshield wipers operate normally.
   - Push the clips into place securely.

Roof Molding Replacement

Special Tools Required
KTC trim tool set 07AAC-SEPA240

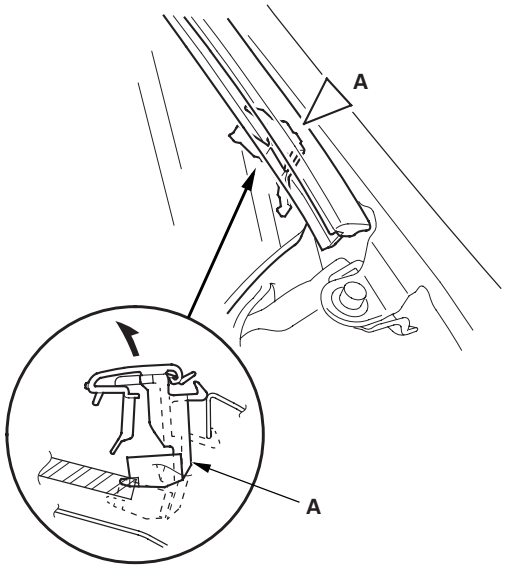
Molding Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to damage the windshield.
- Do not use any metallic tools to remove the roof molding, or you may chip or crack the windshield.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.
- Take care not to bend the roof molding.

1. Remove the cowl cover (see page 20-163).

2. Detach the bottom clip (A) at the lower corner of the windshield.

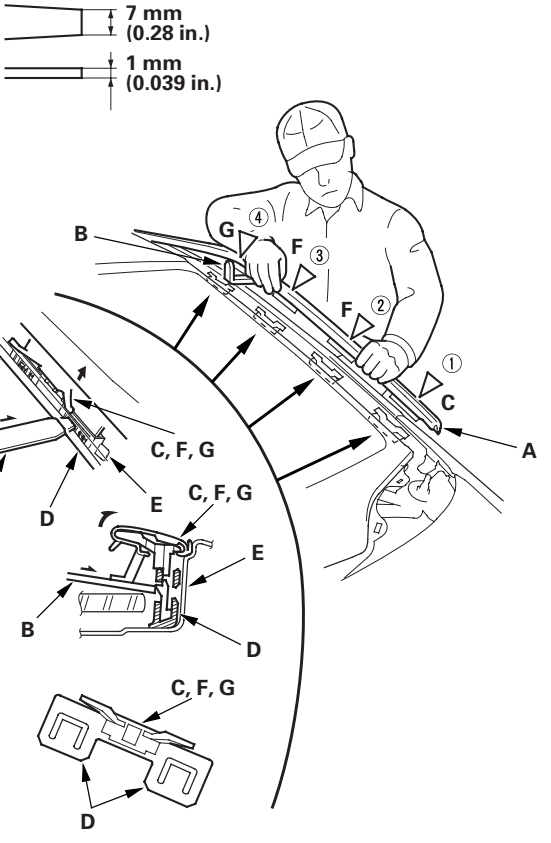
Fastener Location
A ▷ : Clip



3. Remove the windshield portion of the roof molding (A).

–1 Carefully insert a trim tool (B) in under the molding next to the lower clip (C).
–2 While pulling the clip portion of the molding up by hand, push the hooks (D) to release the clip from the retainer (E). Do not pry on the windshield trim with any tools.
–3 Gradually work your way up to release each of the clips (F, G).

Fastener Locations
C, F ▷ : Clip (Light Green)
G ▷ : Clip (Light Yellow)



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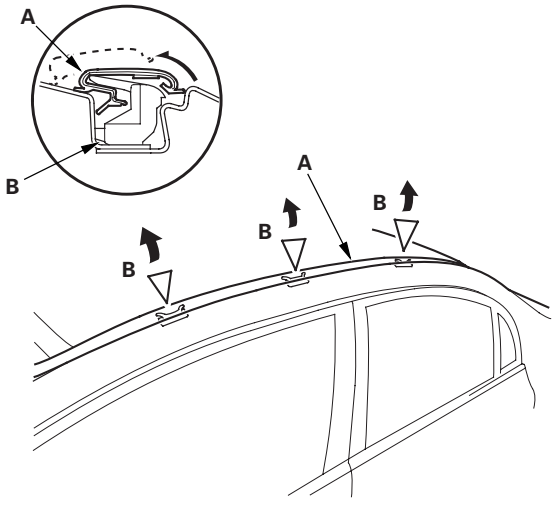
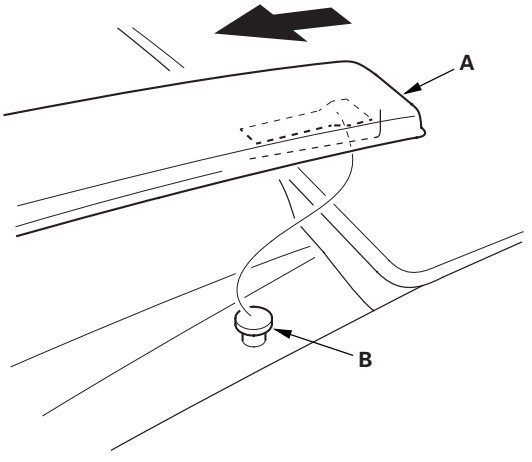
Roof Molding Replacement (cont'd)

4. Pull up the middle portion of the roof molding (A) to release it from the retainers (B).



5. Pull up and release the rear end of the roof molding (A) from the pin (B), then remove the roof molding.

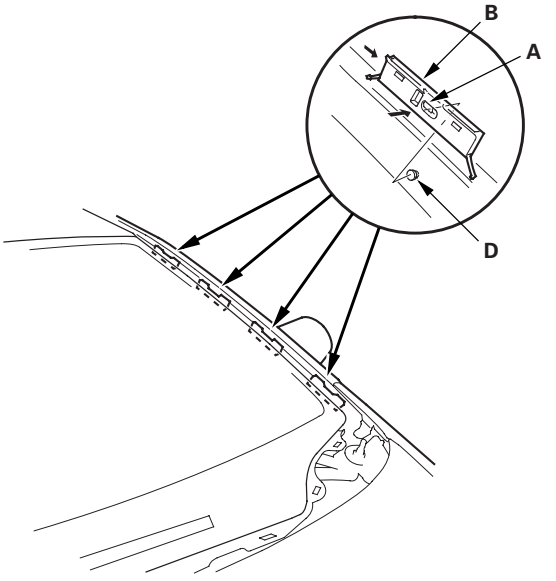


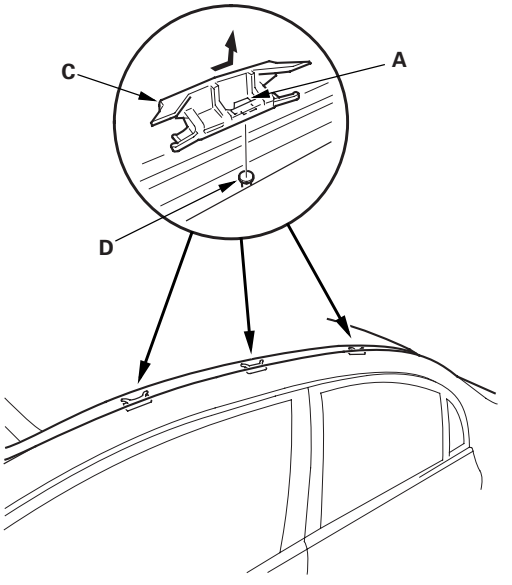
6. Install the molding in the reverse order of removal, and note these items:

   - Make sure the roof molding is installed securely.
   - If the clips are damaged or stress-whitened, replace them with new ones.

Retainer Replacement

1. While prying the middle hooks (A) with a flat-tip screwdriver, slide the upper retainers (B, C) upward to release them from the pins (D) on the A-pillar and roof drip portion. Take care not to scratch the body.





2. Install the retainers in the reverse order of removal.

Door Molding Replacement

Special Tools Required
KTC trim tool set 07AAC-SEPA240

NOTE:
- Be careful not to pry too far or you may bend the molding.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

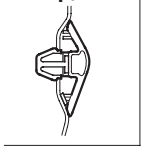
1. Remove these items:

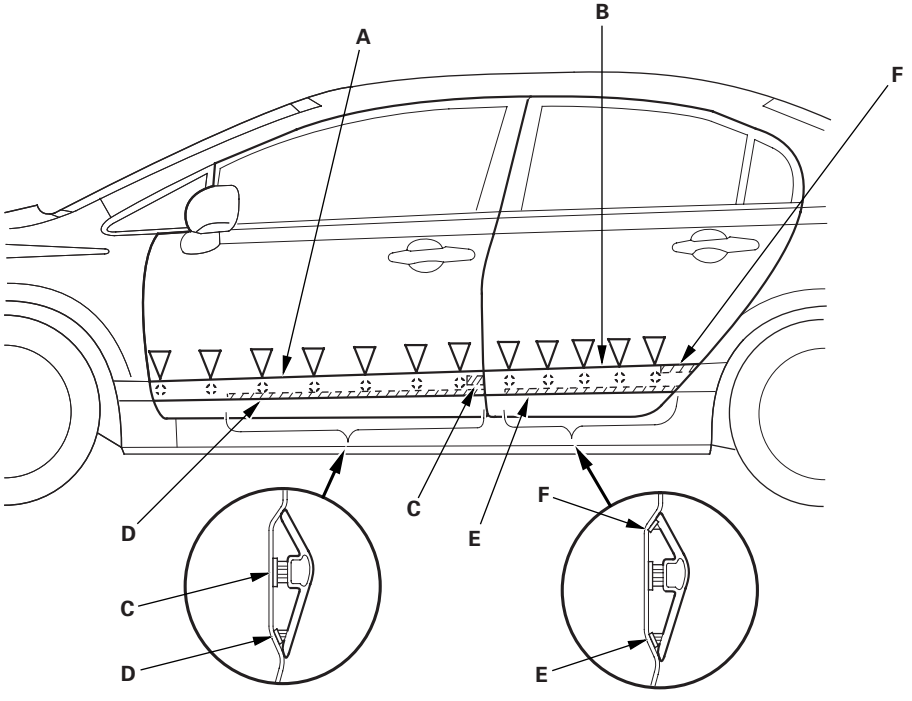
   - Front door panel (see page 20-7) and plastic cover (see page 20-3)
   - Rear door panel (see page 20-17) and plastic cover (see page 20-5)

2. Release the clips, and gently pry the front door molding (A) or rear door molding (B) away from the door while separating the adhesive tape (C, D, E, F).

   Adhesive tape (C): Thickness 1.2 mm (0.047 in.) Width 5 mm (0.2 in.) Length 30 mm (1.18 in.)
   Adhesive tape (D): Thickness 1.2 mm (0.047 in.) Width 10 mm (0.39 in.) Length 930 mm (36.61 in.)
   Adhesive tape (E): Thickness 1.2 mm (0.047 in.) Width 10 mm (0.39 in.) Length 580 mm (22.83 in.)
   Adhesive tape (F): Thickness 1.2 mm (0.047 in.) Width 5 mm (0.2 in.) Length 24 mm (0.94 in.)

Fastener Locations
▷: Clip, 12

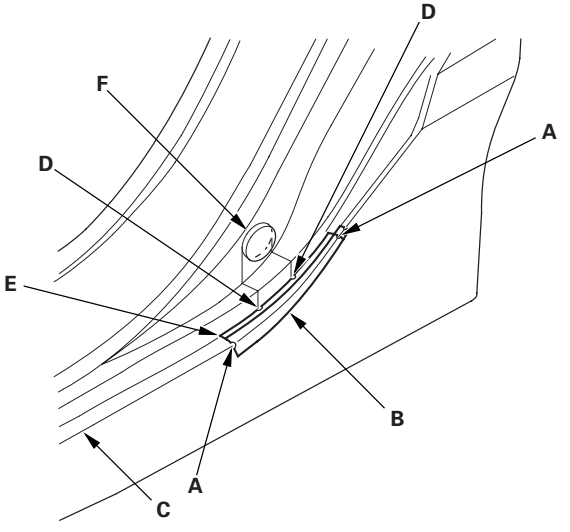




3. Install the moldings in the reverse order of removal, and if the clips are damaged or stress-whitened, replace them with new ones.

Side Sill Protection Tape Replacement

1. Slowly peel up the old side sill protection tape.
2. Clean the body bonding surface with a shop towel dampened in isopropyl alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
3. Peel the adhesive backing from the side sill protection tape.
4. Align the alignment marks (A) of the side sill protection tape (B) with the body line (C), and align the alignment marks (D) of the application tape (E) with the round body bulge (F), then press the side sill protection tape into place.

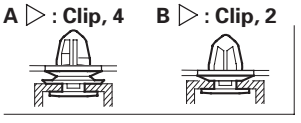


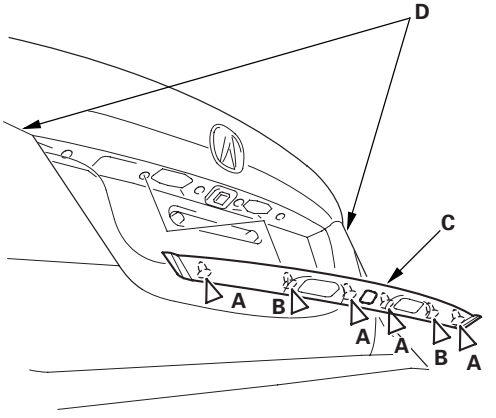
Rear License Trim Replacement

1. Detach the clips (A, B), and on both sides of the rear license trim (C), release the edge of the trim from the inner taillight (D), then remove the trim. Take care not to scratch the trunk lid.

Fastener Locations

A ▷ : Clip, 4 **B ▷ : Clip, 2**





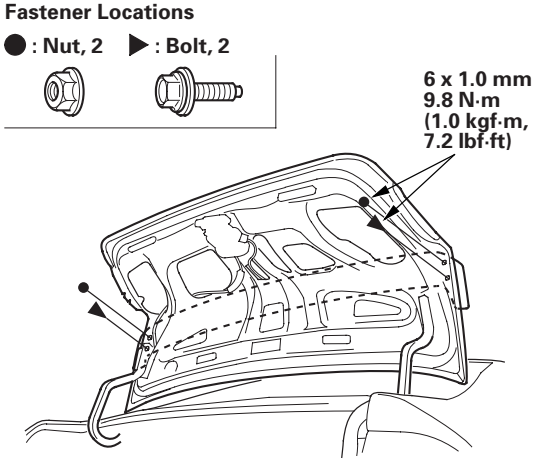
2. Install the trim in the reverse order of removal, and note these items:
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

Trunk Lid Spoiler Replacement

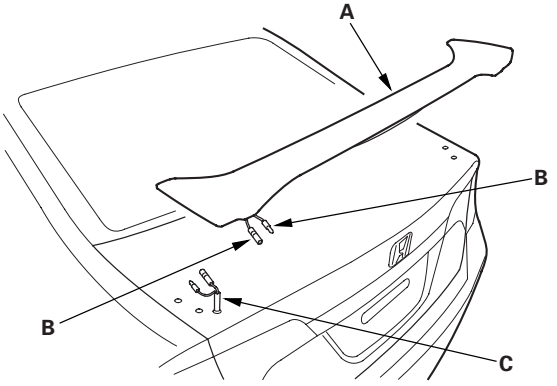
For Some Models

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the trunk lid.

1. Open the trunk lid, and remove the nut and bolts from inside the trunk lid.



2. Close the trunk lid. While lifting the trunk lid spoiler (A) up, disconnect the high mount brake light terminals (B) from the spoiler subharness (C), then remove the spoiler.

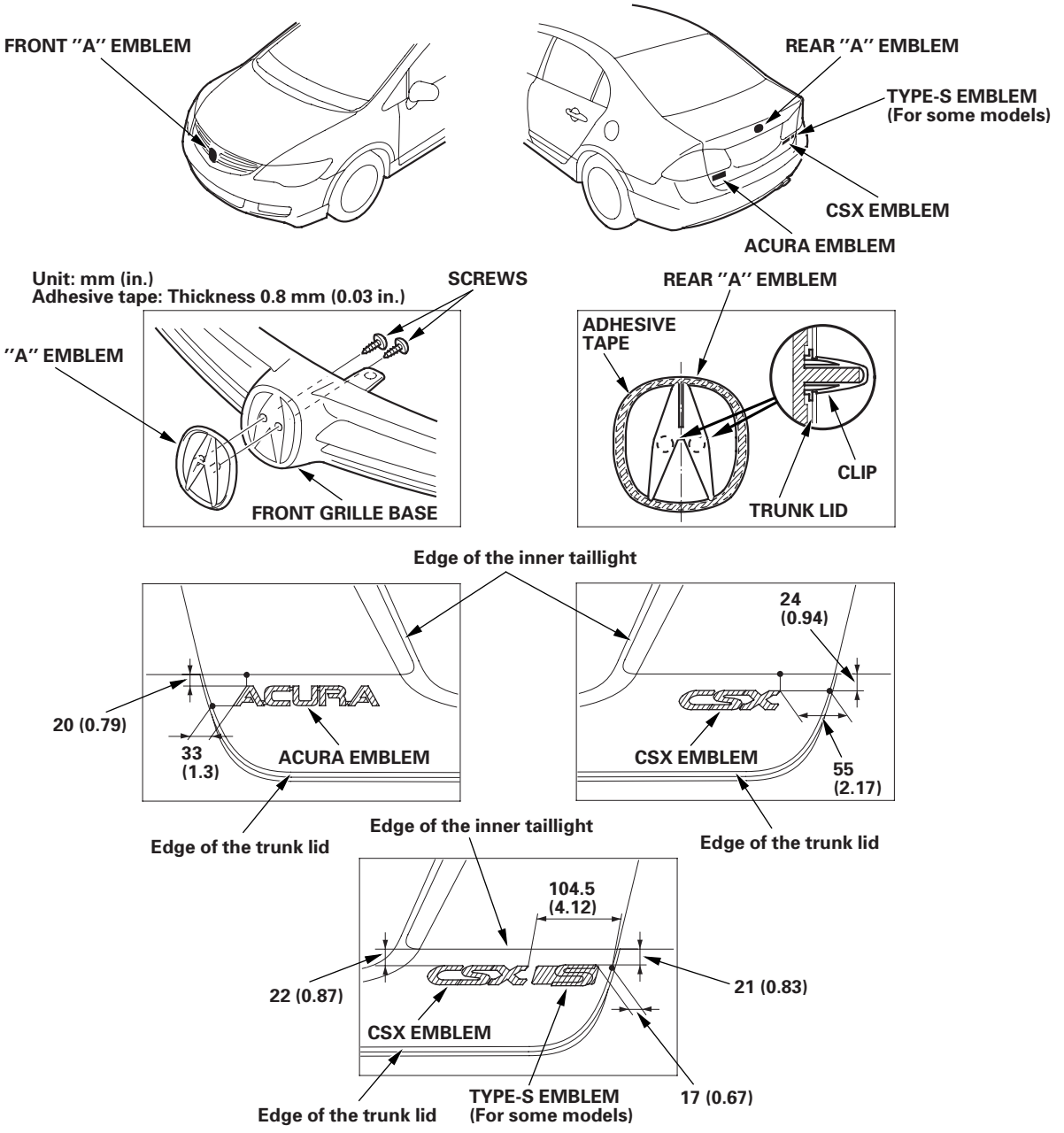


3. Install the spoiler in the reverse order of removal, and make sure the high mount brake light terminals are plugged in properly.

Emblem/Sticker Replacement

NOTE: When removing the emblems, take care not to scratch the body.

1. To remove the front ''A'' emblem, remove the front grille (see page 20-160).
2. Clean the body surface with a shop towel dampened in isopropyl alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
3. Apply the emblem where shown.
4. After installing the front ''A'' emblem, reinstall the front grille.



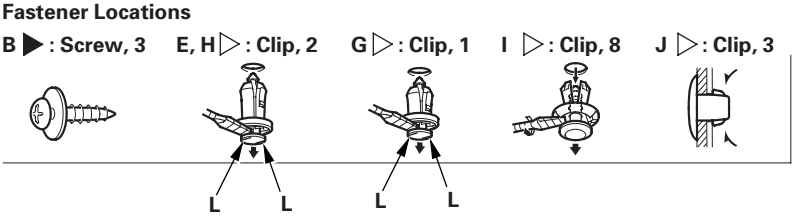
Front Inner Fender Replacement

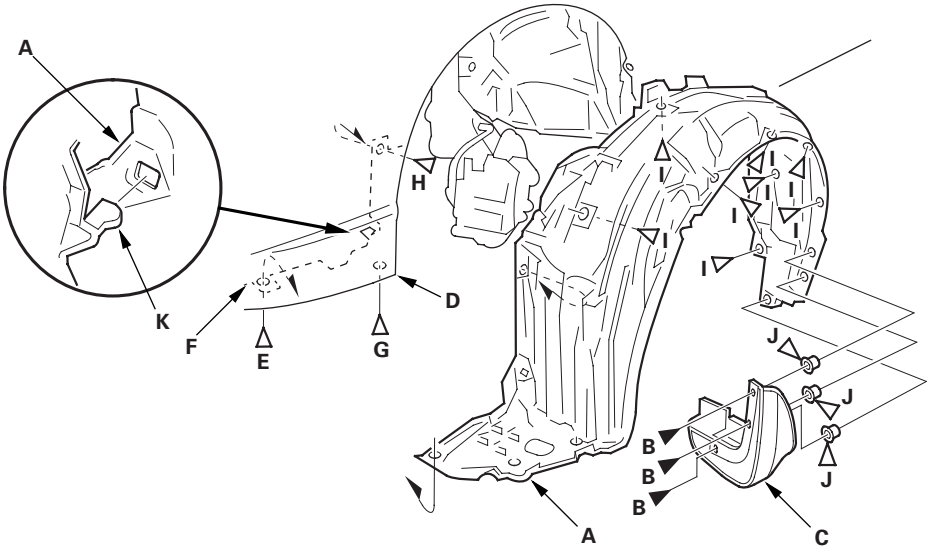
NOTE: Take care not to scratch the body.

1. Remove the front inner fender (A).

   -1 On the back of the wheel arch, remove the screws (B), and remove the front splash guard (C).
   -2 From under the front bumper (D), remove the clips (E) securing the splash shield (F) and the front inner fender to the front bumper.
   -3 From the wheel arch, remove the clips (G, H, I, J) securing the front inner fender (and splash shield) to the body.
   -4 Release the hook (K) of the splash shield, then remove the front inner fender.

   NOTE: To release the clips E, H and G, pry up on the center pin at the notch (L).





2. Install the inner fender in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips and the hooks into place securely.

Splash Shield Replacement

NOTE: Take care not to scratch the body.

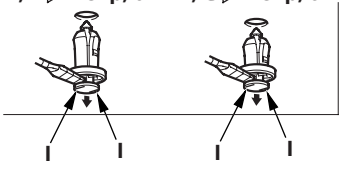
1. Remove the splash shield (A).

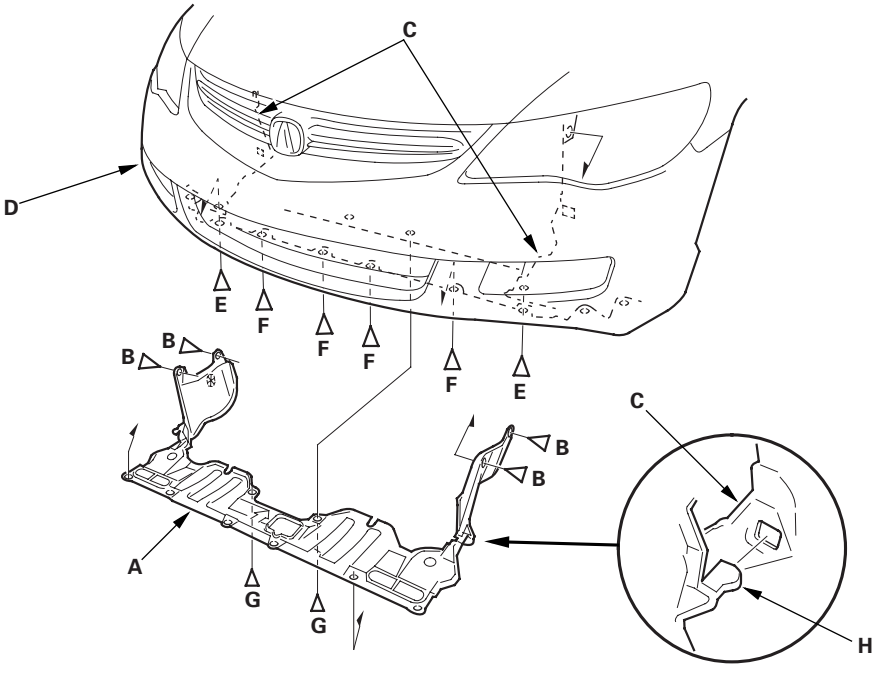
   –1 Remove the clips (B) that secure the front inner fender (C) and the front splash shield to the body.
   –2 From under the front bumper (D), remove the clips (E, F).
   –3 From under the body, remove the clips (G).
   –4 Release the hooks (H) of the front splash shield, then pull the splash shield out.

   NOTE: To release the clips B, E, F and G, pry up on the center pin at the notch (I).

Fastener Locations

B, E ▷ : Clip, 6 **F, G ▷ : Clip, 6**





2. Install the splash shield in the reverse order of removal, and note these items:

   • If the clips are damaged or stress-whitened, replace them with new ones.
   • Push the clips and the hooks into place securely.

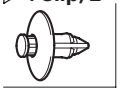
Front Fender Fairing Replacement

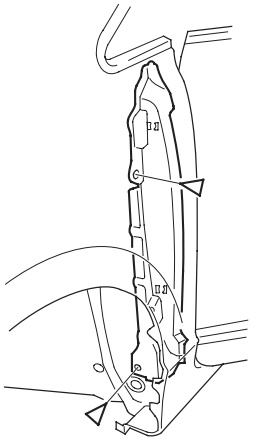
1. Remove the front inner fender as needed (see page 20-171).

2. From the wheel arch, remove the clips.

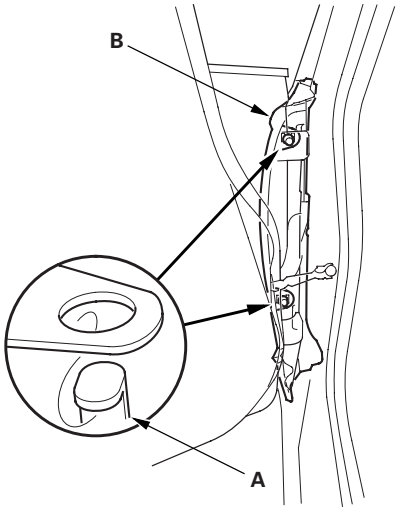
Fastener Locations

▷ : **Clip, 2**

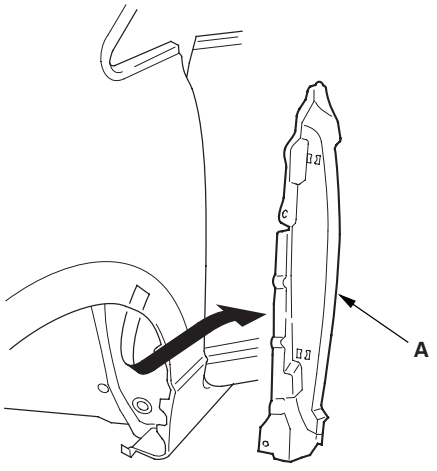




3. Open the front door. Detach the hooks (A) securing the front fender fairing (B).



4. Remove the front fender fairing (A).



5. Install the fender fairing in the reverse order of removal, and note these items:

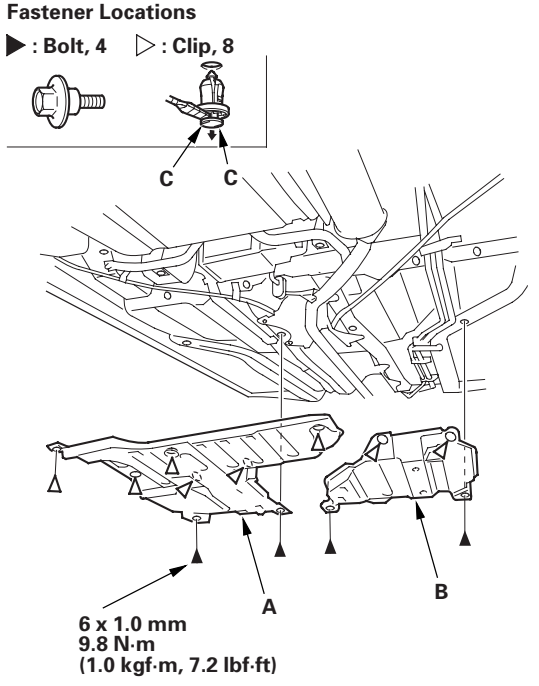
   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips and the hooks into place securely.

Middle Floor Undercover Replacement

NOTE: Take care not to scratch the body.

1. Remove the bolts, and detach the clips, then remove the left middle floor undercover (A) and right middle undercover (B).

   NOTE: To release the clips, pry up on the center pin at the notch (C).

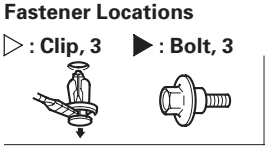


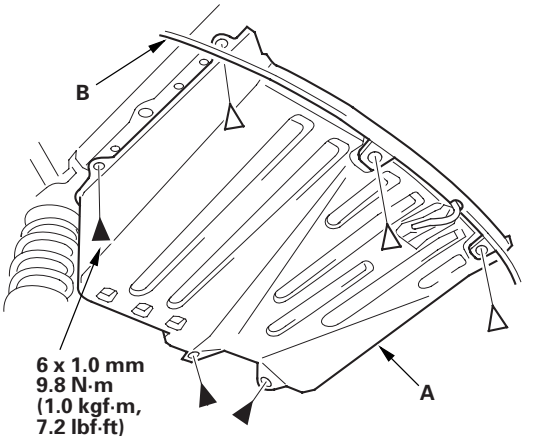
2. Install the undercovers in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

Rear Floor Undercover Replacement

1. Remove the clips and the bolts, then remove the rear floor undercover (A). Take care not to scratch the rear bumper (B).





2. Install the undercover in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

Fuel Pipe Protector Replacement

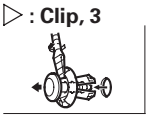
NOTE:
- Take care not to scratch the body.
- Put on gloves to protect your hands.

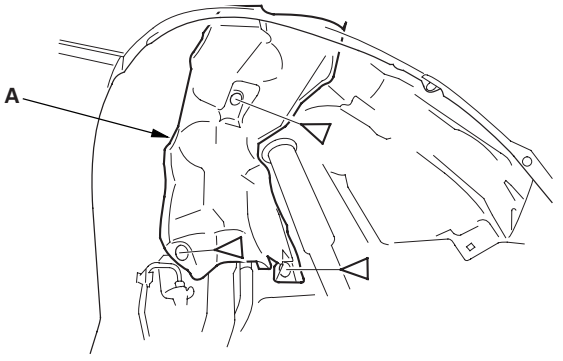
1. Remove the left rear wheel (see page 18-32).

2. Remove the clips, then remove the fuel pipe protector (A).

Fastener Locations

▷ : Clip, 3





3. Install the protector in the reverse order of removal, and note these items:

   - If the clips are damaged or stress-whitened, replace them with new ones.
   - Push the clips into place securely.

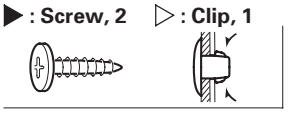
Rear Fender Cover Replacement

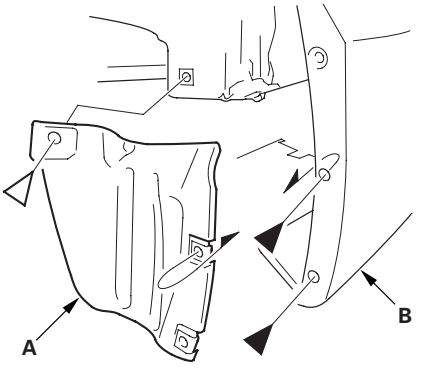
NOTE: Take care not to scratch the rear bumper and the body.

1. Remove the screws and the clip, then remove the rear fender cover (A) from the rear bumper (B) and the body.

Fastener Locations

▶ : Screw, 2 **▷ : Clip, 1**



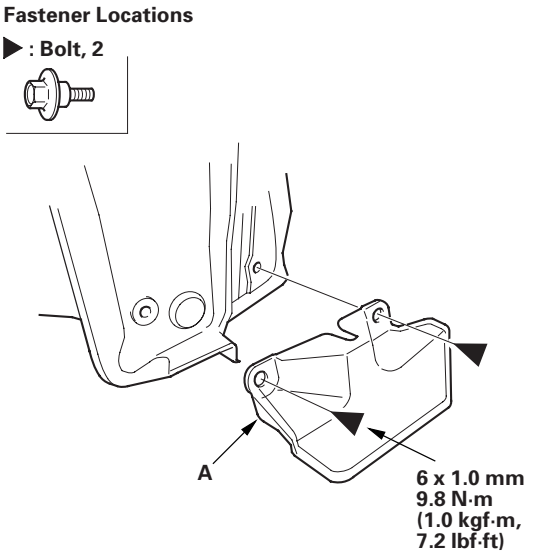


2. Install the fender cover in the reverse order of removal, and if the clip is damaged or stress-whitened, replace them with a new one.

Rear Strake Replacement

NOTE: Take care not to scratch the body.

1. Remove the bolts, then remove the rear strake (A) from the body.

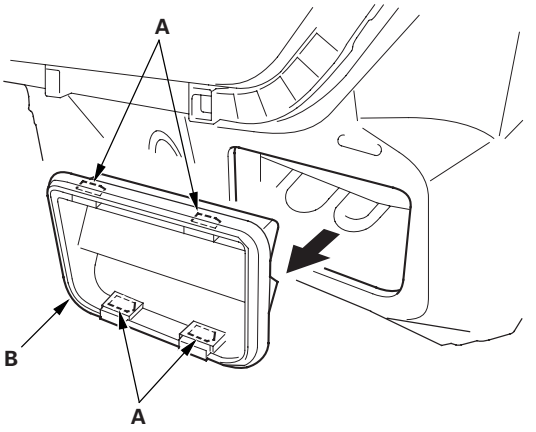


2. Install the strake in the reverse order of removal.

Rear Air Outlet Replacement

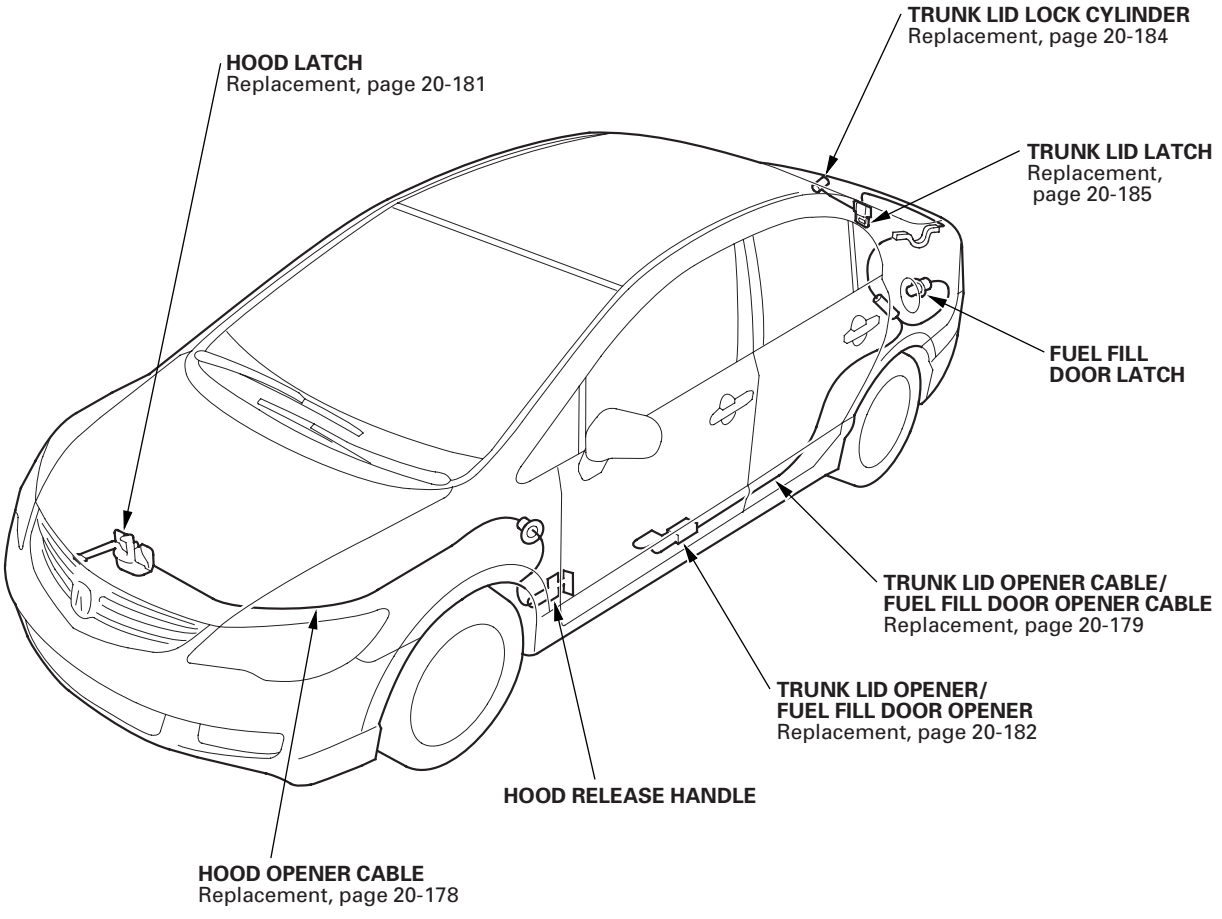
1. Remove the rear bumper (see page 20-149).

2. Detach the hooks (A), then remove the rear air outlet (B). Take care not to scratch the body.



3. Install the air outlet by pushing on the hook portions until the hooks snap into place.

Component Location Index



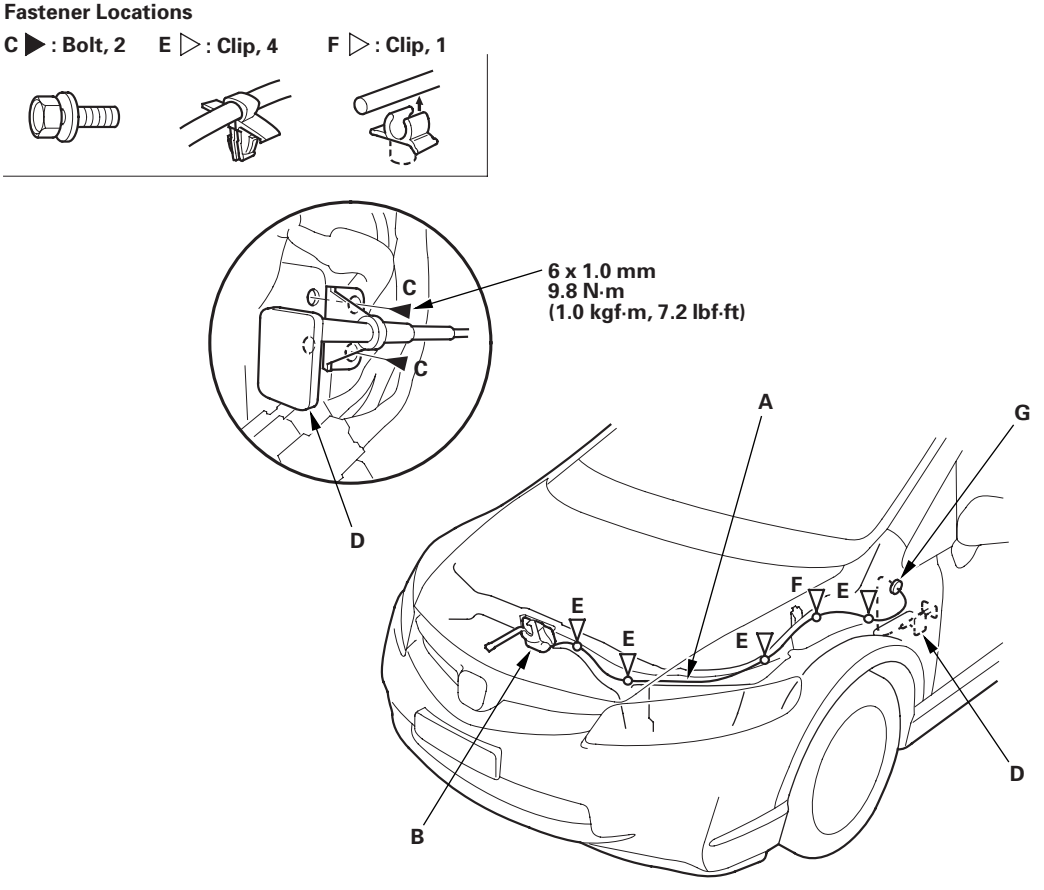
Hood Opener Cable Replacement

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. Remove these items:

   - Front grille cover (see page 20-163)
   - Front inner fender, driver's side (see page 20-171)
   - Kick panel, driver's side (see page 20-66)

2. Disconnect the hood opener cable (A) from the hood latch (B) (see page 20-181), and remove the bolts (C), then remove the hood release handle (D). Take care not to kink the cable.



3. Detach the clips (E) with a clip remover, release the hood opener cable from the clip (F), and remove the grommet (G) from the body, then remove the hood opener cable from the vehicle. Take care not to kink the cable.

4. Install the cable in the reverse order of removal, and if the clips are damaged or stress-whitened, replace them with new ones.

Trunk Lid Opener Cable/Fuel Fill Door Opener Cable Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

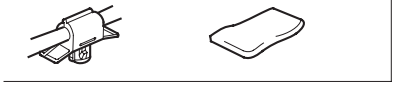
1. Remove these items:
   - Rear seat cushion (see page 20-133)
   - Rear seat side bolster (see page 20-134)
   - Front door sill trim, driver's side (see step 3 on page 20-66)
   - Kick panel, driver's side (see page 20-66)
   - Rear door sill trim, both sides (see page 20-67)
   - B-pillar lower trim, driver's side (see page 20-72)
   - Trunk side trim panel, left side (see step 6 on page 20-81)
   - Trunk lid trim (see page 20-82)
   - Trunk lid opener/fuel fill door opener (see page 20-182)
   - Fuel cap adapter (see page 20-159)

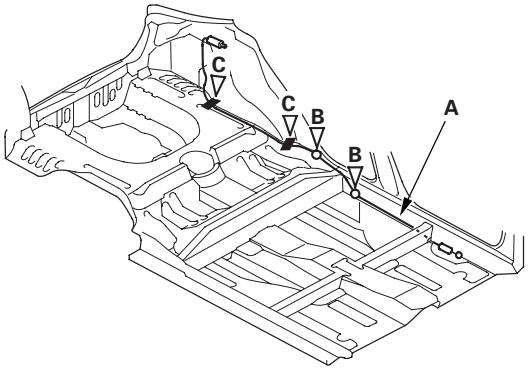
2. Pull the carpet back as needed.

3. Release the opener cable (A) from the clips (B). Remove the cushion tape (C).

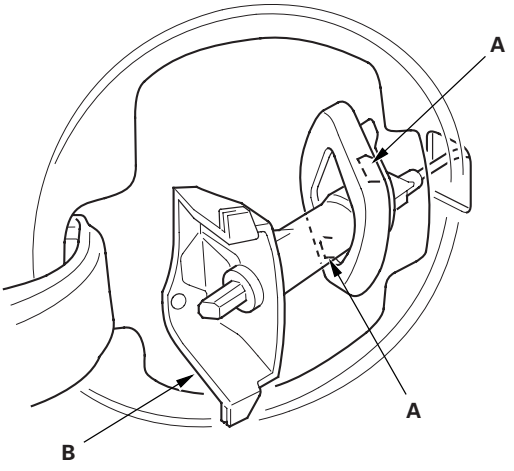
Fastener Locations

B ▷ : Clip, 2 C ▷ : Cushion tape, 2

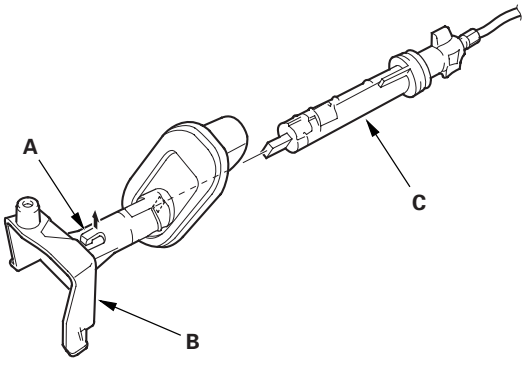




4. While pinching the hooks (A) from inside the vehicle, remove the grommet (B) from the body.



5. Release the hook (A), then remove the grommet (B) from the fuel fill door latch (C).



(cont'd)

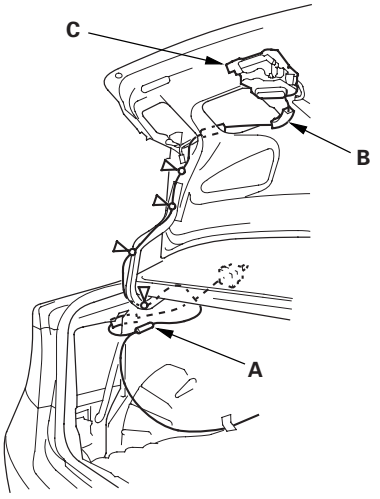
Trunk Lid Opener Cable/Fuel Fill Door Opener Cable Replacement (cont'd)

6. Remove the fuel fill door opener cable from inside the body.

7. Detach the opener cable junction box (A) from the body.

Fastener Locations

▷ : **Clip, 4**



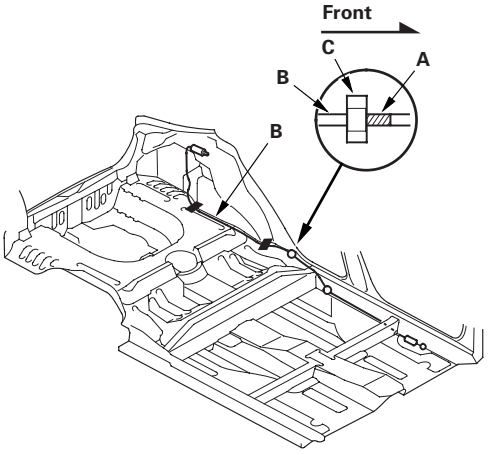
8. Disconnect the trunk lid opener cable (B) from the trunk lid latch (C) (see page 20-185).

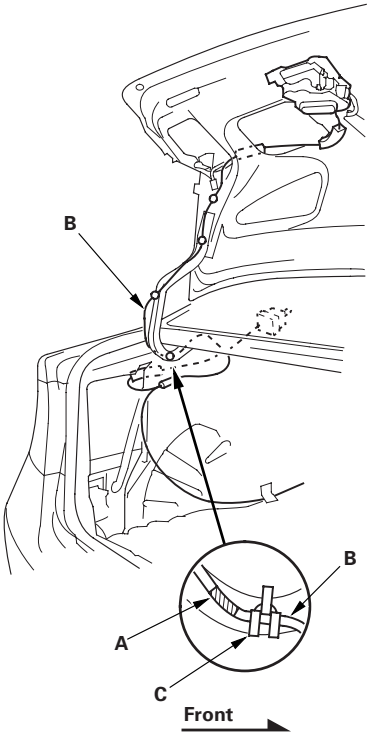
9. Release the trunk lid opener/fuel fill door opener cable from the clips.

10. Remove the trunk lid opener/fuel fill door opener cable from the vehicle. Take care not to kink the cable.

11. Install the opener cable in the reverse order of removal, and note these items:

- Align the marks (A) on the opener cable (B) with the cable clips (C) as shown.
- Replace any damaged clips and the cushion tape.

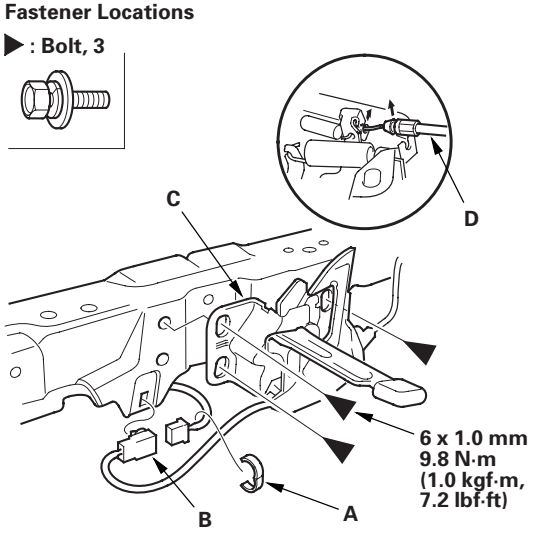




Hood Latch Replacement

1. Remove the front grille cover (see page 20-163).

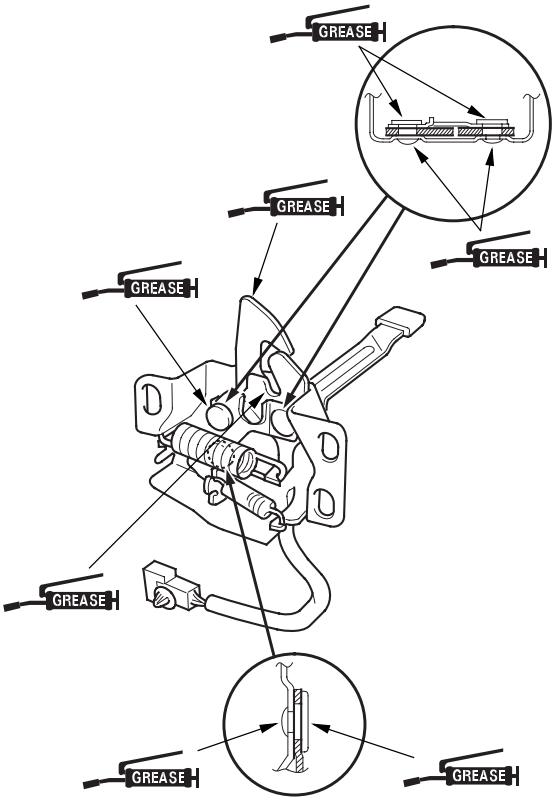
2. With hood latch switch: Remove the clip (A), then disconnect and detach the hood latch switch connector (B).



3. Remove the bolts, then remove the hood latch (C) from the body, and disconnect the hood opener cable (D) from the hood latch.

4. Install the latch in the reverse order of removal, and note these items:

   - Apply multipurpose grease to each location of the hood latch indicated by the arrows.
   - Make sure the hood opener cable is connected properly and the hood latch switch connector is plugged in properly (for some models).
   - Adjust the hood latch alignment (see step 4 on page 20-152).
   - Make sure the hood opens properly and locks securely.

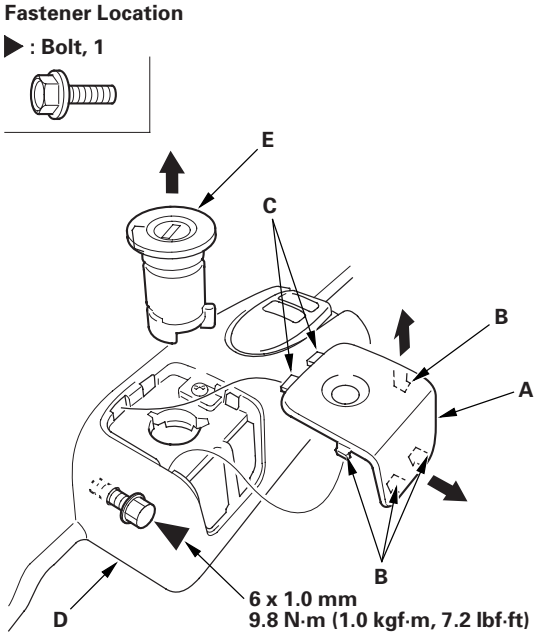


Trunk Lid Opener/Fuel Fill Door Opener Replacement

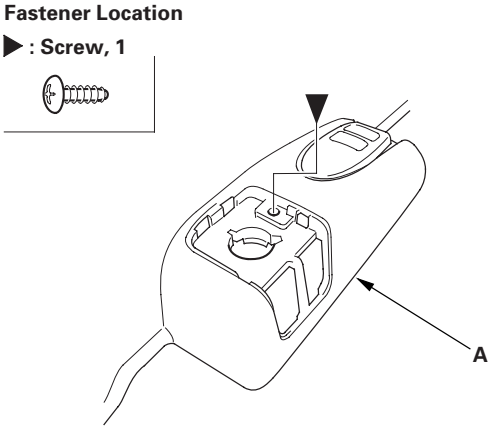
Special Tools Required
KTC trim tool set : 07AAC-SEPA240

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when removing components.

1. Pry out the bottom edge of the front side cap (A) at the notch with the appropriate trim tool to detach the hooks (B), and release the hooks (C), then remove the cap from the front door sill trim (D).



2. Remove the opener lock cylinder (E), and loosen the bolt.
3. Remove the screw securing the front door sill trim (A) and trunk lid opener/fuel full door opener.

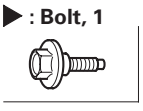


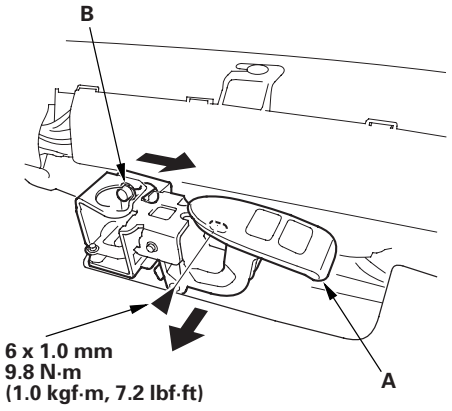
4. Remove the front door sill trim (see step 3 on page 20-66).

5. Remove the bolt, then remove the trunk lid opener/fuel fill door opener (A) from the bolt (B).

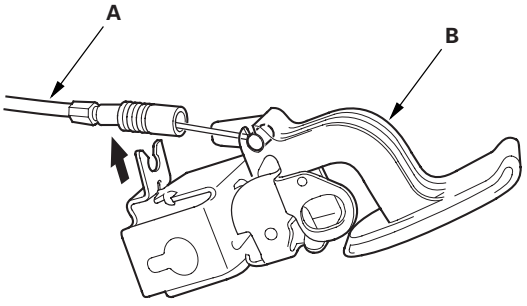
Fastener Location

▶ : Bolt, 1





6. Disconnect the trunk lid opener/fuel fill door opener cable (A), then remove the opener (B). Take care not to kink the cable.



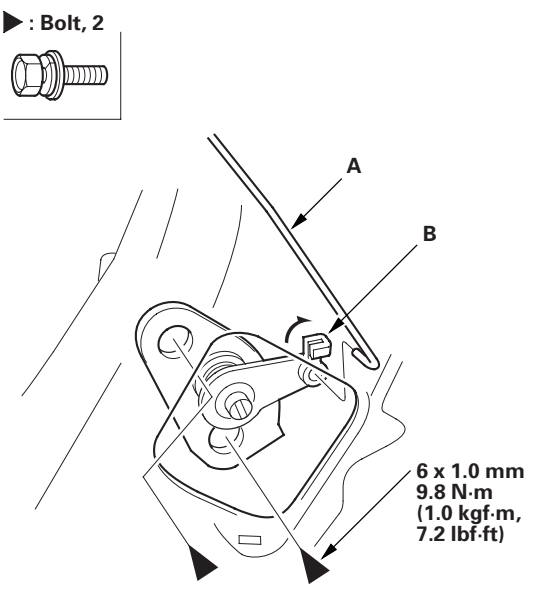
7. Install the opener in the reverse order of removal, and note these items:

   - Make sure the opener cable is connected properly.
   - Make sure the trunk lid and fuel fill door open properly and lock securely.
   - If the trunk lid or the fuel fill door does not open properly, adjust the position of the cable end on the opener.

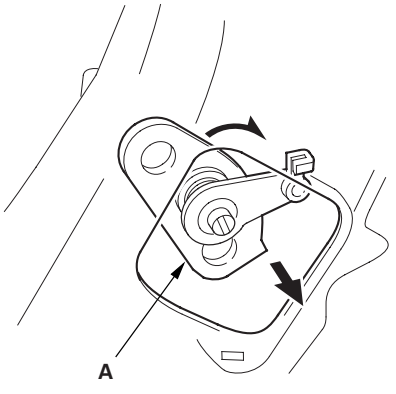
Trunk Lid Lock Cylinder Replacement

1. Remove the trunk lid trim (see page 20-82).
2. Disconnect the cylinder rod (A).

   NOTE: Check for a damaged or stress-whitened rod fastener (B).



3. Remove the bolts securing the lock cylinder.
4. Turn the lock cylinder (A) to release the hook from the trunk lid, then remove the lock cylinder.



5. Install the lock cylinder in the reverse order of removal, and note these items:

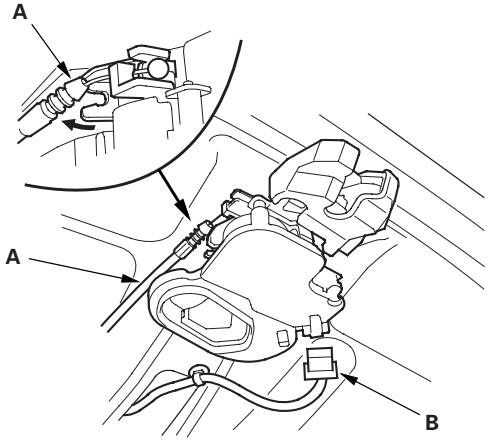
   - If the rod fastener is damaged, replace it with a new one.
   - Make sure the cylinder rod is connected properly.
   - Make sure the trunk lid opens properly and locks securely.

Trunk Lid Latch Replacement

1. Remove the trunk lid trim (see page 20-82).

2. Disconnect the cylinder rod from the lock cylinder (see step 2 on page 20-184).

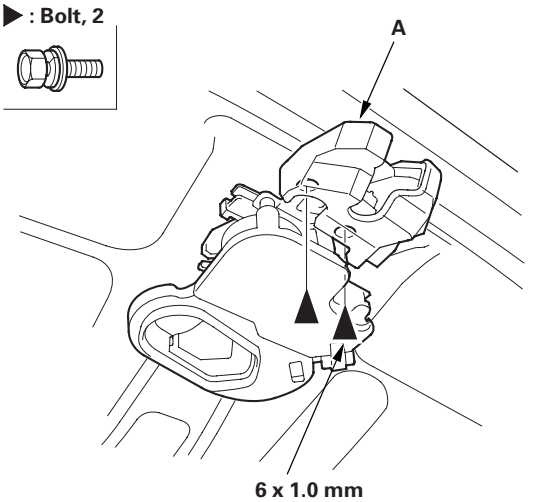
3. Disconnect the trunk lid opener cable (A), and disconnect the power trunk lid actuator connector (B). Take care not to kink the opener cable.



4. Remove the bolts from the trunk lid latch (A).

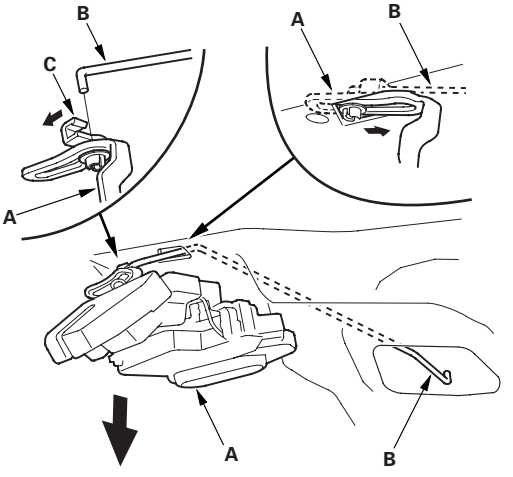
Fastener Locations

▶ : Bolt, 2



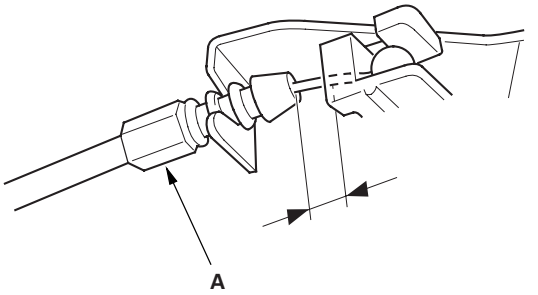
5. Pull the trunk lid latch (A) out, and disconnect the cylinder rod (B) from the trunk lid latch. Take care not to bend the cylinder rod.

   NOTE: Check for a damaged or stress-whitened rod fastener (C).



6. Install the latch in the reverse order of removal, and note these items:

   - Replace the rod fastener if it is damaged.
   - Make sure the connector is plugged in properly and the opener cable is connected properly.
   - Make sure the trunk lid opens properly and locks securely.
   - If the trunk latch does not operate properly, adjust the position of the cable end (A) on the latch.

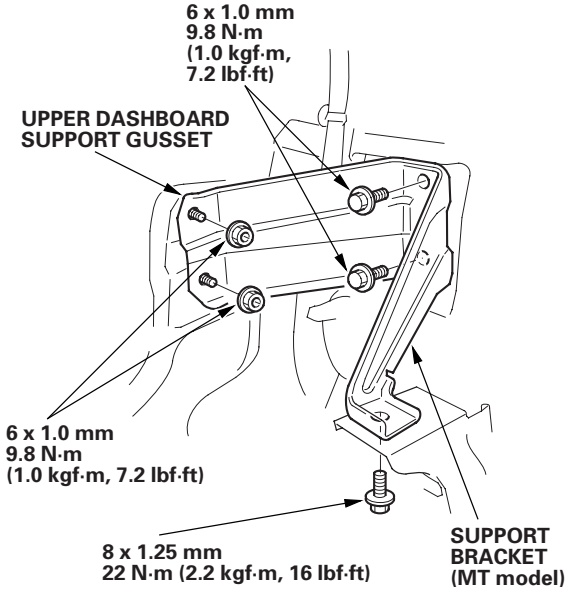


Upper Dashboard Support Gusset Replacement

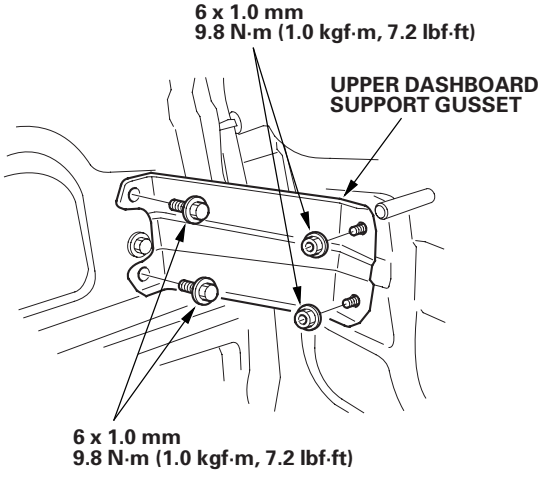
Upper Dashboard Support Gusset Torque

NOTE: Take care not to scratch the body.

Driver's side



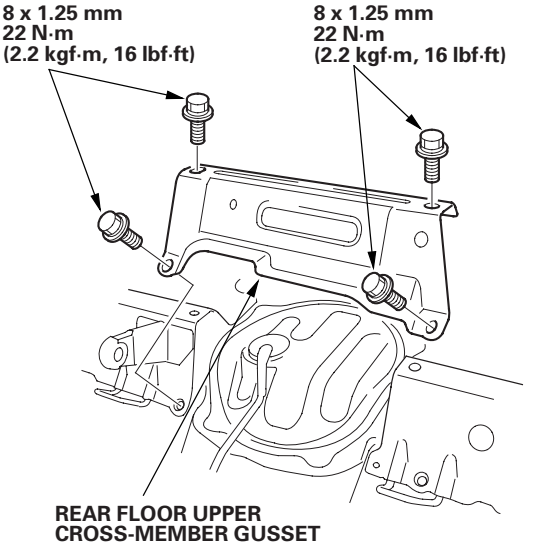
Passenger's side



Rear Floor Upper Cross-member Gusset Replacement

Rear Floor Upper Cross-member Gusset Torque

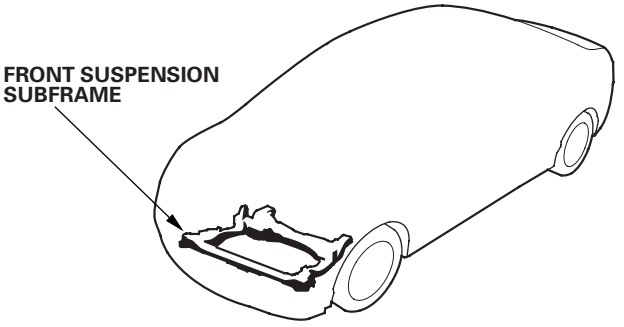
NOTE: Take care not to scratch the body.

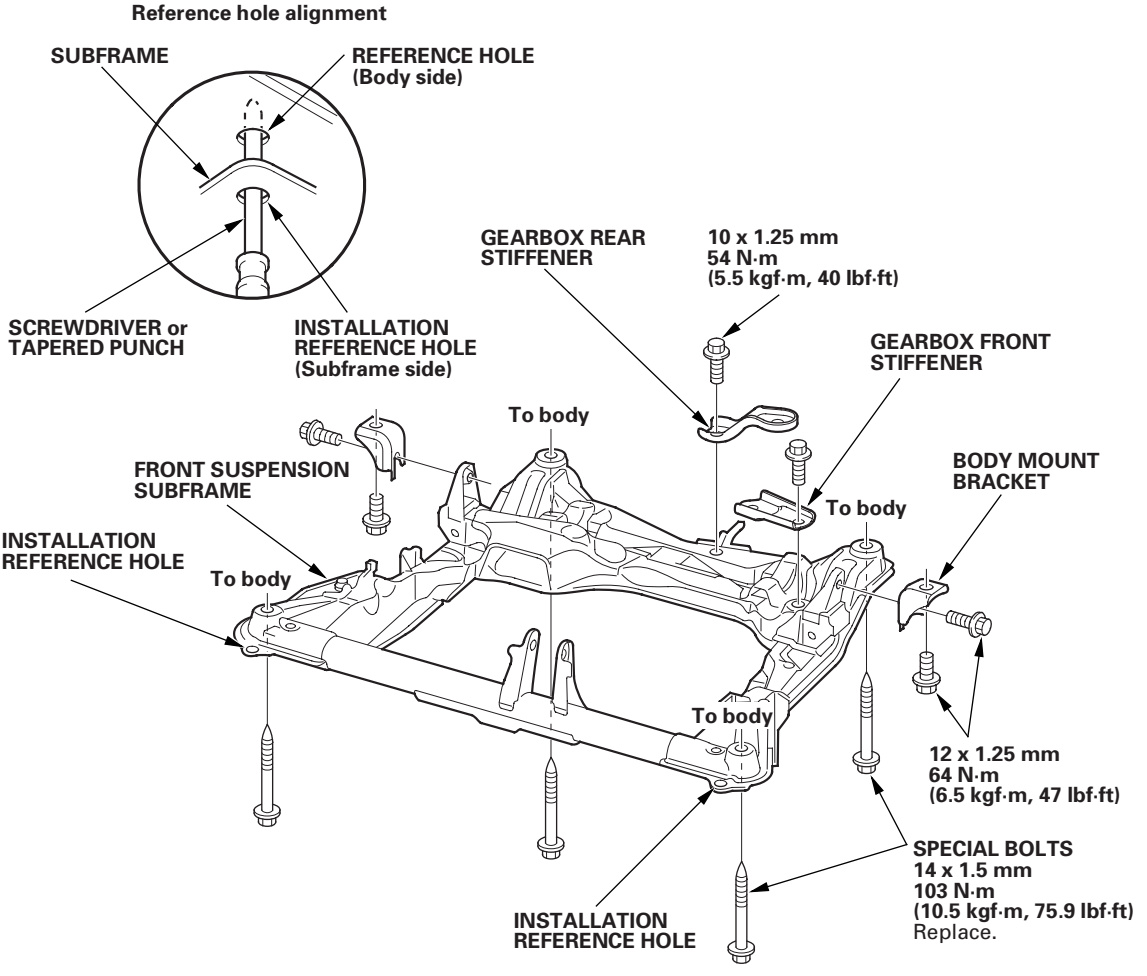


Subframe Replacement

Front Subframe Torque

NOTE:
- After loosening the subframe mounting bolts, be sure to replace them with new ones.
- When installing, align both installation reference holes in the subframe with both reference holes in the body using a screwdriver or tapered punch as a guide.

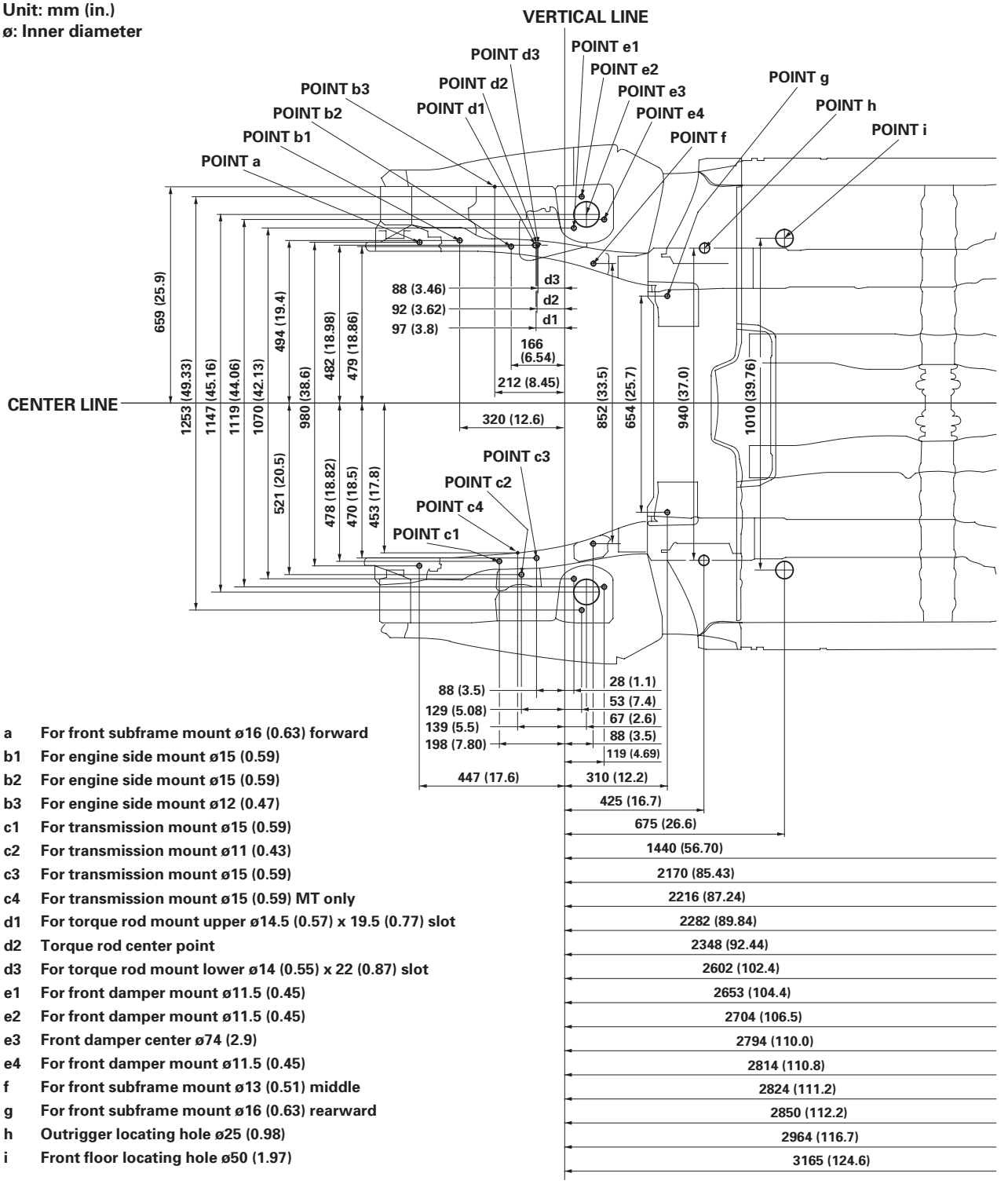




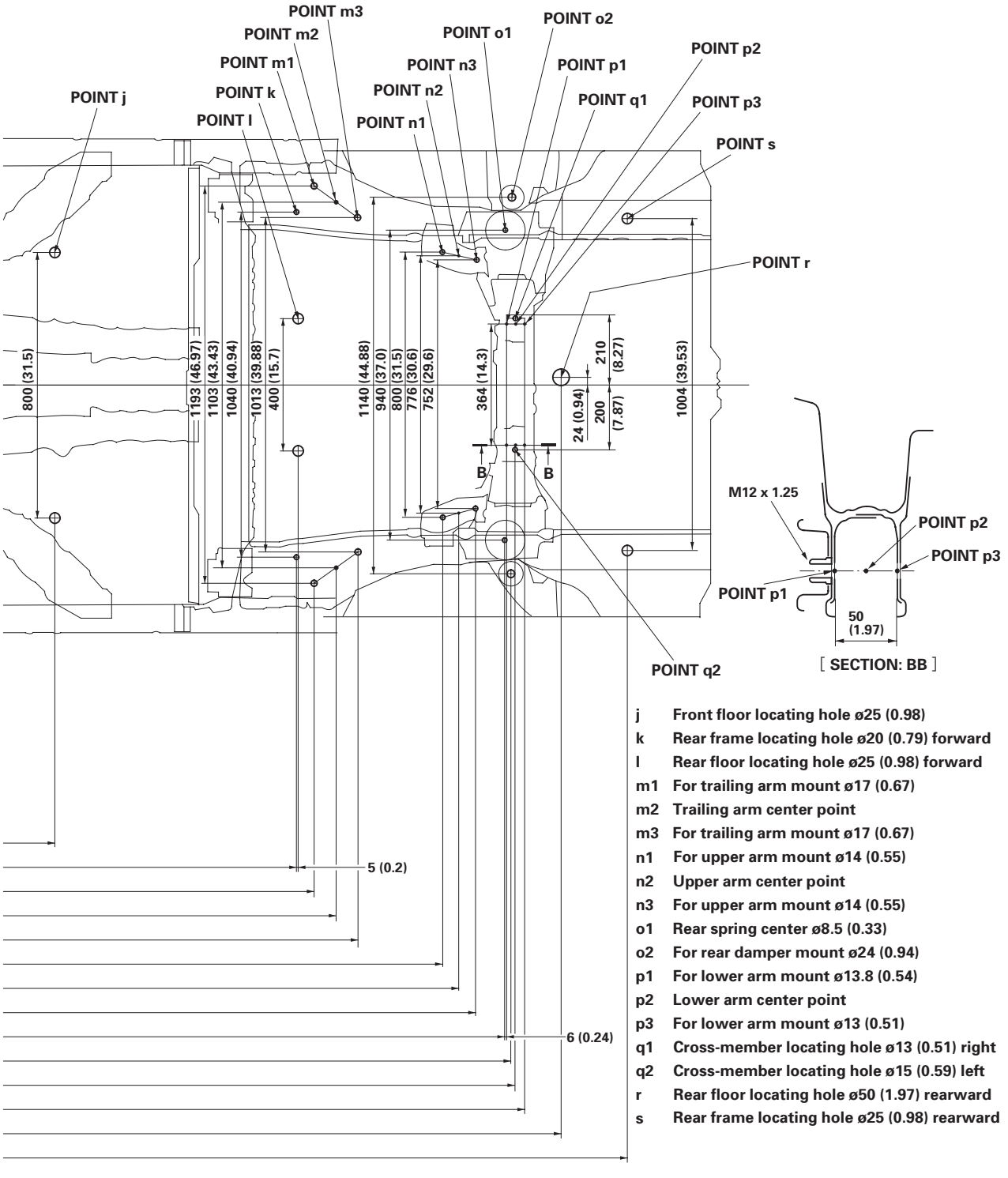
Frame Repair Chart

Top View

Unit: mm (in.)
ø: Inner diameter



a	For front subframe mount ø16 (0.63) forward
b1	For engine side mount ø15 (0.59)
b2	For engine side mount ø15 (0.59)
b3	For engine side mount ø12 (0.47)
c1	For transmission mount ø15 (0.59)
c2	For transmission mount ø11 (0.43)
c3	For transmission mount ø15 (0.59)
c4	For transmission mount ø15 (0.59) MT only
d1	For torque rod mount upper ø14.5 (0.57) x 19.5 (0.77) slot
d2	Torque rod center point
d3	For torque rod mount lower ø14 (0.55) x 22 (0.87) slot
e1	For front damper mount ø11.5 (0.45)
e2	For front damper mount ø11.5 (0.45)
e3	Front damper center ø74 (2.9)
e4	For front damper mount ø11.5 (0.45)
f	For front subframe mount ø13 (0.51) middle
g	For front subframe mount ø16 (0.63) rearward
h	Outrigger locating hole ø25 (0.98)
i	Front floor locating hole ø50 (1.97)



j	Front floor locating hole ø25 (0.98)
k	Rear frame locating hole ø20 (0.79) forward
l	Rear floor locating hole ø25 (0.98) forward
m1	For trailing arm mount ø17 (0.67)
m2	Trailing arm center point
m3	For trailing arm mount ø17 (0.67)
n1	For upper arm mount ø14 (0.55)
n2	Upper arm center point
n3	For upper arm mount ø14 (0.55)
o1	Rear spring center ø8.5 (0.33)
o2	For rear damper mount ø24 (0.94)
p1	For lower arm mount ø13.8 (0.54)
p2	Lower arm center point
p3	For lower arm mount ø13 (0.51)
q1	Cross-member locating hole ø13 (0.51) right
q2	Cross-member locating hole ø15 (0.59) left
r	Rear floor locating hole ø50 (1.97) rearward
s	Rear frame locating hole ø25 (0.98) rearward

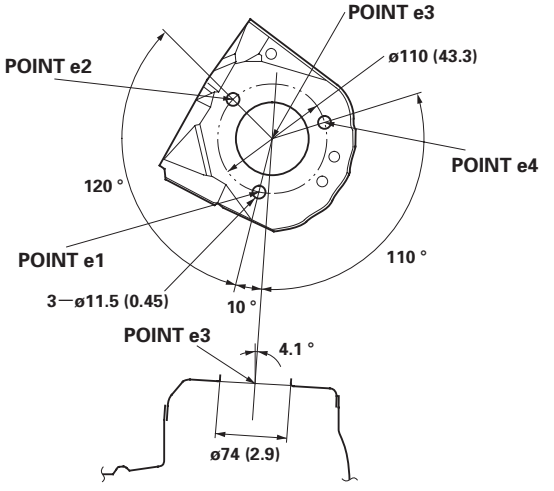
(cont'd)

Frame Repair Chart (cont'd)

Side View

Unit: mm (in.)
ø: Inner diameter

a	For front subframe mount ø16 (0.63) forward
b1	For engine side mount ø15 (0.59)
b2	For engine side mount ø15 (0.59)
b3	For engine side mount ø12 (0.47)
c1	For transmission mount ø15 (0.59)
c2	For transmission mount ø11 (0.43)
c3	For transmission mount ø15 (0.59)
c4	For transmission mount ø15 (0.59) MT only
d1	For torque rod mount upper ø14.5 (0.57) x 19.5 (0.77) slot
d2	Torque rod center point
d3	For torque rod mount lower ø14 (0.55) x 22 (0.87) slot
e1	For front damper mount ø11.5 (0.45)
e2	For front damper mount ø11.5 (0.45)
e3	Front damper center ø74 (2.9)
e4	For front damper mount ø11.5 (0.45)
f	For front subframe mount ø13 (0.51) middle
g	For front subframe mount ø16 (0.63) rearward
h	Outrigger locating hole ø25 (0.98)
i	Front floor locating hole ø50 (1.97)



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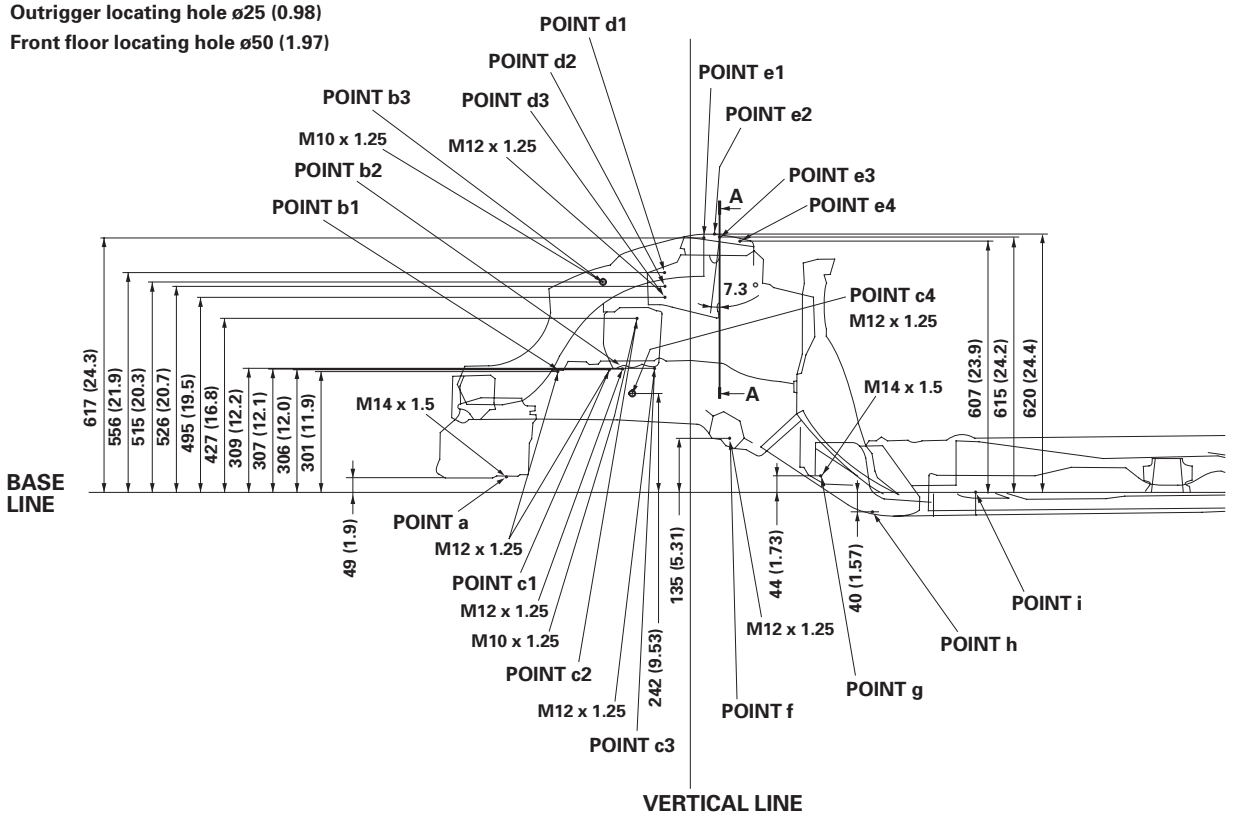
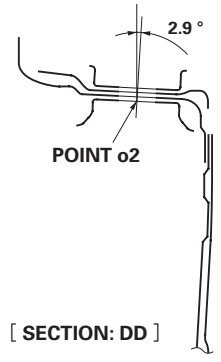
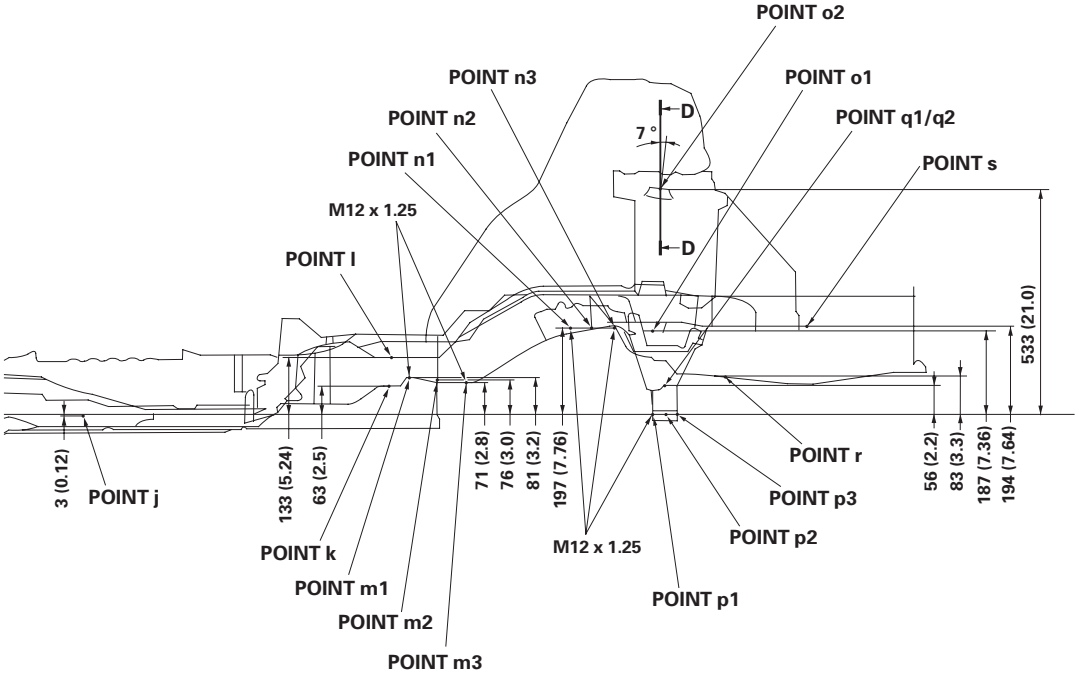




[SECTION: DD]

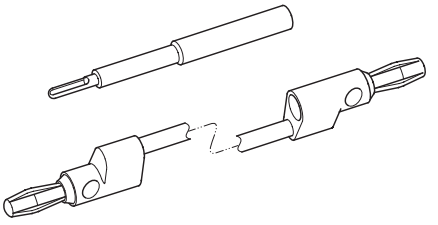
j	Front floor locating hole ø25 (0.98)
k	Rear frame locating hole ø20 (0.79) forward
l	Rear floor locating hole ø25 (0.98) forward
m1	For trailing arm mount ø17 (0.67)
m2	Trailing arm center point
m3	For trailing arm mount ø17 (0.67)
n1	For upper arm mount ø14 (0.55)
n2	Upper arm center point
n3	For upper arm mount ø14 (0.55)
o1	Rear spring center ø8.5 (0.33)
o2	For rear damper mount ø24 (0.94)
p1	For lower arm mount ø13.8 (0.54)
p2	Lower arm center point
p3	For lower arm mount ø13 (0.51)
q1	Cross-member locating hole ø13 (0.51) right
q2	Cross-member locating hole ø15 (0.59) left
r	Rear floor locating hole ø50 (1.97) rearward
s	Rear frame locating hole ø25 (0.98) rearward



HVAC (Heating, Ventilation, and Air Conditioning)

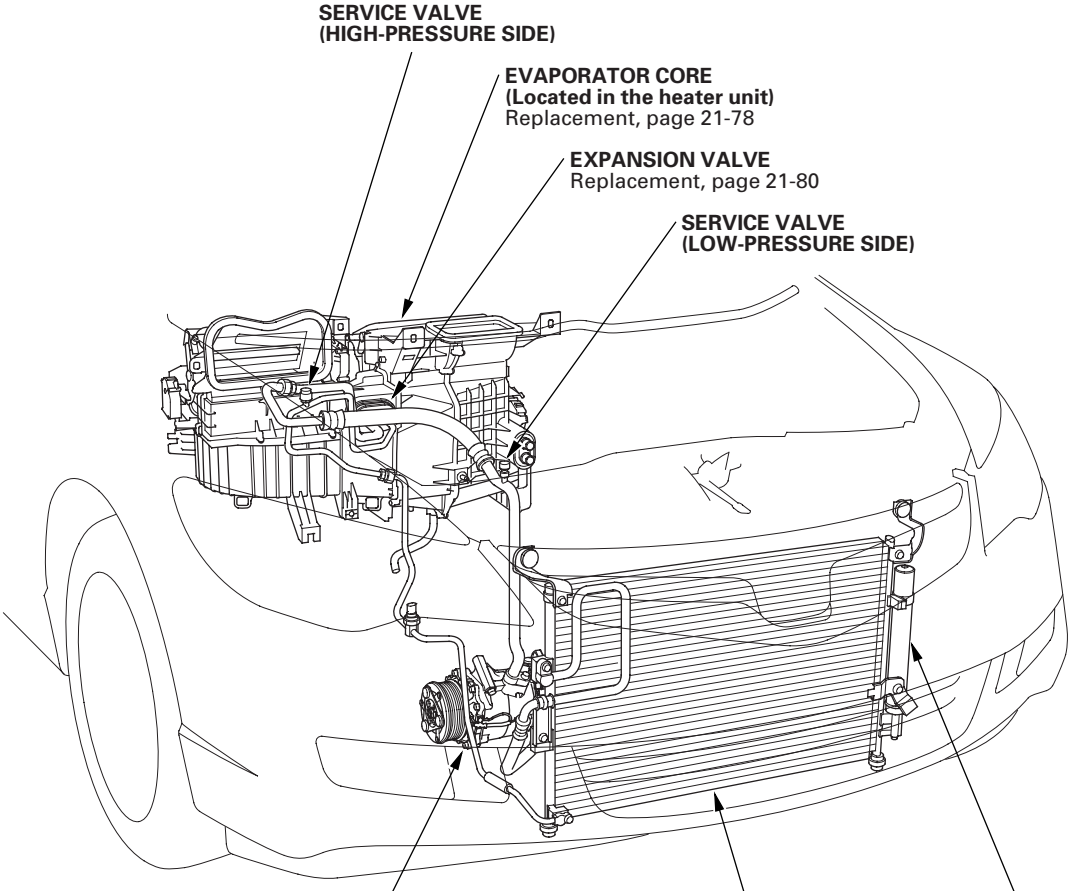
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2



①

Component Location Index



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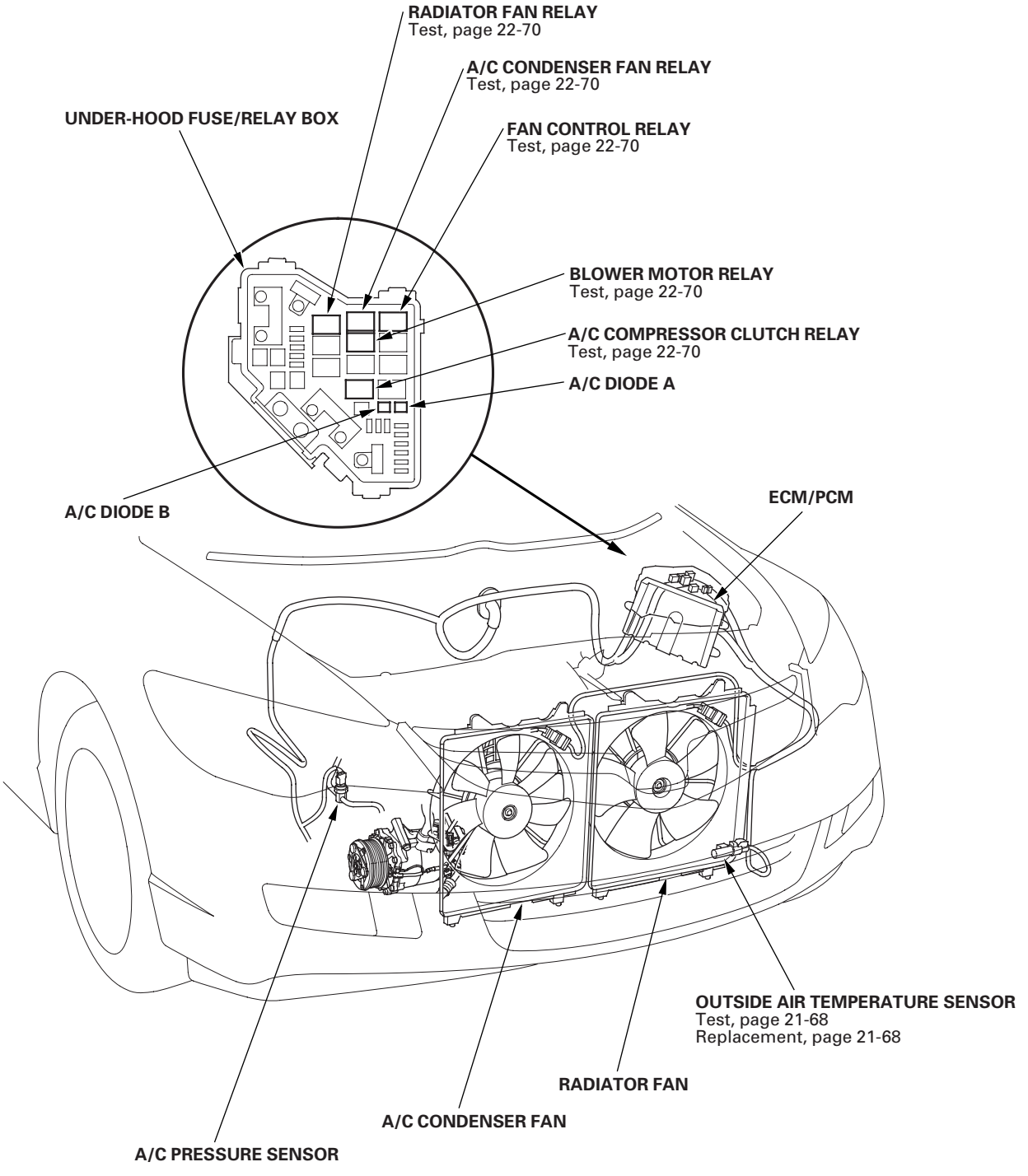
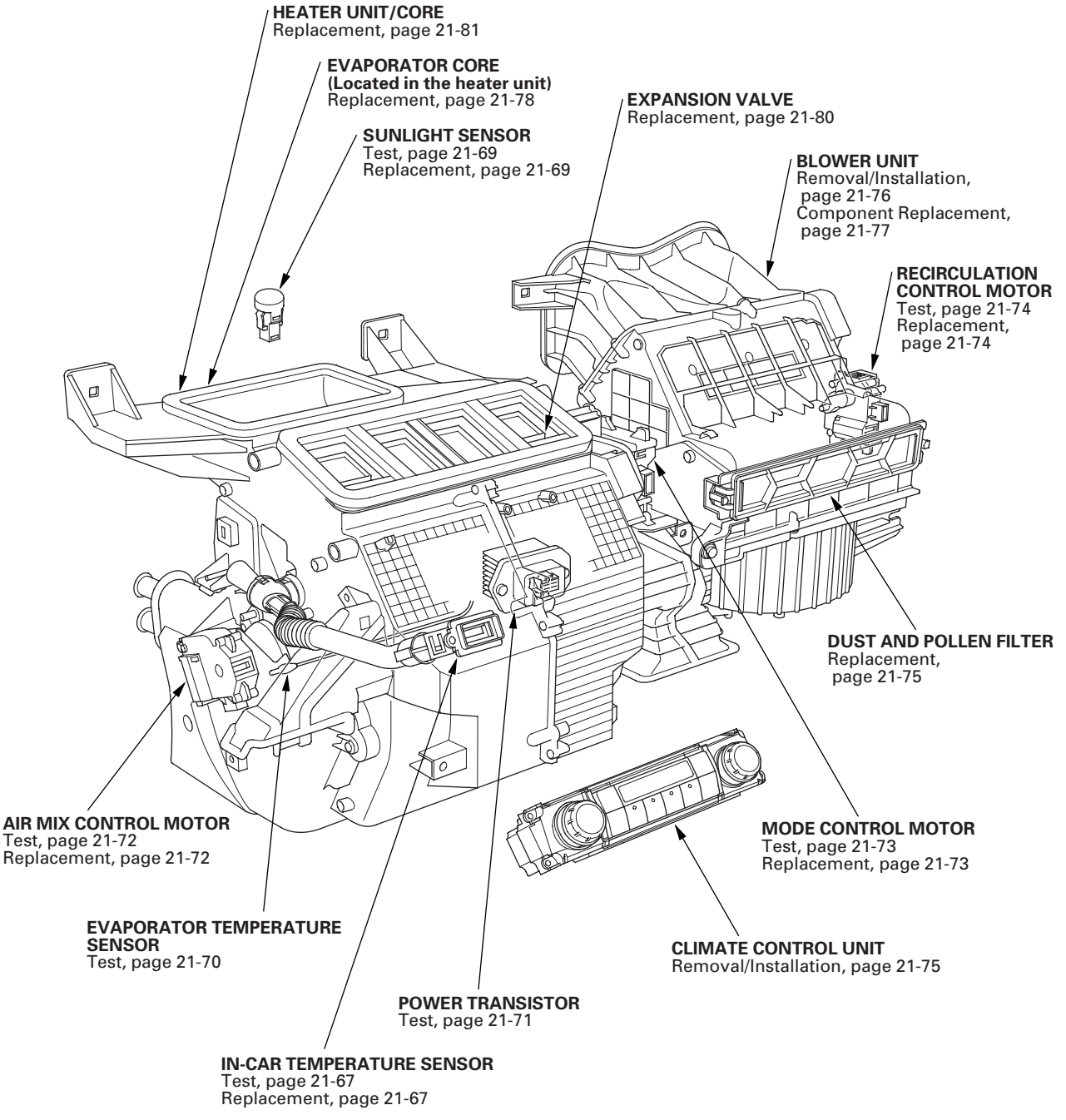
Component Location Index (cont'd)





A/C Service Tips and Precautions

⚠ WARNING

- Compressed air mixed with the R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant or mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result.
Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

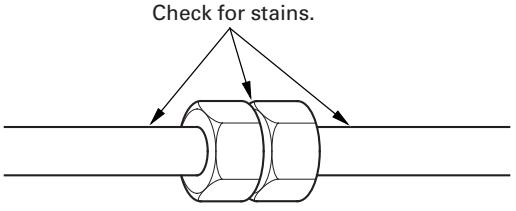
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use an R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C System Inspection

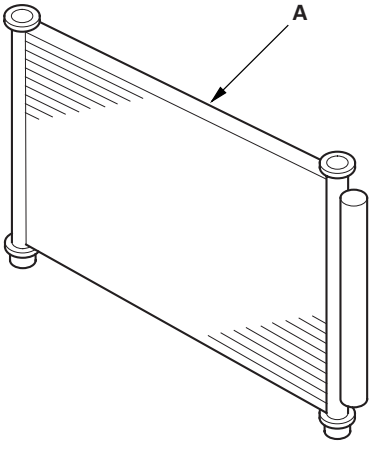
Before troubleshooting any problem with the air conditioning system, do the following:

1. With the ignition switch in LOCK (0), inspect the A/C components, the pressure lines, and the hoses for stains that may indicate a refrigerant or a compressor oil leak.



2. Check the A/C condenser (A) for material clogging the fins or for damage to the fins:

   - Carefully clean any material from the A/C condenser fins with water and detergent. If deeper cleaning is required, clean the fins with Honda brite cleaner (P/N 08732-0020B).
   - Be sure to dry the A/C condenser completely.
   - Refer to the Refrigerant Leak Check (see page 21-93) to confirm leaks if there is visible damage to the A/C condenser.



3. Inspect the drive belt (see page 4-30).

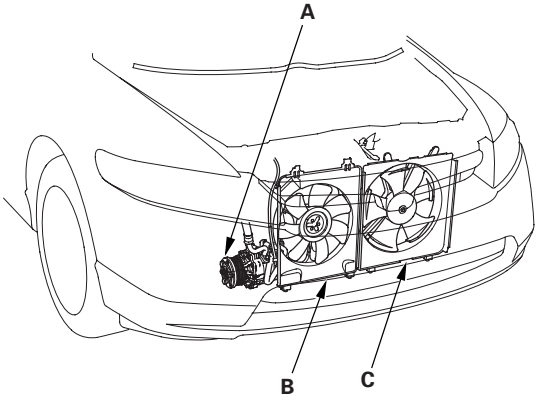
4. Make sure no material is blocking the air flow to the A/C condenser.

5. Check the dust and pollen filter. Replace it if it is clogged (see page 21-75).

6. Check for kinks or sharp bends in the A/C lines and hoses, which can greatly reduce system performance. Replace A/C lines and hoses if they are kinked or damaged (see page 21-8).

7. Start the engine, turn the air conditioning system on, and allow it to run for a few minutes and reach stable operation.

   - Check that the A/C operates at each position of the blower fan switch (except OFF). If the A/C does not operate, refer to the symptom troubleshooting.
   - Check that the A/C compressor clutch (A) is engaged. The pressure plate should be rotating at the same speed as the pulley. If the pressure plate does not engage, refer to the symptom troubleshooting.
   - Check that the A/C condenser fan (B) and radiator fan (C) operate when the A/C compressor clutch is engaged. If either fan fails to operate when the A/C compressor clutch is engaged, refer to the symptom troubleshooting.
   - Check that the engine idle speed is correctly maintained when the A/C is switched on and off and the A/C compressor clutch is engaged and disengaged.



A/C Refrigerant Oil Replacement

Recommended PAG oil: SP-10

P/N 38897-P13-A01AH: 120 mL (4 fl·oz)

It is important to have the correct amount of refrigerant oil in the A/C system to ensure proper lubrication of the compressor. Too little oil damages the compressor; too much oil reduces the cooling capacity of the system, and can produce high vent temperatures.

- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts:

A/C condenser .....50 mL (1 2/3 fl·oz)
Evaporator .....40 mL (1 1/3 fl·oz)
Line or hose .....10 mL (1/3 fl·oz)
Receiver/Dryer .....10 mL (1/3 fl·oz)
Leakage repair .....25 mL (5/6 fl·oz)
A/C compressor .....Since the oil separator is equipped inside the compressor for this vehicle, oil drainage is unnecessary at the time of compressor replacement.

3. Inspect the drive belt (see page 4-30).

4. Make sure no material is blocking the air flow to the A/C condenser.

5. Check the dust and pollen filter. Replace it if it is clogged (see page 21-75).

6. Check for kinks or sharp bends in the A/C lines and hoses, which can greatly reduce system performance. Replace A/C lines and hoses if they are kinked or damaged (see page 21-8).

7. Start the engine, turn the air conditioning system on, and allow it to run for a few minutes and reach stable operation.

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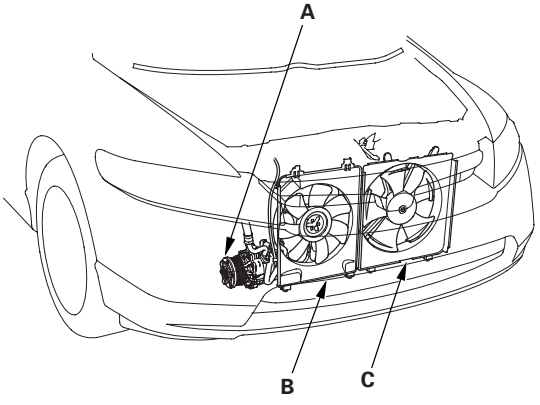

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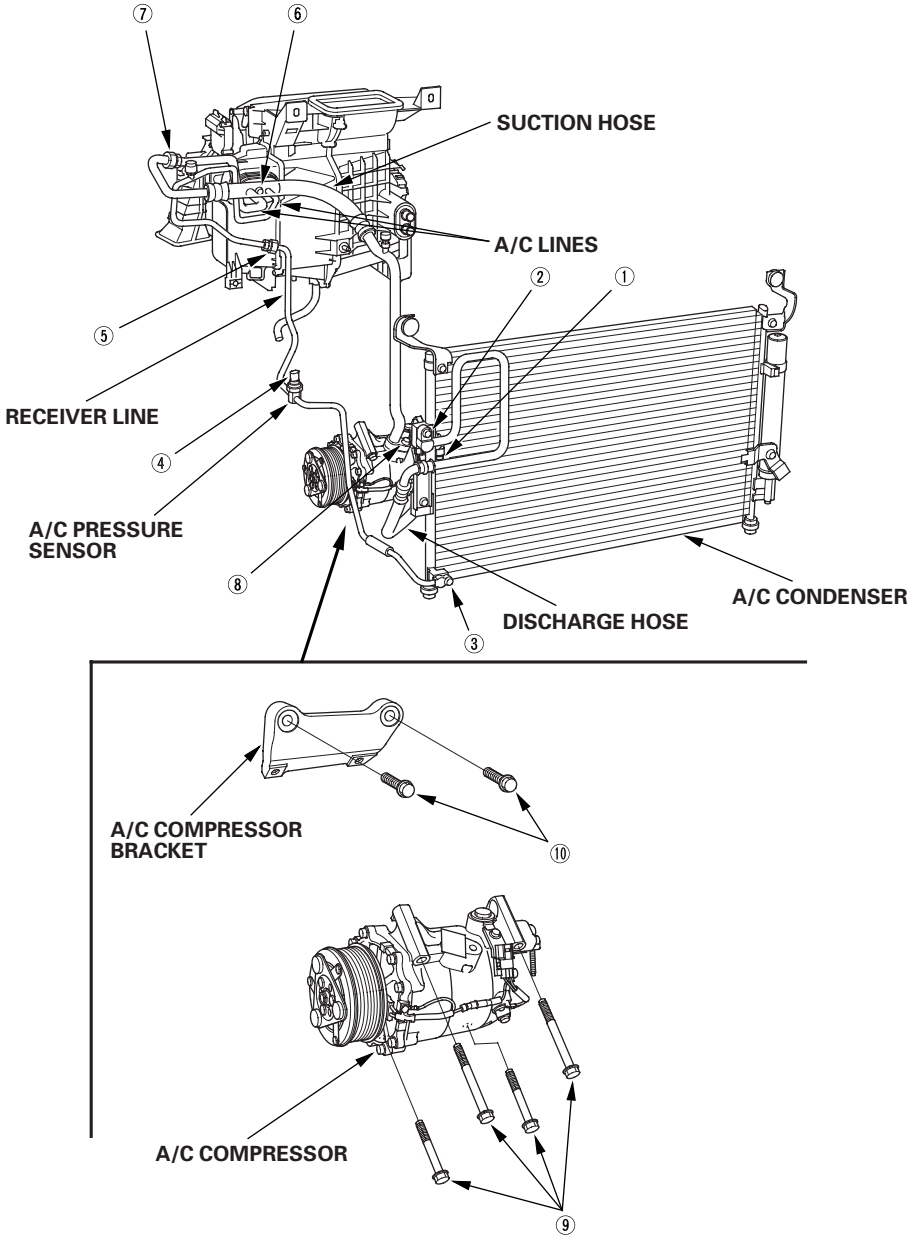
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts:

A/C condenser .....50 mL (1 2/3 fl·oz)
Evaporator .....40 mL (1 1/3 fl·oz)
Line or hose .....10 mL (1/3 fl·oz)
Receiver/Dryer .....10 mL (1/3 fl·oz)
Leakage repair .....25 mL (5/6 fl·oz)
A/C compressor .....Since the oil separator is equipped inside the compressor for this vehicle, oil drainage is unnecessary at the time of compressor replacement.

A/C Line Replacement

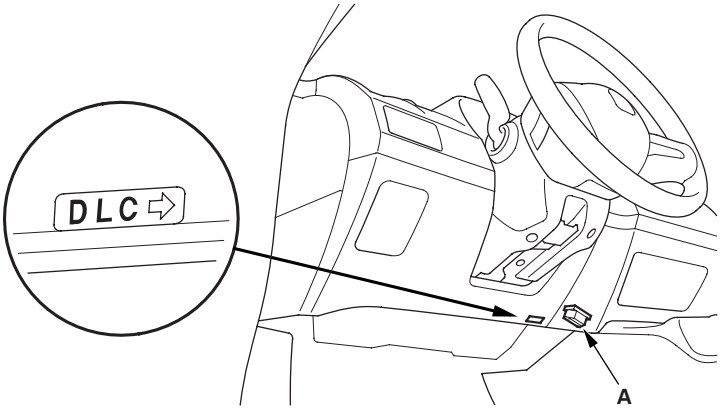


① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
④ A/C pressure sensor to the receiver line (11 x 1.0 mm): 11.3 N·m (1.2 kgf·m, 8.3 lbf·ft)
⑤ Receiver line to the A/C line (16 x 1.5 mm): 13.3 N·m (1.4 kgf·m, 9.8 lbf·ft)
⑥ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑦ A/C line to the suction hose (24 x 1.5 mm): 31.9 N·m (3.2 kgf·m, 23.5 lbf·ft)
⑧ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
⑨ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 22 N·m (2.2 kgf·m, 16 lbf·ft)
⑩ A/C compressor bracket to the engine block (8 x 1.25 mm): 24 N·m (2.4 kgf·m, 17.7 lbf·ft)

General Troubleshooting Information

How to Check for DTCs with the HDS

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the climate control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
5. Select HVAC/CLIMATE CONTROL in the BODY ELECTRICAL menu.
6. Select DTCs in the HVAC/CLIMATE CONTROL menu.
7. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting. If no DTCs are indicated, refer to symptom troubleshooting.

   NOTE:
   - After troubleshooting, clear the DTCs with the HDS.
   - For specific operations, refer to the user's manual that came with the HDS.

(cont'd)

General Troubleshooting Information (cont'd)

How to Use the Self-diagnostic Function with the HDS

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the climate control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
5. Select HVAC/CLIMATE CONTROL in the BODY ELECTRICAL menu.
6. Select INSPECTION in the HVAC/CLIMATE CONTROL menu.
7. Select CLIMATE CONTROL SELF TEST in the INSPECTION menu.
8. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting.

   NOTE:
   - After troubleshooting, clear the DTCs with the HDS.
   - For specific operations, refer to the user's manual that came with the HDS.

How to Use the Self-diagnostic Function without the HDS

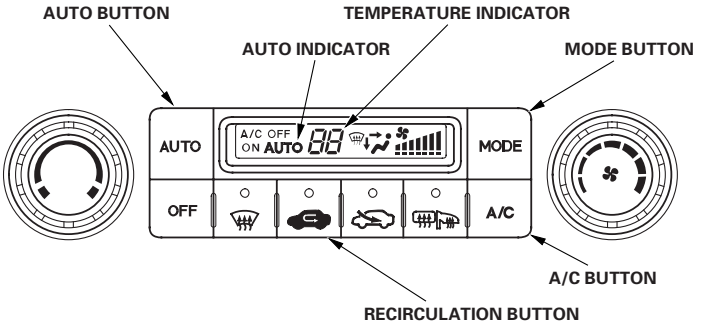
The climate control unit has a self-diagnostic function. To run the self-diagnostic function, do the following:

1. Make sure the ignition switch is in LOCK (0).
2. Press and hold the AUTO and RECIRCULATION buttons, turn the ignition switch to ON (II), then release the AUTO and RECIRCULATION buttons.
3. All LCD segments come on for 2 seconds, then self-diagnostic function begins.

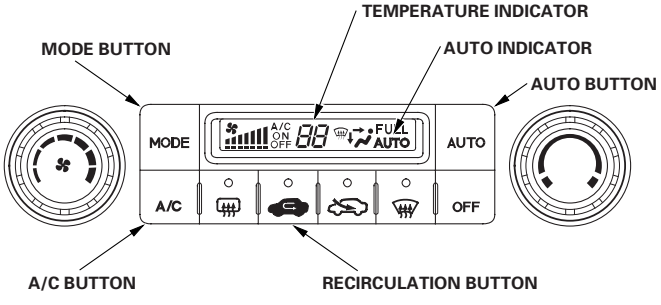
   NOTE: The blower motor will run at various speeds when in the self-diagnostic mode, regardless of what the panel is displaying.

   - If there is any problem in the system, the temperature indicator will light up the segment (A through P) and AUTO indicator corresponding to the error. The temperature indicator will then alternate every second between displaying ''88'' (all segments lit) and the error code segment (A through P) and AUTO indicator. To determine the meaning of the DTC, refer to checking for DTCs.
   - If there are no problems detected, the segments will not illuminate, and the system will appear to be turned off.

Except Type S model



Type S model



Canceling the Self-diagnostic Function

4. Turn the ignition switch to LOCK (0) to cancel the self-diagnostic function. After completing repair work, run the self-diagnostic function again to make sure that there are no other DTCs.

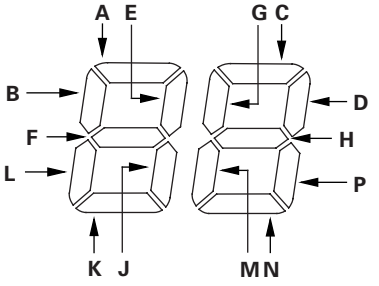
(cont'd)

General Troubleshooting Information (cont'd)

Checking for DTCs

The temperature display indicates single or multiple DTCs. If indicator segments A, C, E, G, J, M, and AUTO are on at the same time, there may be an open in the common ground wire. If no DTCs are present, the indicator remains blank.

TEMPERATURE INDICATOR



AUTO INDICATOR

AUTO

DTC (Temperature Indicator Segment and AUTO Indicator)	Detection Item
A	An open in the in-car temperature sensor circuit (see page 21-31)
B	A short in the in-car temperature sensor circuit (see page 21-32)
C	An open in the outside air temperature sensor circuit (see page 21-33)
D	A short in the outside air temperature sensor circuit (see page 21-34)
E	An open in the sunlight sensor circuit (see page 21-35)
F	A short in the sunlight sensor circuit (see page 21-36)
G	An open in the evaporator temperature sensor circuit (see page 21-37)
H	A short in the evaporator temperature sensor circuit (see page 21-39)
J	An open in the air mix control motor circuit (see page 21-40)
K	A short in the air mix control motor circuit (see page 21-41)
L	A problem in the air mix control linkage, door, or motor (see page 21-42)
M	An open or short in the mode control motor circuit (see page 21-44)
N	A problem in the mode control linkage, doors, or motor (see page 21-46)
P	A problem in the blower motor circuit (see page 21-47)
A and AUTO	An open in the recirculation control motor circuit (see page 21-52)
B and AUTO	A problem in the recirculation control linkage, door, or motor (see page 21-51)
C and AUTO	Climate control unit internal error (see page 21-28)
D and AUTO	Climate control unit lost communication with gauge control module (TACH) (ILLUMI message) (see page 21-28)
E and AUTO	A short in the recirculation control motor circuit (see page 21-29)
F and AUTO	Climate control unit lost communication with gauge control module (TACH) (ECT message) (see page 21-28)
J and AUTO	Climate control unit lost communication with gauge control module (TACH) (VSP message) (see page 21-28)
K and AUTO	Communication bus line error (see page 22-106)
L and AUTO	Climate control unit lost communication with gauge control module (TACH) (NE message) (see page 21-28)

Displaying Sensor Inputs at the Climate Control Unit

The climate control unit has a mode that displays the sensor inputs it receives. This mode shows you what data the climate control unit is receiving from each of the sensors, one at a time, and it can help you determine if a sensor is faulty.

Check these items before using the sensor input display mode

1. Turn the ignition switch to ON (II), and check the recirculation door function; press the recirculation button to switch from FRESH to RECIRC. The air volume and sound should change slightly.

2. Set the temperature control knob to the desired test temperature. When selecting the test temperature, note these items:

   - ''Lo'' temperature setting will default to MAX COOL, VENT, and RECIRC.
   - ''Hi'' temperature setting will default to MAX HOT, FLOOR, and FRESH.
   - 19 through 31 ℃ settings will use the automatic climate control logic.

3. Turn the ignition switch to LOCK (0).

To run the sensor input display mode, follow these steps

1. Turn the ignition switch to LOCK (0).

2. Press and hold both the AUTO and MODE buttons, then start the engine.

3. After the engine starts, release both buttons. The display panel will flash the sensor number and then the value for that sensor. Record the value displayed.

4. To advance to the next sensor, press the A/C button.

Sensor	Item	Displayed Value
1	Mode Positioning	BIT
2	In-car Temperature	℃
3	Outside Air Temperature	℃
4	Solar Radiation Sensor Value: Dark = 00, Flashlight = 04, Cloudy = 10, Sunny = 65	10 kcal/m^2·h
5	Evaporator Outlet Air Temperature	℃
6	Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
7	Recirculation Opening	% of opening
8	Vehicle Speed (Vehicle must be driven to display speed)	km/h
9	Engine Coolant Temperature	℃
A	Vent Temperature Air Out (TAO)	℃

NOTE:
- The sensor values will be displayed in degrees Celsius (℃) or an alphanumeric code. Use the chart to convert the value to degrees Fahrenheit (℉).
- If the sensor value displays ''Er'' this indicates there is an open or short in the circuit or sensor. Check for DTCs using the HDS, or use the climate control self-diagnostic function.
- If necessary, compare the sensor input display to a known-good vehicle under the same test conditions.
- If the sensor is out of the normal range, refer to the sensor test or substitute a known-good sensor, and recheck.

5. To cancel the sensor input display mode, press the AUTO button or turn the ignition switch to LOCK (0).

(cont'd)

General Troubleshooting Information (cont'd)

Celsius to Fahrenheit Conversion Table

℃	℉	℃	℉	℃	℉	℃	℉	℃	℉
0	32	10	50	20	68	30	86	40	104
1	34	11	52	21	70	31	88	41	106
2	36	12	54	22	72	32	90	42	108
3	37	13	55	23	73	33	91	43	109
4	39	14	57	24	75	34	93	44	111
5	41	15	59	25	77	35	95	45	113
6	43	16	61	26	79	36	97	46	115
7	45	17	63	27	81	37	99	47	117
8	46	18	64	28	82	38	100	48	118
9	48	19	66	29	84	39	102	49	120

℃	℉	℃	℉	℃	℉	℃	℉	℃	℉
50	122	60	140	70	158	80	176	90	194
51	124	61	142	71	160	81	178	91	196
52	126	62	144	72	162	82	180	92	198
53	127	63	145	73	163	83	181	93	199
54	128	64	147	74	165	84	183	94	201
55	131	65	149	75	167	85	185	95	203
56	133	66	151	76	169	86	187	96	205
57	135	67	152	77	170	87	188	97	207
58	136	68	154	78	172	88	190	98	208
59	139	69	158	79	174	89	192	99	210

Alphanumeric Conversion Table

Display Reading (Alphanumeric)	℃	℉	%
A1 thru A9	−1 thru −9	30 thru 16	−1 thru −9
B0 thru B9	−10 thru −19	14 thru −2	−10 thru −19
C0 thru C9	−20 thru −29	−4 thru −20	−20 thru −29
D0 thru D9	−30 thru −39	−22 thru −38	−30 thru −39
E0 thru E9	−40 thru −49	−40 thru −58	−40 thru −49
F0 thru F9	———	———	+100 thru +109

Alphanumeric Conversion Table (Mode Positioning)

Display Reading (Alphanumeric)	Mode Position
2	OVER VENT
A	VENT
8	VENT-HEAT/VENT
c	HEAT/VENT
d	HEAT/VENT-HEAT
9	HEAT
b	HEAT-HEAT/DEF
3	HEAT/DEF
7	HEAT/DEF-DEF
6	DEF
E	OVER DEF

DTC Troubleshooting Index

Checking the DTCs by HDS

DTC	Detection Item or Symptom	ECU	DTC type	Page
B1200	Communication bus line error	Climate control unit	Loss of communication	(see page 22-107)
B1202	Climate control unit internal error	Climate control unit	Internal error	(see page 21-28)
B1205	Climate control unit lost communication with gauge control module (TACH) (VSP/NE message)	Climate control unit	Loss of communication	(see page 21-28)
B1206	Climate control unit lost communication with gauge control module (TACH) (ECT message)	Climate control unit	Loss of communication	(see page 21-28)
B1207	Climate control unit lost communication with gauge control module (TACH) (ILLUMI message)	Climate control unit	Loss of communication	(see page 21-28)
B1220	A short in the recirculation control motor circuit	Climate control unit	Signal error	(see page 21-29)
B1225	An open in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-31)
B1226	A short in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-32)
B1227	An open in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-33)
B1228	A short in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-34)
B1229	An open in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-35)
B1230	A short in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-36)
B1231	An open in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-37)
B1232	A short in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-39)
B1233	An open in the air mix control motor circuit	Climate control unit	Signal error	(see page 21-40)
B1234	A short in the air mix control motor circuit	Climate control unit	Signal error	(see page 21-41)
B1235	A problem in the air mix control linkage, door, or motor	Climate control unit	Signal error	(see page 21-42)
B1239	An open or short in the mode control motor circuit	Climate control unit	Signal error	(see page 21-44)
B1240	A problem in the mode control linkage, doors, or motor	Climate control unit	Signal error	(see page 21-46)
B1241	A problem in the blower motor circuit	Climate control unit	Signal error	(see page 21-47)
B2983	A problem in the recirculation control motor linkage, door, or motor	Climate control unit	Signal error	(see page 21-51)
B2986	An open in the recirculation control motor circuit	Climate control unit	Signal error	(see page 21-52)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
The blower and heater controls and the A/C system do not work	• Probable cause: Climate control unit malfunction • Do the climate control power and ground circuit troubleshooting (see page 21-53)	• HVAC DTCs (see page 21-9) • Blown fuse No. 36 (10 A) in the driver's under-dash fuse/relay box • Poor ground at G504 (see page 22-30) • Poor or loose connections at the terminals
The A/C compressor clutch and the A/C condenser/radiator fans are inoperative, but the blower and heater controls work	• Probable cause: A/C pressure sensor circuit malfunction • Troubleshoot the pressure sensor circuit: – A/C pressure sensor circuit low voltage (see page 11-301) – A/C pressure sensor circuit high voltage (see page 11-303) NOTE: The A/C pressure sensor can malfunction without setting a DTC	• HVAC DTCs (see page 21-9) • Powertrain DTCs (see page 11-3) • A/C signal circuit troubleshooting (see page 21-64) • Poor or loose connections at the terminals
The A/C compressor clutch does not engage, but the A/C condenser/radiator fans operate, and the blower and heater controls work	• Probable cause: No power to the A/C compressor clutch • Do the A/C compressor clutch circuit troubleshooting (see page 21-62)	• HVAC DTCs (see page 21-9) • Blown fuse No. 20 (7.5 A) in the under-hood fuse/relay box • A/C system pressure is normal (see page 21-21) • A/C thermal protector has continuity (see step 4 on page 21-85) • Poor or loose connections at the terminals
The A/C condenser fan and/or the radiator fan do not run with the A/C on	• Probable cause: Condenser/radiator fan low speed circuit malfunction • Do the radiator and A/C condenser fan low speed circuit troubleshooting (see page 21-56)	• HVAC DTCs (see page 21-9) • Powertrain DTCs (see page 11-3) • Blown fuse No. 7 (20 A) in the under-hood fuse/relay box • Poor ground at G301 (see page 22-22) • Poor or loose connections at the terminals
The condenser/radiator fans do not run at high speed, but do run at low speed	• Probable cause: Malfunction in the fan(s) high speed circuit • Do the following troubleshooting as needed: – A/C condenser fan high speed circuit troubleshooting (see page 21-60) – Radiator fan high speed circuit troubleshooting (see page 10-26)	• HVAC DTCs (see page 21-9) • Powertarin DTCs (see page 11-3) • Blown fuse No. 6 (20 A) and/or No.7 (20 A) in the under-hood fuse/relay box • Poor ground at G301 (see page 22-22) • Poor or loose connections at the terminals
Voice commands do not work	• Probable cause: Communication problem between the climate control unit and the navigation system • Do the navigation communication line circuit troubleshooting (see page 21-54)	• HVAC DTCs (see page 21-9) • Navi system link (see page 23-135) • Poor or loose connections at the terminals

Symptom	Diagnostic procedure	Also check for
Blower fan runs slower than expected in cold weather (when in AUTO mode) NOTE: It is normal for the blower fan to run slowly until the coolant temperature rises when in AUTO mode	• Probable cause: Engine coolant temperature (ECT) circuit malfunction • Troubleshooting the ECT sensor circuit: – ECT sensor 2 circuit low voltage (see page 11-170) – ECT sensor 2 circuit high voltage (see page 11-172)	• HVAC DTCs (see page 21-9) • Powertrain DTCs (see page 11-3) • Blower motor operation
The A/C compressor clutch cycles rapidly on and off	• Probable cause: A/C system is very low on refrigerant, indicating a possible leak • Do the refrigerant leak check (see page 21-93) and repair any leaks. Replace the receiver/dryer (see page 21-89), then recharge the system to specifications (see page 21-92)	• HVAC DTCs (see page 21-9) • If there is no leak and the refrigerant level is normal, do the A/C compressor clutch circuit troubleshooting (see page 21-62), and look for an intermittent problem
Warm air comes out of the vents, and the high pressure liquid line is very hot	• Probable causes: The A/C system is overcharged (too much refrigerant), or the condenser is malfunctioning • Recover A/C refrigerant (see page 21-90), then check the condenser for restrictions or poor airflow. Repair as needed. Recharge the system to specifications (see page 21-92)	• Incorrect tension or abnormal wear on the drive belt. Replace the belt and/or the belt tensioner as needed • Proper operation of the condenser/radiator fans. Repair as needed • Signs of an overheated engine. Repair as needed
Warm air comes out of the vents. The suction line is cool to warm, and the discharge line is warm to hot	• Probable cause: A/C system is low on refrigerant, indicating a possible leak • Do the refrigerant leak check (see page 21-93) and repair any leaks. Recharge the system to specifications (see page 21-92)	• HVAC DTCs (see page 21-9) • Add refrigerant oil depending on the part you replaced (see page 21-7)
Warm air comes out of the vents. The suction line is cool to warm, the discharge line is warm to hot, and there is no frost on the expansion valve	• Probable cause: Excessive air and/or moisture in the system, indicating a possible leak • Do the refrigerant leak check (see page 21-93) and repair any leaks. Replace the receiver/dryer (see page 21-89), then recharge the system to specifications (see page 21-92)	• HVAC DTCs (see page 21-9) • Check the amount of refrigerant oil in the system. Adjust the oil level as needed
Warm air comes out of the vents. The liquid line or the condenser outlet is abnormally cool, or there is frost or condensation on the receiver/dryer	• Probable cause: A restriction in the high-pressure side of the system • Recover A/C refrigerant (see page 21-90), then check the liquid line, the receiver/dryer, and the condenser for restrictions. Repair as needed. Recharge the system to specifications (see page 21-92)	HVAC DTCs (see page 21-9)
There is heavy frost or condensation on the expansion valve, and frost on the suction line	• Probable cause: A restriction in the low-pressure side of the system • Recover A/C refrigerant (see page 21-90), then check the suction line and the expansion valve for restrictions. Repair as needed. Recharge the system to specifications (see page 21-92)	HVAC DTCs (see page 21-9)

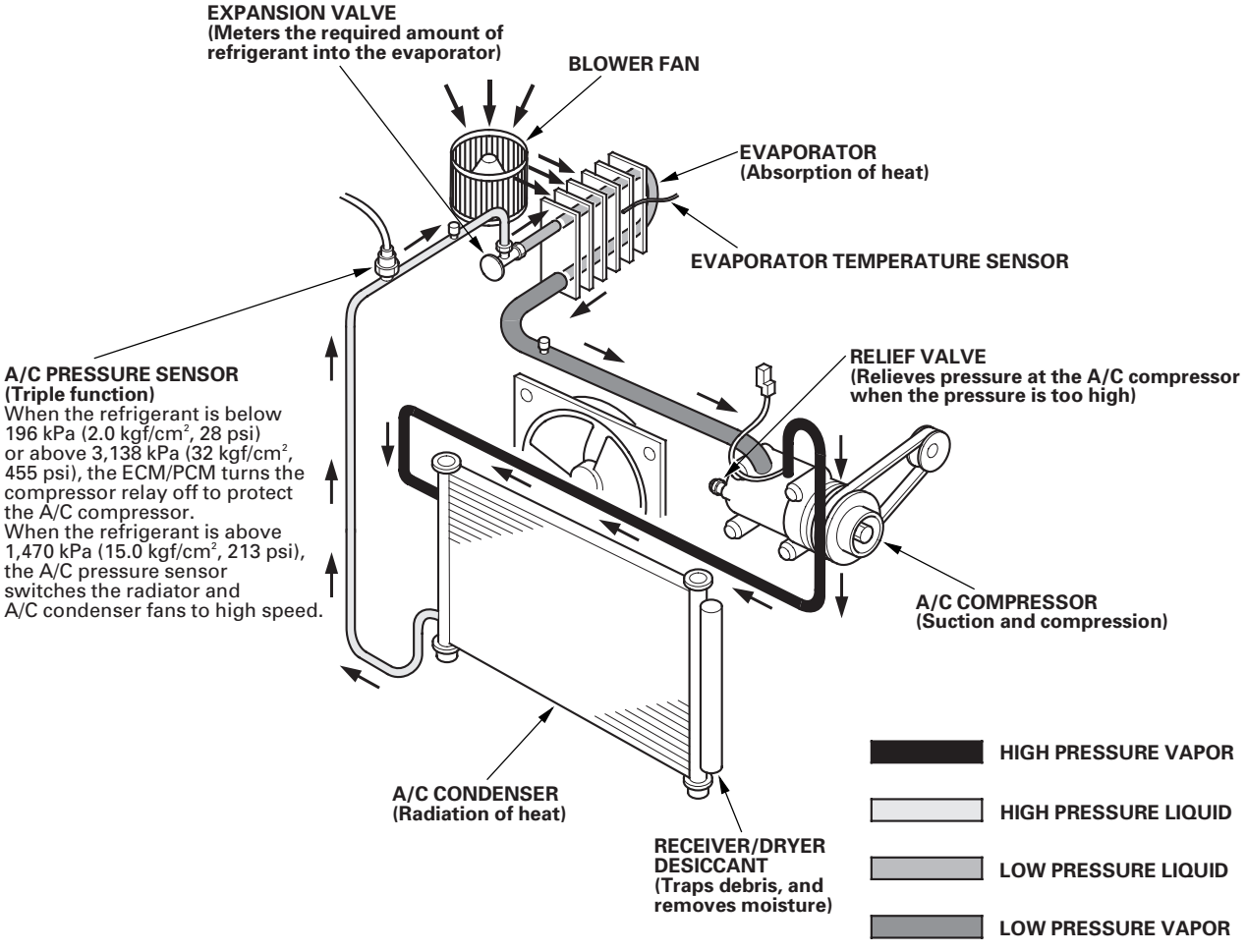
(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Warm air comes out of the vents, and there is frost on the expansion valve	• Probable cause: The expansion valve is stuck closed • Replace the expansion valve (see page 21-80)	• HVAC DTCs (see page 21-9) • Check the old expansion valve for contamination. If contaminants are found, replace the A/C system component that caused the contamination
The temperature of the liquid line is the same on both sides of the expansion valve, and the evaporator coil or suction line has heavy condensation	• Probable cause: The expansion valve is stuck open • Replace the expansion valve (see page 21-80)	• HVAC DTCs (see page 21-9) • Check the old expansion valve for contamination. If contaminants are found, replace the A/C system component that caused the contamination
Warm air comes out of the vents, but operation is normal otherwise	• Probable cause: Compressor failure • Do the A/C system test (see page 21-99), and correct any problems. If necessary, replace the compressor (see page 21-83)	• HVAC DTCs (see page 21-9) • Add refrigerant oil depending on the part you replaced (see page 21-7)
Driver's and passenger's side vent temperatures vary by more than 11 ℃ (20 ℉)	• Probable causes: The recirculation control door or the air mix door is malfunctioning • Do the following troubleshooting: – Recirculation control motor test (see page 21-74) – Air mix control motor test (see page 21-72)	• HVAC DTCs (see page 21-9) • Poor or loose connections at the terminals
Insufficient heating	1. Check the coolant level (see page 10-7) 2. Check the radiator cap (see page 10-4) 3. Check the coolant temperature during normal operation 4. Check the heater core inlet hose temperature: • If it is COLD, check for restrictions in the hose, a damaged or leaking thermostat, or a damaged or leaking water pump • If it is HOT, check for restrictions in the heater core. Back flush or replace the heater core 5. Do the air mix control motor test (see page 21-72) 6. Check the blower motor unit for obstructions 7. Check for air leaks around the ducts and vents	• HVAC DTCs (see page 21-9) • Damaged cylinder head gasket

System Description

The air conditioning (A/C) system removes heat from the passenger compartment by transferring heat from the ambient air to the evaporator. The A/C system refrigerant expands in the evaporator, and the evaporator becomes very cold and absorbs the heat from the ambient air. The blower fan pushes air across the evaporator where the heat is absorbed, and then it blows the cool air into the passenger compartment.



This vehicle uses HFC-134a (R-134a) refrigerant, which does not contain chlorofluorocarbons. Pay attention to the following service items:

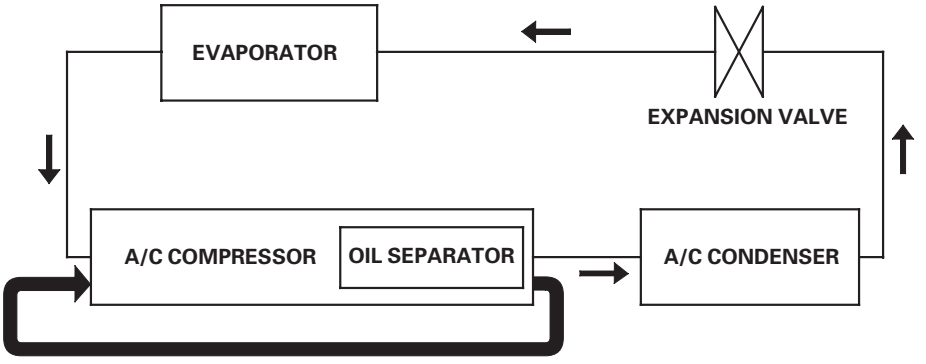
- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (SP-10) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

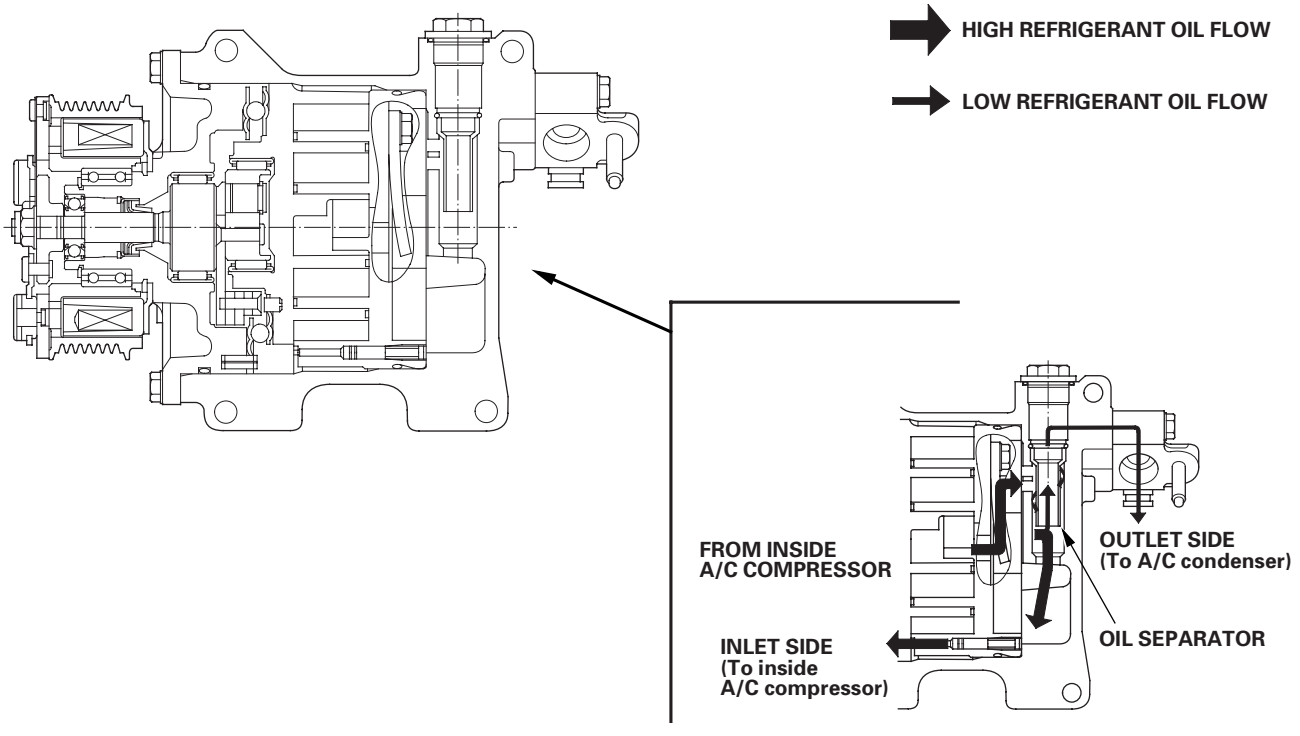
(cont'd)

System Description (cont'd)

Oil Separator

Oil emission from the A/C compressor to the A/C line is reduced by placing the oil separator in the A/C compressor. This results in a thinner oil film inside of the heat exchangers (A/C condenser and evaporator). Air conditioning efficiency is increased without sacrificing engine performance.





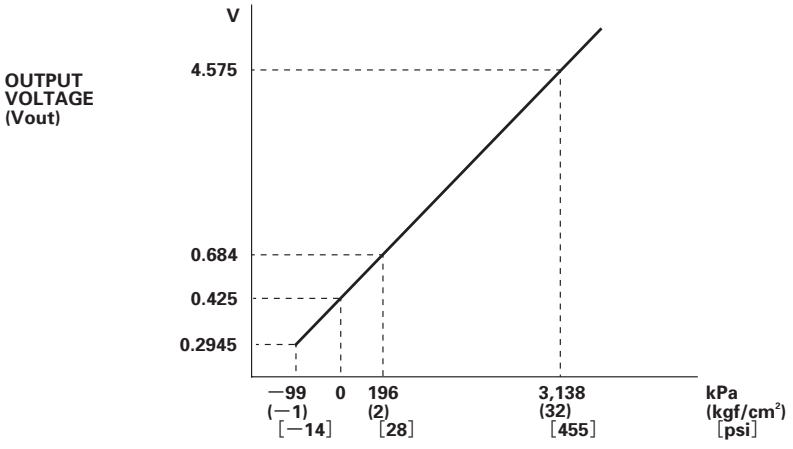
A/C Pressure Sensor

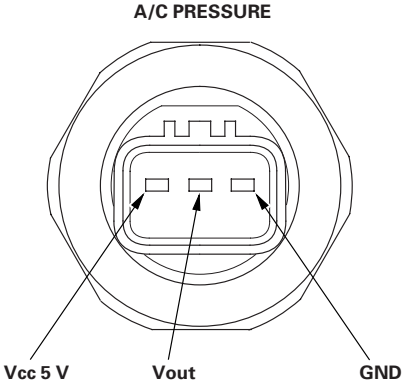
The A/C pressure sensor converts A/C pressure into electrical signals to the ECM/PCM.

A/C System Pressure *	Sensor Output Voltage (V out)	System Operation
Abnormally low pressure: Below 196 kPa (2.0 kgf/cm^2, 28 psi)	Below 0.685 V	The ECM/PCM disengages the compressor clutch. The radiator and condenser fans operate based on engine coolant temperature.
Normal operating pressure: • Above 196 kPa (2.0 kgf/cm^2, 28 psi) • Below 1,470 kPa (15.0 kgf/cm^2, 213 psi)	0.686 V to 1.944 V	The ECM/PCM cycles the compressor clutch based on cooling demand. The radiator and condenser fans operate at low speed unless the engine coolant temperature exceeds 206 ℉.
High operating pressure: • Above 1,470 kPa (15.0 kgf/cm^2, 213 psi) • Below 3,138 kPa (32 kgf/cm^2, 455 psi)	1.945 V to 4.575 V	The ECM/PCM cycles the compressor clutch based on cooling demand. The radiator and condenser fans operate at high speed.
Abnormally high pressure: More than 3,138 kPa (32 kgf/cm^2, 455 psi)	Above 4.575 V	The ECM/PCM disengages the compressor clutch. The radiator and condenser fans operate based on engine coolant temperature.

* : The A/C system pressure can be monitored in the HDS PGM-FI Data List.

The response of the A/C pressure sensor is shown in the graph.

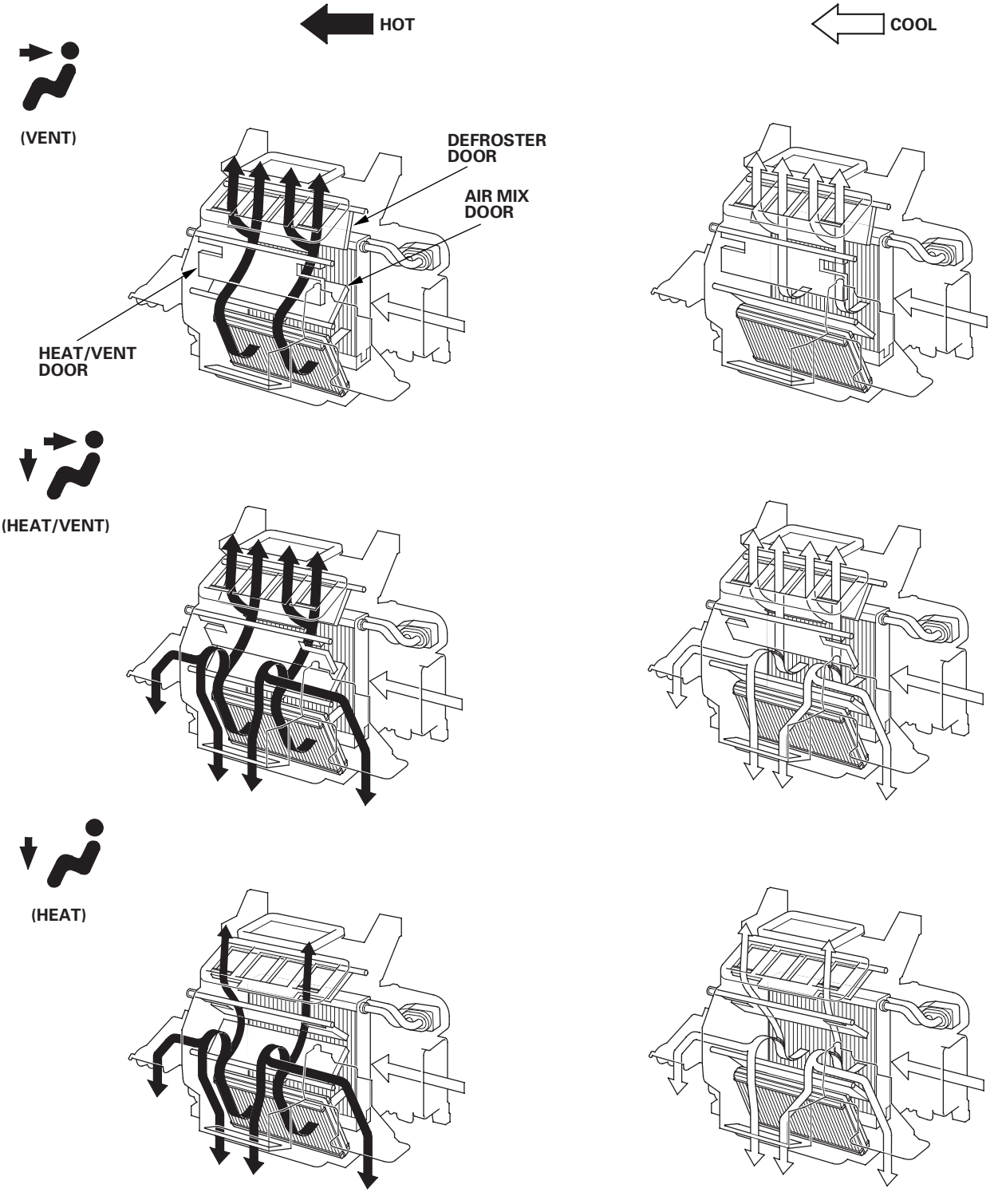




(cont'd)

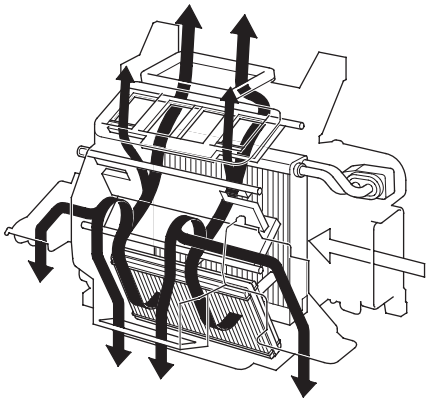
System Description (cont'd)

Climate Control Door Positions

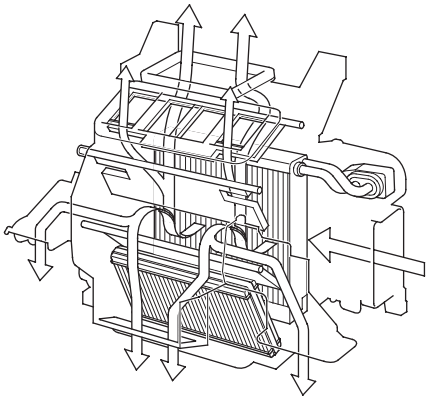


(HEAT/DEF)

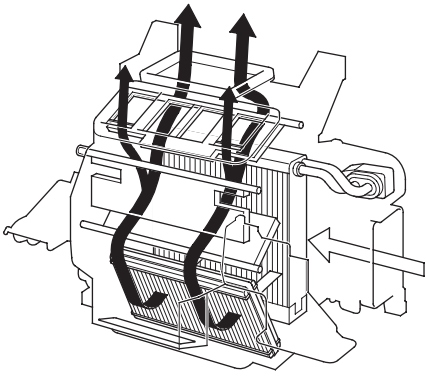
HOT

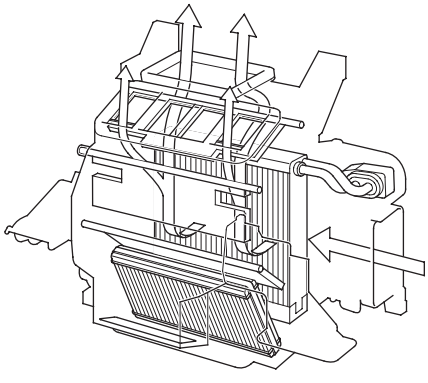


COOL



(DEF)



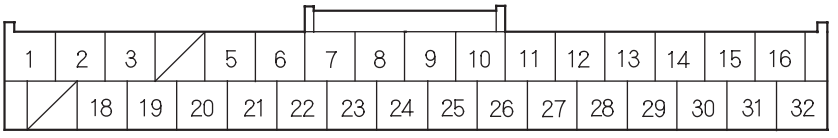


(cont'd)

System Description (cont'd)

Climate Control Unit Inputs and Outputs

CLIMATE CONTROL UNIT 32P CONNECTOR



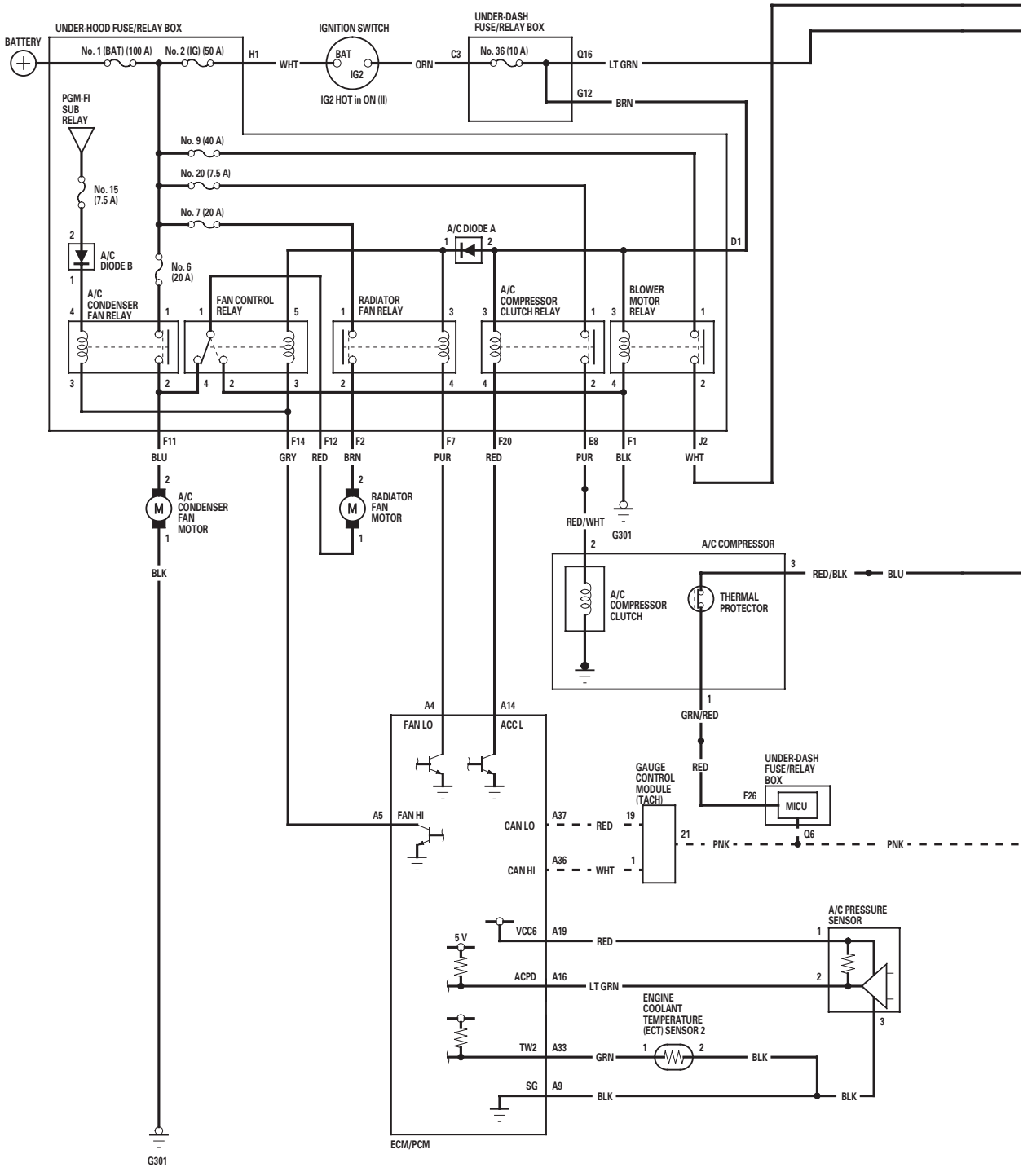
Wire side of female terminals

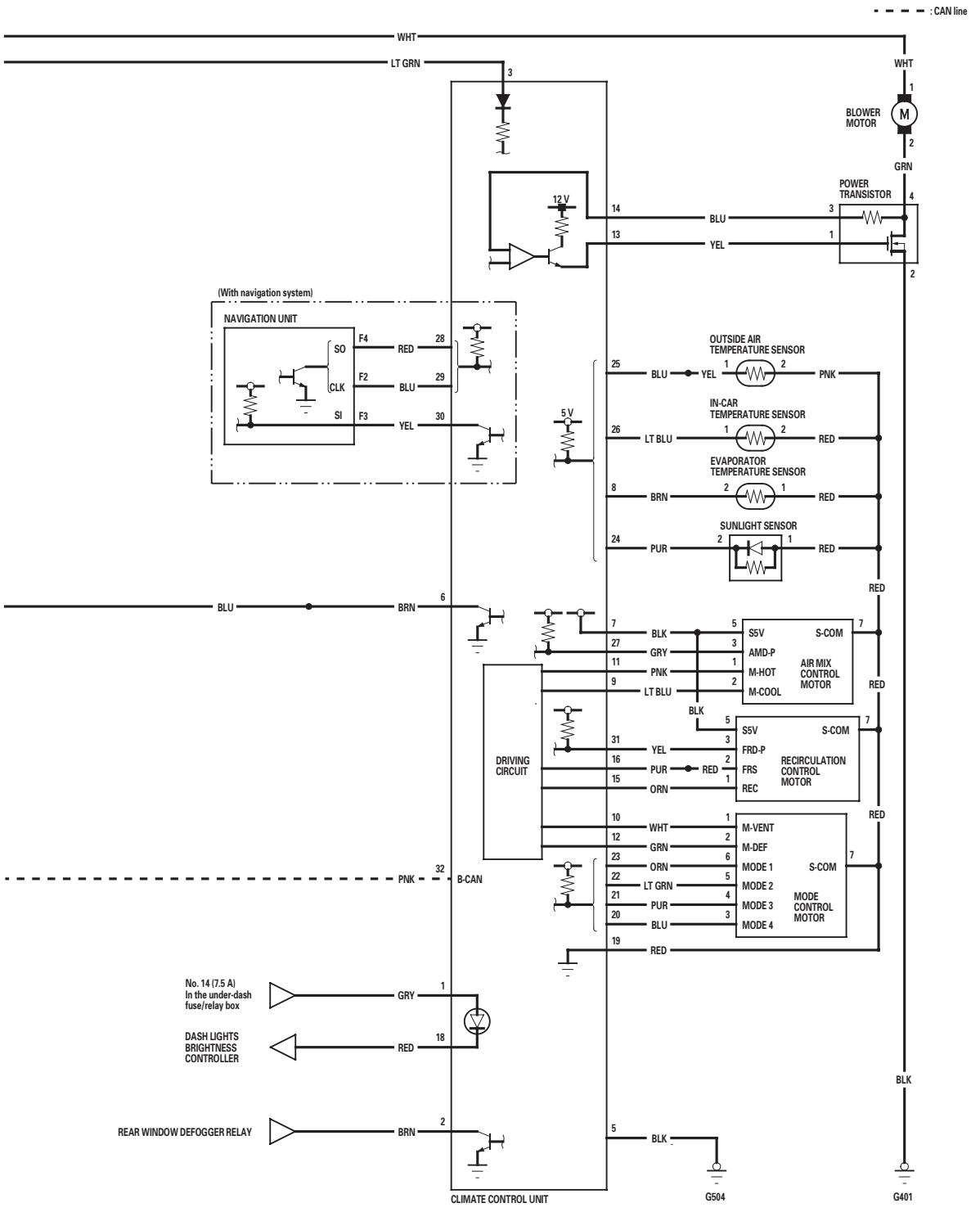
Cavity	Wire color	Terminal name	Description	Signal
1	GRY	ILL +	Power source for illumination	With lighting switch ON: battery voltage
2	BRN	RrDEF Ry	Drives rear window defogger relay	———
3	LT GRN	IG2	IG2 power source	With ignition switch ON (II): battery voltage
5	BLK	GND	Ground for climate control unit (G504)	———
6	RED	ACS	Outputs A/C ON signal	———
7	BLK	S5V	Outputs sensor 5V	With ignition switch ON (II): about 5 V
8	BRN	Teva	Detects evaporator temperature sensor signal	———
9	LT BLU	M-COOL	Drives air mix control motor COOL side	Drive on COOL side: 7 V—15 V
10	WHT	M-VENT	Drives mode control motor VENT side	Drive on VENT side: about 14.5 V
11	PNK	M-HOT	Drives air mix control motor HOT side	Drive on HOT side: 7 V—15 V
12	GRN	M-DEF	Drives mode control motor DEF side	Drive on DEF side: about 14.5 V
13	YEL	BLW-G	Outputs power transistor gate	———
14	BLU	BLW-V	Feedback signal of power transistor drain voltage	———
15	ORN	REC	Drives recirculation control motor REC side	Drive on REC side: about 14.5 V
16	PUR	FRS	Drives recirculation control motor FRESH side	Drive on FRESH side: about 14.5 V
18	RED	ILL —	Ground for illumination	———
19	RED	S-COM	Ground exclusive for sensor	———
20	BLU	MODE 4	Inputs mode motor signal 4	———

Cavity	Wire color	Terminal name	Description	Signal
21	PUR	MODE 3	Inputs mode motor signal 3	———
22	LT GRN	MODE 2	Inputs mode motor signal 2	———
23	ORN	MODE 1	Inputs mode motor signal 1	———
24	PUR	Tsun	Detects sunlight sensor signal	———
25	BLU	Tam	Detects outside air temperature sensor signal	———
26	LT BLU	Tr	Detects in-car sensor signal	———
27	GRY	AMD-P	Air mix control motor potentiometer signal	Drive on HOT side: about 4.5 V Drive on COOL side: about 1.5 V
28*	RED	AC SO	SO for navigation communication (A/C side receiving)	———
29*	BLU	AC CLK	CLK for navigation communication	———
30*	YEL	AC SI	SI for navigation communication (A/C side transmission)	———
31	YEL	RFD-P	Recirculation control motor potentiometer signal	———
32	PNK	B-CAN	CAN communication	———

*: With navigation

Circuit Diagram




: CAN line
WHT
LT GRN
3
WHT
1
BLOWER MOTOR
M
2
GRN
POWER TRANSISTOR
4
12 V
14
BLU
3
13
YEL
1
2
(With navigation system)
NAVIGATION UNIT
SO
CLK
SI
F4
RED
28
F2
BLU
29
F3
YEL
30
OUTSIDE AIR TEMPERATURE SENSOR
25
BLU
YEL
1
2
PNK
5 V
IN-CAR TEMPERATURE SENSOR
26
LT BLU
RED
EVAPORATOR TEMPERATURE SENSOR
8
BRN
RED
SUNLIGHT SENSOR
24
PUR
RED
RED
BLU
BRN
6
7
BLK
27
GRY
11
PNK
9
LT BLU
S5V
S-COM
AMD-P
M-HOT
M-COOL
AIR MIX CONTROL MOTOR
BLK
DRIVING CIRCUIT
31
YEL
16
PUR
RED
15
ORN
FRD-P
FRS
REC
RECIRCULATION CONTROL MOTOR
10
WHT
12
GRN
23
ORN
22
LT GRN
21
PUR
20
BLU
19
RED
M-VENT
M-DEF
MODE 1
MODE 2
MODE 3
MODE 4
MODE CONTROL MOTOR
PNK
32
B-CAN
No. 14 (7.5 A)
In the under-dash fuse/relay box
GRY
1
DASH LIGHTS BRIGHTNESS CONTROLLER
18
RED
REAR WINDOW DEFOGGER RELAY
BRN
2
5
BLK
BLK
CLIMATE CONTROL UNIT
G504
G401

DTC Troubleshooting

DTC B1202 or DTC indicator C and AUTO: Climate Control Unit Internal Error

NOTE: Check the battery condition (see page 22-67) and the charging system (see page 4-26).

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1202 or C and AUTO indicated?

   YES—The climate control unit is faulty, replace the climate control unit. ■

   NO—Intermittent failure, the climate control unit is OK at this time. ■

DTC B1205, DTC indicator J and AUTO or L and AUTO: Climate Control Unit Lost Communication with Gauge Control Module (TACH) (VSP/NE message)

DTC B1206 or DTC indicator F and AUTO: Climate Control Unit Lost Communication with Gauge Control Module (TACH) (ECT message)

DTC B1207 or DTC indicator D and AUTO: Climate Control Unit Lost Communication with Gauge Control Module (TACH) (ILLUMI message)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check the DTCs.

   Is DTC B1205, J and AUTO or L and AUTO, and/or DTC B1206 or F and AUTO, and/or DTC B1207 or D and AUTO indicated?

   YES—Go to step 5.

   NO—Intermittent failure, check for loose wires or poor connections on the gauge control module (TACH) and climate control unit circuit. ■
5. Select UNIT INFORMATION in the BODY ELECTRICAL menu.
6. Select CONNECTED UNIT in the UNIT INFORMATION menu.

   Is gauge control module detected?

   YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

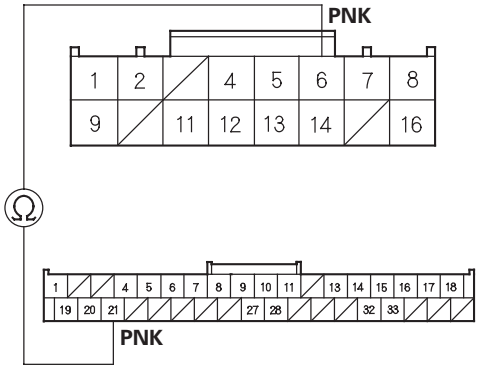
   NO—Go to step 7.
7. Turn the ignition switch to LOCK (0).

8. Disconnect under-dash fuse/relay box connector Q (16P).

9. Disconnect the gauge control module (TACH) 36P connector.

10. Check for continuity between under-dash fuse/relay box connector Q (16P) terminal No. 6 and the gauge control module (TACH) 36P connector terminal No. 21.

UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (16P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to the gauge control module input test (see page 22-271). ■

NO—Repair open in the wire between the MICU and the gauge control module (TACH). ■

DTC B1220 or DTC indicator E and AUTO: A Short in the Recirculation Control Motor Circuit

1. Clear the DTC with the HDS.

2. Turn the ignition switch to LOCK (0), and then turn to ON (II).

3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).

4. Check for DTCs.

   Is DTC B1220 or E and AUTO indicated?

   YES—Go to step 5.

   NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).

6. Test the recirculation control motor (see page 21-74).

   Is the recirculation control motor OK?

   YES—Go to step 7.

   NO—Replace the recirculation control motor (see page 21-74). ■

7. Disconnect the recirculation control motor 7P connector (see page 21-74).

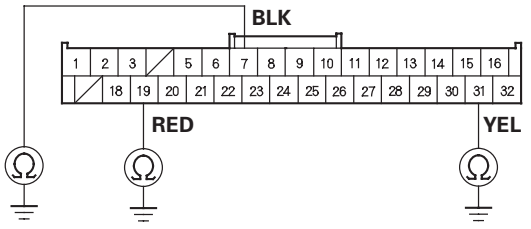
8. Disconnect the climate control unit 32P connector.

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 7, 19, and No. 31 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO—Go to step 10.

10. Check for continuity between the climate control unit 32P connector terminals as follows.

From terminal	To terminals
7	19, 31
19	31

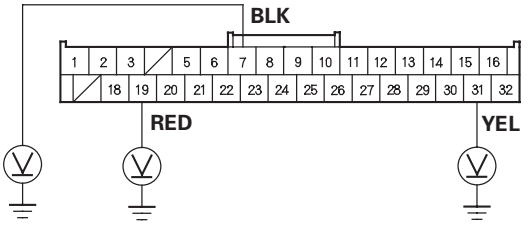
Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 11.

11. Turn the ignition switch to ON (II), and measure the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the recirculation control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1225 or DTC indicator A: An Open in the In-car Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1225 or A indicated?

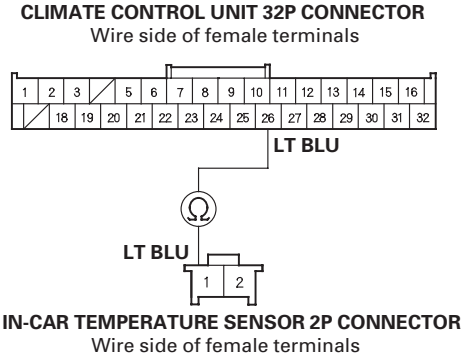
   YES—Go to step 5.

   NO—Intermittent failure, check for loose wires or poor connections on the in-car temperature sensor circuit. ■
5. Turn the ignition switch to LOCK (0).
6. Remove the in-car temperature sensor (see page 21-67), and test it (see page 21-67).

   Is the in-car temperature sensor OK?

   YES—Go to step 7.

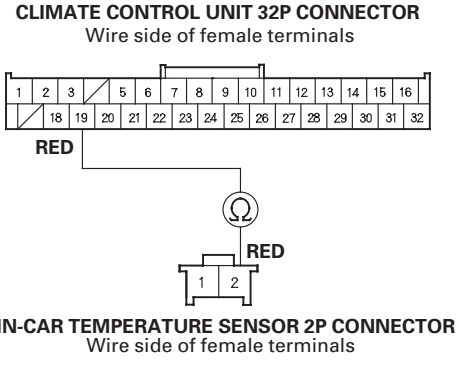
   NO—Replace the in-car temperature sensor. ■
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the climate control unit 32P connector terminal No. 26 and the in-car temperature sensor 2P connector terminal No. 1.



   Is there continuity?

   YES—Go to step 9.

   NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■
9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the in-car temperature sensor 2P connector terminal No. 2.



   Is there continuity?

   YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

   NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

DTC Troubleshooting (cont'd)

DTC B1226 or DTC indicator B: A Short in the In-car Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1226 or B indicated?

   YES—Go to step 5.

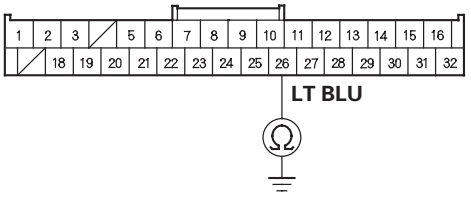
   NO—Intermittent failure. ■
5. Turn the ignition switch to LOCK (0).
6. Remove the in-car temperature sensor (see page 21-67), and test it (see page 21-67).

   Is the in-car temperature sensor OK?

   YES—Go to step 7.

   NO—Replace the in-car temperature sensor. ■
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 26.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

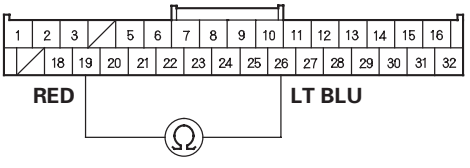
Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the in-car temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 32P connector terminals No. 19 and No. 26.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the in-car temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1227 or DTC indicator C: An Open in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1227 or C indicated?

   YES—Go to step 5.

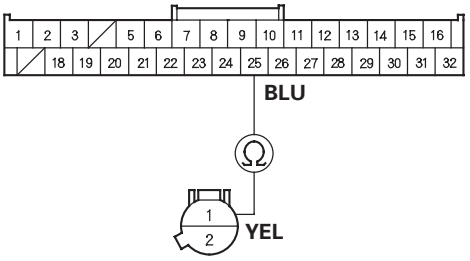
   NO—Intermittent failure, check for loose wires or poor connections on the outside air temperature sensor circuit. ■
5. Turn the ignition switch to LOCK (0).
6. Remove the outside air temperature sensor (see page 21-68), and test it (see page 21-68).

   Is the outside air temperature sensor OK?

   YES—Go to step 7.

   NO—Replace the outside air temperature sensor. ■
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the climate control unit 32P connector terminal No. 25 and the outside air temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

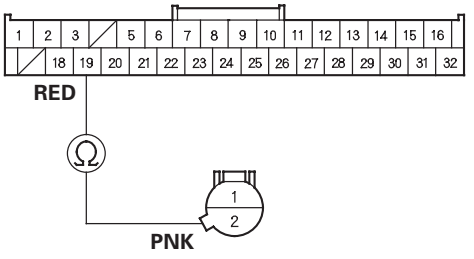
NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the outside air temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

DTC B1228 or DTC indicator D: A Short in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1228 or D indicated?

   YES—Go to step 5.

   NO—Intermittent failure. ■
5. Turn the ignition switch to LOCK (0).
6. Remove the outside air temperature sensor (see page 21-68), and test it (see page 21-68).

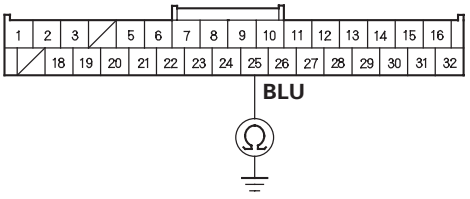
   Is the outside air temperature sensor OK?

   YES—Go to step 7.

   NO—Replace the outside air temperature sensor. ■
7. Disconnect the climate control unit 32P connector.

8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 25.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

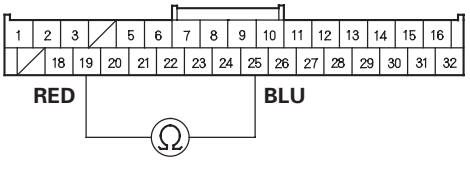
Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the outside air temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 32P connector terminals No. 19 and No. 25.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the outside air temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1229 or DTC indicator E: An Open in the Sunlight Sensor Circuit

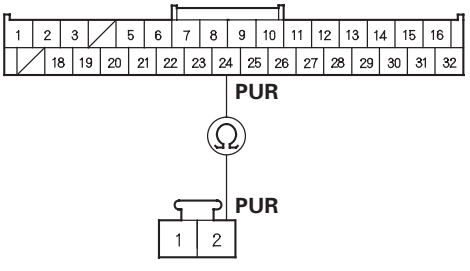
1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1229 or E indicated?

   YES—Go to step 5.

   NO—Intermittent failure, check for loose wires or poor connections on the sunlight sensor circuit. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the sunlight sensor 2P connector.
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the climate control unit 32P connector terminal No. 24 and the sunlight sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

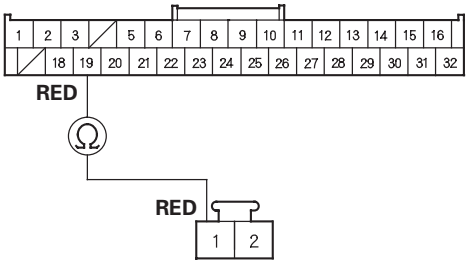
NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the sunlight sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

10. Reconnect the sunlight sensor 2P connector.

11. Reconnect the climate control unit 32P connector.

12. Test the sunlight sensor (see page 21-69).

Is the sunlight sensor OK?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the sunlight sensor (see page 21-69). ■

DTC B1230 or DTC indicator F: A Short in the Sunlight Sensor Circuit

1. Clear the DTC with the HDS.

2. Turn the ignition switch to LOCK (0), and then turn to ON (II).

3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).

4. Check for DTCs.

Is DTC B1230 or F indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

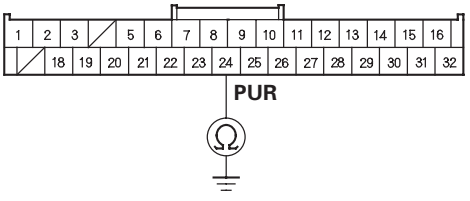
5. Turn the ignition switch to LOCK (0).

6. Disconnect the sunlight sensor 2P connector.

7. Disconnect the climate control unit 32P connector.

8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 24.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

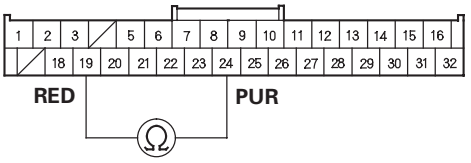
Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the sunlight sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 32P connector terminals No. 19 and No. 24.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the sunlight sensor. ■

NO—Go to step 10.

10. Reconnect the sunlight sensor 2P connector.

11. Reconnect the climate control unit 32P connector.

12. Test the sunlight sensor (see page 21-69).

Is the sunlight sensor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the sunlight sensor (see page 21-69). ■

DTC B1231 or DTC indicator G: An Open in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.

2. Turn the ignition switch to LOCK (0), and then turn to ON (II).

3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).

4. Check for DTCs.

Is DTC B1231 or G indicated?

YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the evaporator temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).

6. Remove the evaporator temperature sensor (see page 21-78), and test it (see page 21-70).

Is the evaporator temperature sensor OK?

YES—Go to step 7.

NO—Replace the evaporator temperature sensor. ■

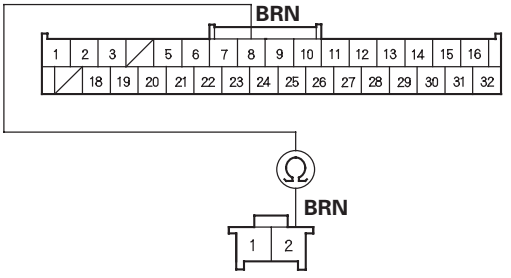
(cont'd)

DTC Troubleshooting (cont'd)

7. Disconnect the climate control unit 32P connector.

8. Check for continuity between the climate control unit 32P connector terminal No. 8 and the evaporator temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

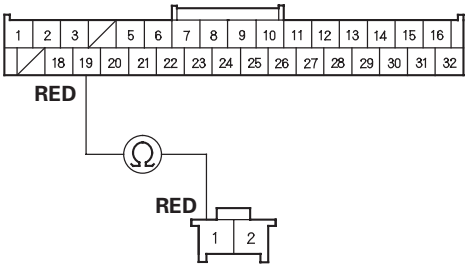
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the evaporator temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

DTC B1232 or DTC indicator H: A Short in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1232 or H indicated?

   YES—Go to step 5.

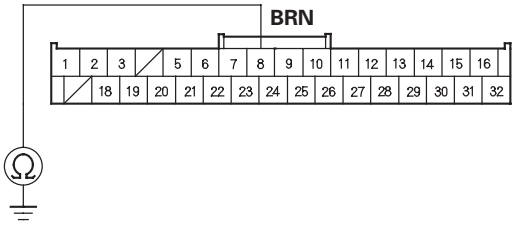
   NO—Intermittent failure. ■
5. Turn the ignition switch to LOCK (0).
6. Remove the evaporator temperature sensor (see page 21-78), and test it (see page 21-70).

   Is the evaporator temperature sensor OK?

   YES—Go to step 7.

   NO—Replace the evaporator temperature sensor. ■
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 8.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

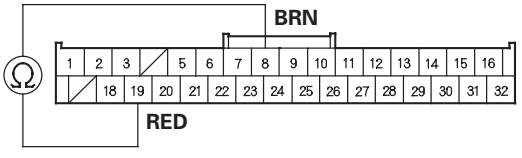
Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the evaporator temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 32P connector terminals No. 8 and No. 19.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the evaporator temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC Troubleshooting (cont'd)

DTC B1233 or DTC indicator J: An Open in the Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1233 or J indicated?

   YES—Go to step 5.

   NO—Intermittent failure, check for loose wires or poor connections on the air mix control motor circuit. ■
5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see page 21-72).

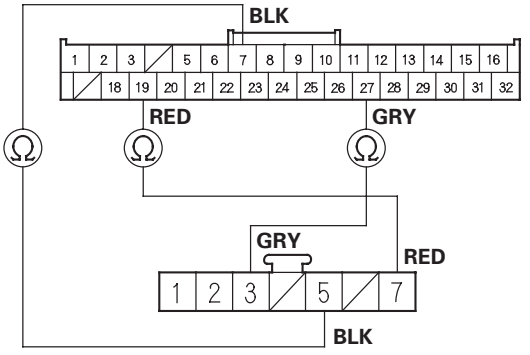
   Is the air mix control motor OK?

   YES—Go to step 7.

   NO—Replace the air mix control motor (see page 21-72). ■
7. Disconnect the air mix control motor 7P connector.
8. Disconnect the climate control unit 32P connector.
9. Check for continuity between the following terminals of the climate control unit 32P connector and the air mix control motor 7P connector.

32P:	7P:
No. 7	No. 5
No. 19	No. 7
No. 27	No. 3

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the air mix control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the air mix control motor. ■

DTC B1234 or DTC indicator K: A Short in the Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1234 or K indicated?

   YES—Go to step 5.

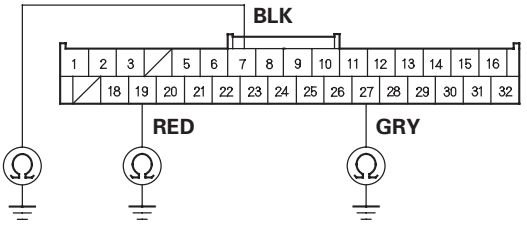
   NO—Intermittent failure. ■
5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see page 21-72).

   Is the air mix control motor OK?

   YES—Go to step 7.

   NO—Replace the air mix control motor (see page 21-72). ■
7. Disconnect the air mix control motor 7P connector.
8. Disconnect the climate control unit 32P connector.
9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 7, 19, and No. 27 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the air mix control motor. ■

NO—Go to step 10.

10. Check for continuity between the climate control unit 32P connector terminals as follows.

From terminal	To terminals
7	19, 27
19	27

Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

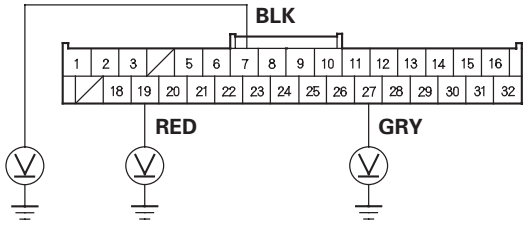
NO—Go to step 11.

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch to ON (II), and measure the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the air mix control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1235 or DTC indicator L: A Problem in the Air Mix Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1235 or L indicated?

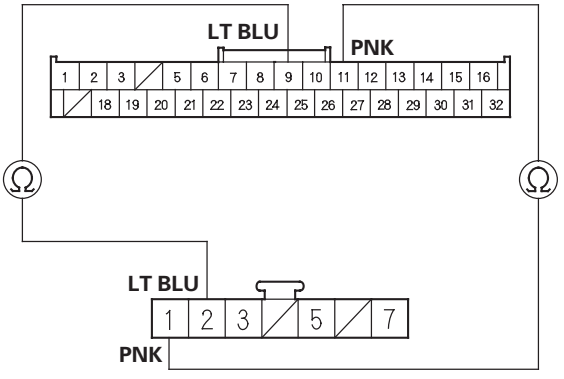
   YES—Go to step 5.

   NO—Intermittent failure. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the air mix control motor 7P connector.
7. Disconnect the climate control unit 32P connector.

8. Check for continuity between the following terminals of the climate control unit 32P connector and the air mix control motor 7P connector.

32P:	7P:
No. 9	No. 2
No. 11	No. 1

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

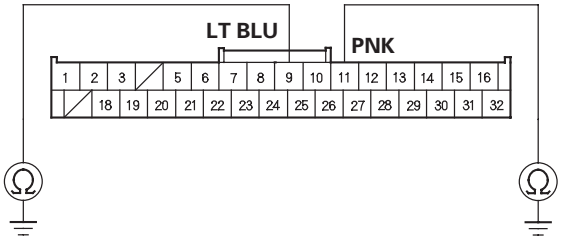
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the air mix control motor. ■

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 9 and No. 11 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the air mix control motor. ■

NO—Go to step 10.

10. Test the air mix control motor (see page 21-72).

Is the air mix control motor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the air mix control motor (see page 21-72), or repair the air mix control linkage or door. ■

DTC Troubleshooting (cont'd)

DTC B1239 or DTC indicator M: An Open or Short in the Mode Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1239 or M indicated?

   YES—Go to step 5.

   NO—Intermittent failure, check for loose wires or poor connections on the mode control motor circuit. ■
5. Turn the ignition switch to LOCK (0).
6. Test the mode control motor (see page 21-73).

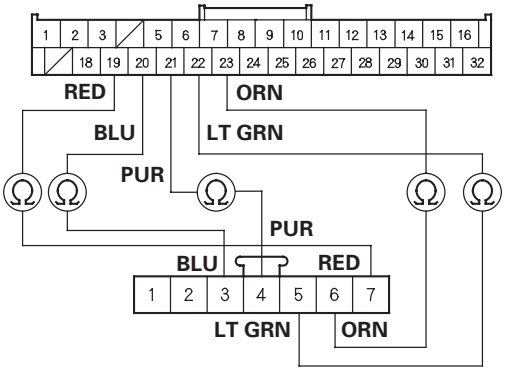
   Is the mode control motor OK?

   YES—Go to step 7.

   NO—Replace the mode control motor (see page 21-73). ■
7. Disconnect the mode control motor 7P connector.
8. Disconnect the climate control unit 32P connector.
9. Check for continuity between the following terminals of the climate control unit 32P connector and the mode control motor 7P connector.

32P:	7P:
No. 19	No. 7
No. 20	No. 3
No. 21	No. 4
No. 22	No. 5
No. 23	No. 6

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

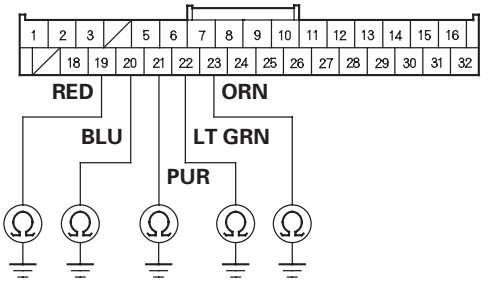
Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire(s) between the climate control unit and the mode control motor. ■

10. Check for continuity between body ground and the climate control unit 32P connector terminals No. 19, 20, 21, 22, and No. 23 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the mode control motor. ■

NO—Go to step 11.

11. Check for continuity between the climate control unit 32P connector terminals as follows.

From terminal	To terminals
19	20, 21, 22, 23
20	21, 22, 23
21	22, 23
22	23

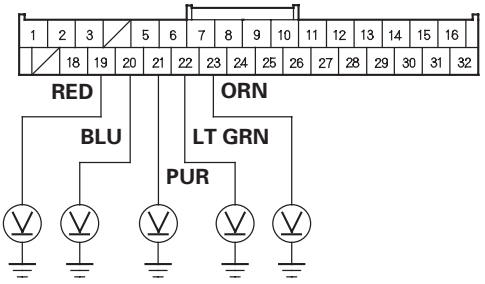
Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 12.

12. Turn the ignition switch to ON (II), and measure the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the mode control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Check for loose wires or poor connections at the climate control unit 32P connector and at the mode control motor 7P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC Troubleshooting (cont'd)

DTC B1240 or DTC indicator N: A Problem in the Mode Control Linkage, Doors, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

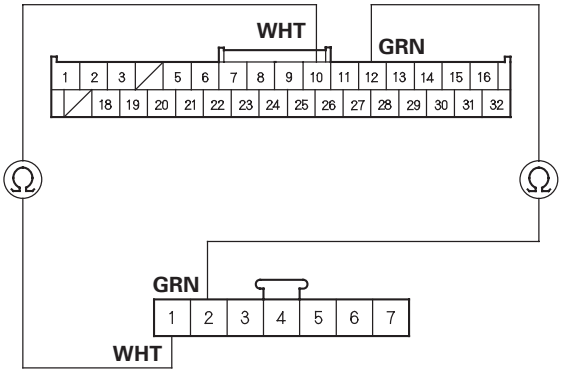
   Is DTC B1240 or N indicated?

   YES—Go to step 5.

   NO—Intermittent failure. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the mode control motor 7P connector.
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the following terminals of climate control unit 32P connector and the mode control motor 7P connector.

32P:	7P:
No. 10	No. 1
No. 12	No. 2

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

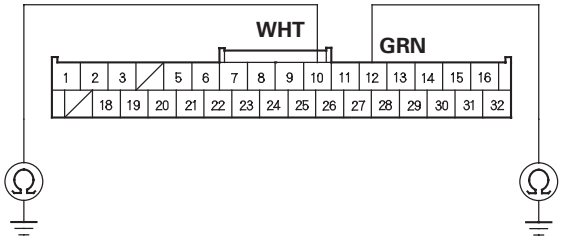
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the mode control motor. ■

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 10 and No. 12 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the mode control motor. ■

NO—Go to step 10.

10. Test the mode control motor (see page 21-73).

Is the mode control motor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the mode control motor (see page 21-73), or repair the mode control linkage or doors. ■

DTC B1241 or DTC indicator P: A Problem in the Blower Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B1241 or P indicated?

   YES—Go to step 5.

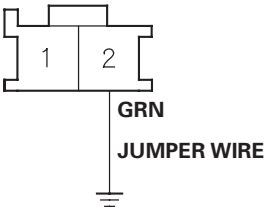
   NO—Intermittent failure, check for loose wires or poor connections on the blower motor circuit. ■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 9 (40 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 7.

   NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 9 (40 A) and No. 36 (10 A) fuses circuit. ■
7. Connect the blower motor 2P connector terminal No. 2 to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch to ON (II).

   Does the blower motor run?

   YES—Go to step 9.

   NO—Go to step 24.

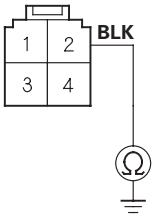
9. Turn the ignition switch to LOCK (0).

10. Disconnect the jumper wire.

11. Disconnect the power transistor 4P connector.

12. Check for continuity between the power transistor 4P connector terminal No. 2 and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

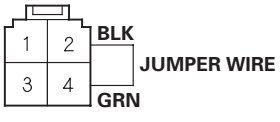
Is there continuity?

YES—Go to step 13.

NO—Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G401 (see page 22-64). ■

13. Connect the power transistor 4P connector terminals No. 2 and No. 4 with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

14. Turn the ignition switch to ON (II).

    Does the blower motor run at high speed?

    YES—Go to step 15.

    NO—Repair open in the GRN wire between the power transistor and the blower motor. ■

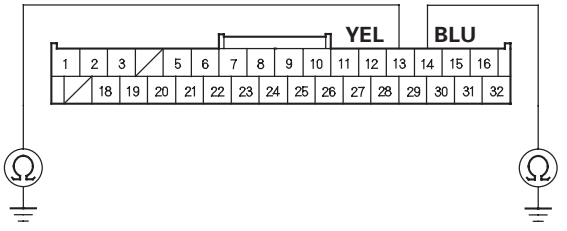
15. Turn the ignition switch to LOCK (0).

16. Disconnect the jumper wire.

17. Disconnect the climate control unit 32P connector.

18. Check for continuity between body ground and the climate control unit 32P connector terminals No. 13 and No. 14 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

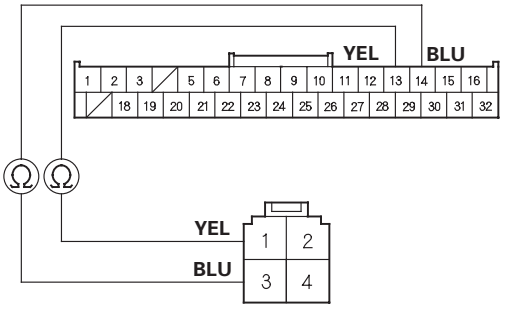
YES—Repair short to body ground in the wire(s) between the climate control unit and the power transistor. ■

NO—Go to step 19.

19. Check for continuity between the following terminals of the climate control unit 32P connector and the power transistor 4P connector.

32P:	4P:
No. 13	No. 1
No. 14	No. 3

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR
Wire side of female terminals

Is there continuity?

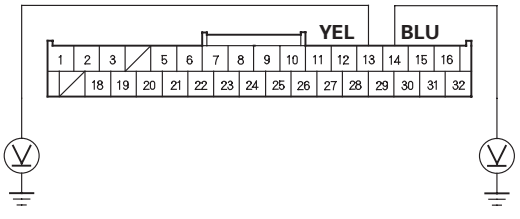
YES—Go to step 20.

NO—Repair open in the wire(s) between the climate control unit and the power transistor. ■

20. Turn the ignition switch to ON (II).

21. Measure the voltage between body ground and the climate control unit 32P connector terminals No. 13 and No. 14 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wire(s). ■

NO—Go to step 22.

22. Reconnect the climate control unit 32P connector.

23. Test the power transistor (see page 21-71).

Is the power transistor OK?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the power transistor 4P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

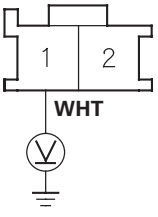
NO—Replace the power transistor. ■

24. Disconnect the jumper wire.

25. Disconnect the blower motor 2P connector.

26. Measure the voltage between the blower motor 2P connector terminal No. 1 and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the blower motor. ■

NO—Go to step 27.

27. Turn the ignition switch to LOCK (0).

28. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-70).

Is the relay OK?

YES—Go to step 29.

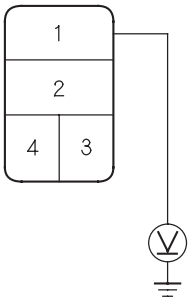
NO—Replace the blower motor relay. ■

(cont'd)

DTC Troubleshooting (cont'd)

29. Measure the voltage between the blower motor relay 4P socket terminal No. 1 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

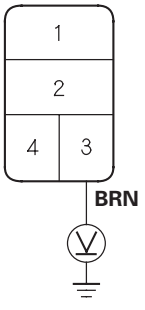
YES—Go to step 30.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

30. Turn the ignition switch to ON (II).

31. Measure the voltage between the blower motor relay 4P socket terminal No. 3 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

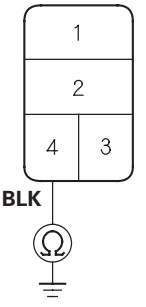
YES—Go to step 32.

NO—Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the blower motor relay. ■

32. Turn the ignition switch to LOCK (0).

33. Check for continuity between the blower motor relay 4P socket terminal No. 4 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES—Repair open in the WHT wire between the blower motor relay and the blower motor. ■

NO—Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G301 (see page 22-64). ■

DTC B2983 or DTC indicator B and AUTO: A Problem in the Recirculation Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

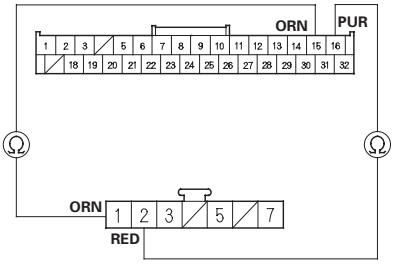
   Is DTC B2983 or B and AUTO indicated?

   YES—Go to step 5.

   NO—Intermittent failure. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the recirculation control motor 7P connector.
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the following terminals of climate control unit 32P connector and the recirculation control motor 7P connector.

32P:	7P:
No. 15	No. 1
No. 16	No. 2

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

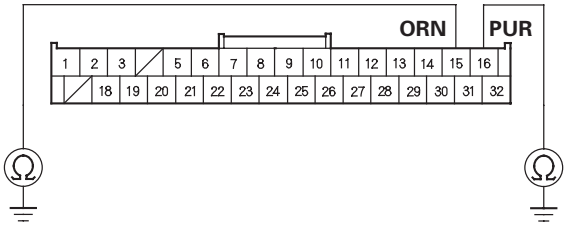
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the recirculation control motor. ■

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 15 and No. 16 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO—Go to step 10.

10. Test the recirculation control motor (see page 21-74).

    Is the recirculation control motor OK?

    YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

    NO—Replace the recirculation control motor (see page 21-74), or repair the recirculation control linkage or door. ■

DTC Troubleshooting (cont'd)

DTC B2986 or DTC indicator A and AUTO: An Open in the Recirculation Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

   Is DTC B2986 or A and AUTO indicated?

   YES—Go to step 5.

   NO—Intermittent failure, check for loose wires or poor connections on the recirculation control motor circuit. ■
5. Turn the ignition switch to LOCK (0).
6. Test the recirculation control motor (see page 21-74).

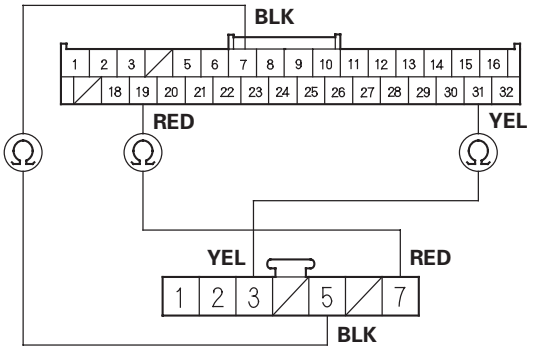
   Is the recirculation control motor OK?

   YES—Go to step 7.

   NO—Replace the recirculation control motor (see page 21-74). ■
7. Disconnect the recirculation control motor 7P connector.
8. Disconnect the climate control unit 32P connector.
9. Check for continuity between the following terminals of the climate control unit 32P connector and the recirculation control motor 7P connector.

32P:	7P:
No. 7	No. 5
No. 19	No. 7
No. 31	No. 3

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the recirculation control motor. ■

Climate Control Power and Ground Circuit Troubleshooting

1. Check the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

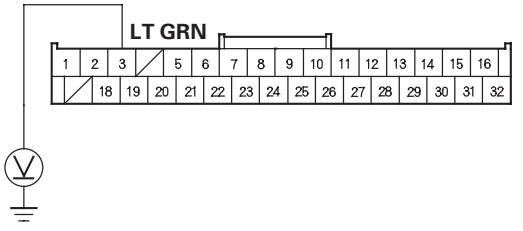
   NO—Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 36 (10 A) fuse circuit. ■

2. Disconnect the climate control unit 32P connector.

3. Turn the ignition switch to ON (II).

4. Measure the voltage between the climate control unit 32P connector terminal No. 3 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there battery voltage?

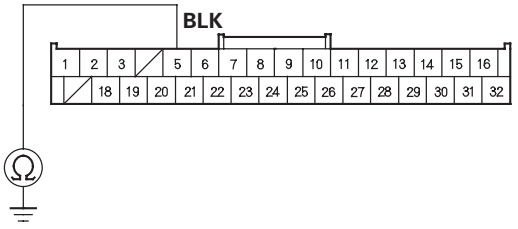
YES—Go to step 5.

NO—Repair an open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the climate control unit. ■

5. Turn the ignition switch to LOCK (0).

6. Check for continuity between the climate control unit 32P connector terminal No. 5 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose wires and poor connections at the climate control unit 32P connector. If connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Check for an open in the wire between the climate control unit and body ground. If the wire is OK, check for poor ground at G504 (see page 22-64). ■

Navigation Communication Line Circuit Troubleshooting

1. Operate the climate control system in several modes.

   Is the climate control system OK?

   YES—Go to step 2.

   NO—Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11). ■

2. Do the Navi system link (see page 23-135). ■

   Is the Air-Con icon red?

   YES—
   - '06-08 models: Go to step 3.
   - '09 model: Go to step 7.

   NO—Go to step 13.

3. Turn the ignition switch to LOCK (0).

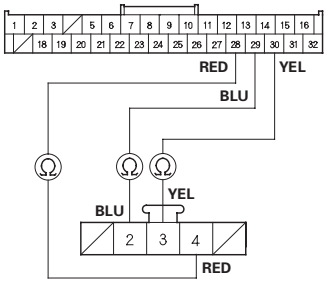
4. Disconnect navigation unit connector F (5P).

5. Disconnect climate control unit 32P connector.

6. Check for continuity between the following terminals of climate control unit 32P connector and navigation unit connector F (5P).

32P:	5P:
No. 28	No. 4
No. 29	No. 2
No. 30	No. 3

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR F (5P)
Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire(s) between the climate control unit and the navigation unit. ■

7. Turn the ignition switch to LOCK (0).

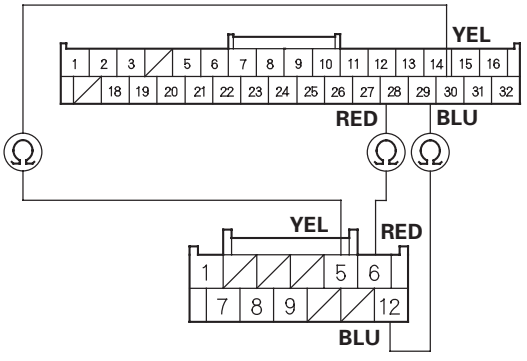
8. Disconnect navigation unit connector D (12P).

9. Disconnect climate control unit 32P connector.

10. Check for continuity between the following terminals of climate control unit 32P connector and navigation unit connector D (12P).

32P:	12P:
No. 28	No. 6
No. 29	No. 12
No. 30	No. 5

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR D (12P)
Wire side of female terminals

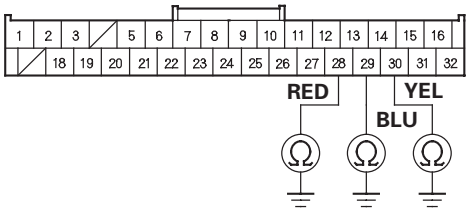
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire(s) between the climate control unit and the navigation unit. ■

11. Check for continuity between body ground and climate control unit 32P connector terminals No. 28, 29, and No. 30 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the navigation unit. ■

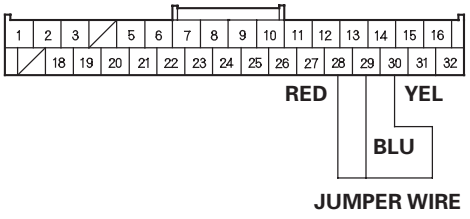
NO—Go to step 12.

12. Reconnect climate control unit 32P connector.

13. '06-08 models: Disconnect navigation unit connector F (5P).
'09 model: Disconnect navigation unit connector D (12P).

14. Connect climate control unit 32P connector terminals No. 28, 29, and No. 30 with a jumper wire.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch to ON (II).

16. Press the RECIRCULATION and OFF buttons.

Does the RECIRCULATION indicator turn on?

YES—Troubleshoot the navigation system: '06-08 models (see page 23-130), '09 model (see page 23-346). ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom goes away, replace the original climate control unit. ■

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 7 (20 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 7 (20 A) and No. 36 (10 A) fuses circuit. ■

2. Remove the radiator fan relay from the under-hood fuse/relay box, and test it (see page 22-70).

   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the radiator fan relay. ■

3. Connect the HDS to the DLC.

4. Turn the ignition switch to ON (II).

5. Turn on the A/C.

6. Check the FAN LOW CTRL in the PGM-FI Data List with the HDS.

   Is the FAN LOW CTRL on?

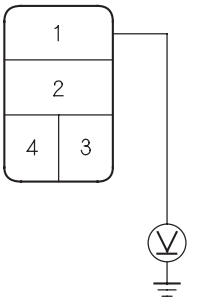
   YES—Go to step 7.

   NO—Substitute a known-good ECM/PCM (see page 11-7), and retest. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

7. Turn the ignition switch to LOCK (0).

8. Measure the voltage between the radiator fan relay 4P socket terminal No. 1 and body ground.

RADIATOR FAN RELAY 4P SOCKET



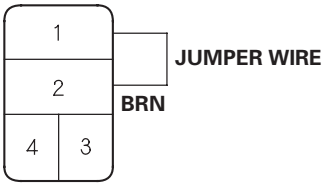
Is there battery voltage?

YES—Go to step 9.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

9. Connect the radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

RADIATOR FAN RELAY 4P SOCKET



Do the A/C condenser and radiator fans run on low?

YES—Go to step 10.

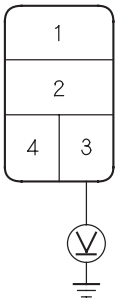
NO—Go to step 19.

10. Disconnect the jumper wire.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between the radiator fan relay 4P socket terminal No. 3 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 13.

NO—Go to step 37.

13. Turn the ignition switch to LOCK (0).

14. Reinstall the radiator fan relay.

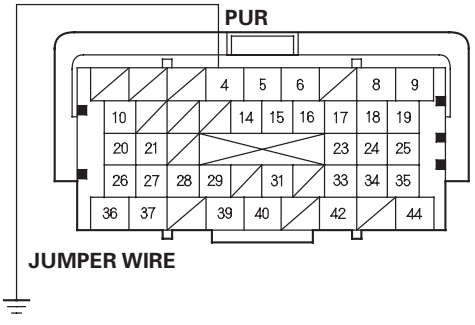
15. Jump the SCS line with the HDS.

    NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

16. Disconnect ECM/PCM connector A (44P).

17. Connect the ECM/PCM connector A (44P) terminal No. 4 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

18. Turn the ignition switch to ON (II).

    Do the A/C condenser and radiator fans run on low?

    YES—Check for loose wires or poor connections at ECM/PCM connector A (44P) terminal No. 4. If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-228). ■

    NO—Repair open in the wire between the radiator fan relay and the ECM/PCM. ■

19. Disconnect the jumper wire.

20. Reinstall the radiator fan relay.

21. Disconnect the radiator fan 2P connector.

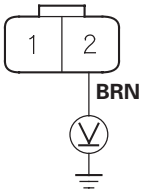
22. Turn the ignition switch to ON (II), then set the A/C button and fan control dial ON.

(cont'd)

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting (cont'd)

23. Measure the voltage between the radiator fan 2P connector terminal No. 2 and body ground.

RADIATOR FAN 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 24.

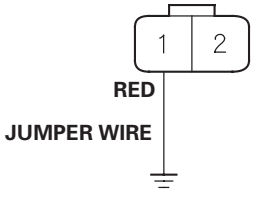
NO—Repair open in the wire between the radiator fan relay and the radiator fan. ■

24. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).

25. Reconnect the radiator fan 2P connector.

26. Connect the radiator fan 2P connector terminal No. 1 to body ground with a jumper wire.

RADIATOR FAN 2P CONNECTOR



Wire side of female terminals

27. Turn the ignition switch to ON (II), then set the A/C button and fan control dial ON.

Does the radiator fan run?

YES—Go to step 28.

NO—Replace the radiator fan motor. ■

28. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).

29. Disconnect the jumper wire.

30. Remove the fan control relay from the under-hood fuse/relay box, and test it (see page 22-70).

Is the relay OK?

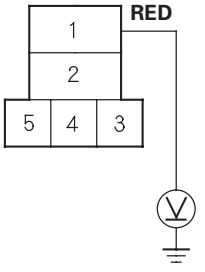
YES—Go to step 31.

NO—Replace the fan control relay. ■

31. Turn the ignition switch to ON (II), then set the A/C button and fan control dial ON.

32. Measure the voltage between the fan control relay 5P socket terminal No. 1 and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there battery voltage?

YES—Go to step 33.

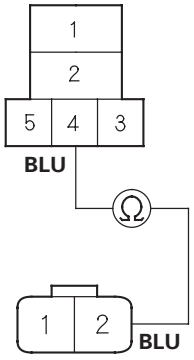
NO—Repair open in the wire between the radiator fan and the fan control relay. ■

33. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).

34. Disconnect the A/C condenser fan 2P connector.

35. Check for continuity between the fan control relay 5P socket terminal No. 4 and the A/C condenser fan 2P connector terminal No. 2.

FAN CONTROL RELAY 5P SOCKET



A/C CONDENSER FAN 2P CONNECTOR
Wire side of female terminals

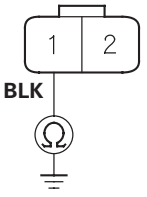
Is there continuity?

YES—Go to step 36.

NO—Repair open in the wire between the fan control relay and the A/C condenser fan. ■

36. Check for continuity between the A/C condenser fan 2P connector terminal No. 1 and body ground.

A/C CONDENSER FAN 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the A/C condenser fan motor. ■

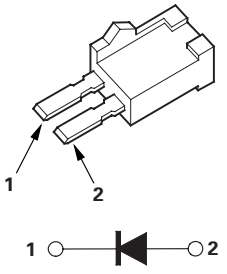
NO—Check for an open in the wire between the A/C condenser fan and body ground. If the wire is OK, check for poor ground at G301 (see page 22-64). ■

37. Turn the ignition switch to LOCK (0).

38. Remove A/C diode A from the under-hood fuse/relay box.

39. Using the diode setting (⊷) on a DVOM, check for current flow in both directions between the A/C diode A terminals No. 1 and No. 2.

A/C DIODE A



Is there current flow in only one direction?

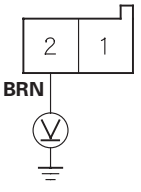
YES—Go to step 40.

NO—Replace A/C diode A. ■

40. Turn the ignition switch to ON (II).

41. Measure the voltage between the A/C diode A 2P socket terminal No. 2 and body ground.

A/C DIODE A 2P SOCKET



Is there battery voltage?

YES—Replace the under-hood fuse/relay box (see page 22-65). ■

NO—Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and A/C diode A. ■

A/C Condenser Fan High Speed Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 6 (20 A) and No. 15 (7.5 A) fuses in the under-hood fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 6 (20 A) and No. 15 (7.5 A) fuses circuit. ■

2. Remove the A/C condenser fan relay from the under-hood fuse/relay box, and test it (see page 22-70).

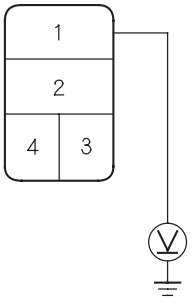
   Is the relay OK?

   YES—Go to step 3.

   NO—Replace the A/C condenser fan relay. ■

3. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 1 and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



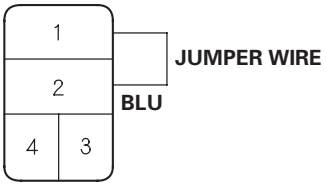
Is there battery voltage?

YES—Go to step 4.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

4. Connect the A/C condenser fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

A/C CONDENSER FAN RELAY 4P SOCKET



Does the A/C condenser fan run on high?

YES—Go to step 5.

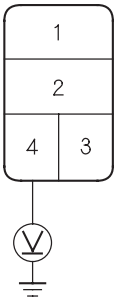
NO—Replace the under-hood fuse/relay box (see page 22-65). ■

5. Disconnect the jumper wire.

6. Turn the ignition switch to ON (II).

7. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 4 and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 8.

NO—Go to step 14.

8. Turn the ignition switch to LOCK (0).

9. Reinstall the A/C condenser fan relay.

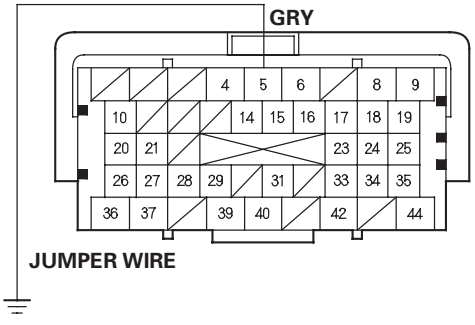
10. Jump the SCS line with the HDS.

    NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

11. Disconnect ECM/PCM connector A (44P).

12. Connect the ECM/PCM connector A (44P) terminal No. 5 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

13. Turn the ignition switch to ON (II).

    Does the A/C condenser fan run on high?

    YES—Check for loose wires or poor connections at ECM/PCM connector A (44P) terminal No. 5. If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-228).■

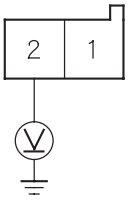
    NO—Repair open in the wire between the A/C condenser fan relay and the ECM/PCM.■

14. Remove the A/C diode B from the under-hood fuse/relay box.

15. Turn the ignition switch to ON (II).

16. Measure the voltage between the A/C diode B 2P socket terminal No. 2 and body ground.

A/C DIODE B 2P SOCKET



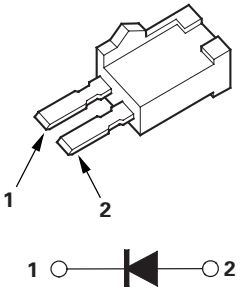
Is there battery voltage?

YES—Go to step 17.

NO—Replace the under-hood fuse/relay box (see page 22-65).■

17. Using the diode setting (⊷) on a DVOM, check for current flow in both directions between the A/C diode B terminals No. 1 and No. 2.

A/C DIODE B



Is there current flow in only one direction?

YES—Replace the under-hood fuse/relay box (see page 22-65).■

NO—Replace the A/C diode B.■

A/C Compressor Clutch Circuit Troubleshooting

NOTE:
- It is normal for the A/C compressor to turn off under certain conditions, such as low idle, high engine coolant temperature, or hard acceleration.
- Do not use this troubleshooting procedure if the fans are also inoperative with the A/C on. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 20 (7.5 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 2.

   NO—Replace the fuses and recheck. If the fuses blow again, check for a short in the No. 20 (7.5 A) and No. 36 (10 A) fuses circuit. ■

2. Connect the HDS to the DLC.

3. Start the engine.

4. Turn on the A/C.

5. Using the HDS, confirm the following values in the PGM-FI Data List at idle.

ECT Sensor 2	80—100 ℃ (176—212 ℉)
TP Sensor	About 0.5 V at idle
RPM	More than 670
A/C Switch	ON
A/C Clutch	ON
A/C Pressure Sensor	196—455 kPa (28—455 psi)

   Are all the values within specifications?

   YES—Go to step 6.

   NO—Troubleshoot the value that is not within the specifications. ■

6. Turn the ignition switch to LOCK (0).

7. Remove the A/C compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-70).

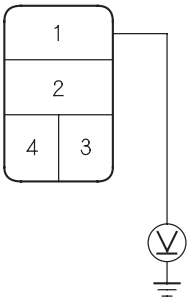
   Is the relay OK?

   YES—Go to step 8.

   NO—Replace the A/C compressor clutch relay. ■

8. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 1 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



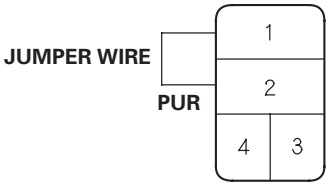
   Is there battery voltage?

   YES—Go to step 9.

   NO—Replace the under-hood fuse/relay box (see page 22-65). ■

9. Connect the A/C compressor clutch relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Does the A/C compressor clutch click?

YES—Go to step 10.

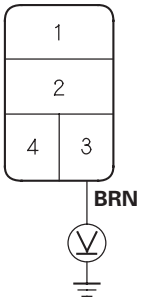
NO—Go to step 19.

10. Disconnect the jumper wire.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 3 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 13.

NO—Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the A/C compressor clutch relay. ■

13. Turn the ignition switch to LOCK (0).

14. Reinstall the A/C compressor clutch relay.

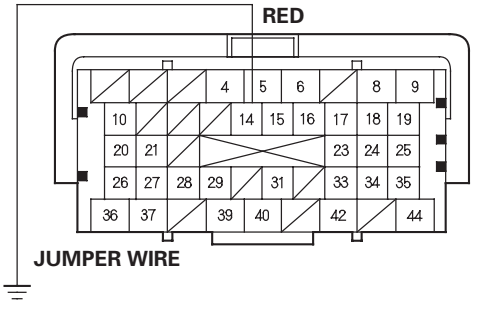
15. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

16. Disconnect ECM/PCM connector A (44P).

17. Connect the ECM/PCM connector A (44P) terminal No. 14 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

18. Turn the ignition switch to ON (II).

Does the A/C compressor click?

YES—Check for loose wires or poor connections at ECM/PCM connector A (44P). If the connections are good, check the ECM/PCM grounds. If the grounds are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the A/C compressor clutch relay and the ECM/PCM. ■

(cont'd)

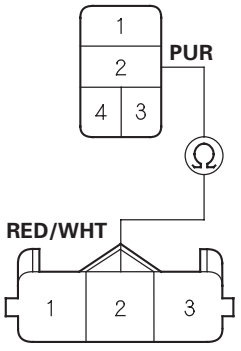
A/C Compressor Clutch Circuit Troubleshooting (cont'd)

19. Disconnect the jumper wire.

20. Disconnect the A/C compressor clutch 3P connector.

21. Check for continuity between the A/C compressor clutch relay 4P socket terminal No. 2 and the A/C compressor clutch 3P connector terminal No. 2.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



A/C COMPRESSOR CLUTCH 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the compressor clutch field coil (see page 21-85). Repair as needed. ■

NO—Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■

A/C Signal Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if any of the following items are operative: A/C condenser fan, radiator fan, A/C compressor. Refer to the symptom troubleshooting index.
- Before doing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Connect the HDS to the DLC.

2. Start the engine.

3. Turn on the A/C.

4. Check the A/C SWITCH in the PGM-FI Data List with the HDS.

   Is the A/C SWITCH on?

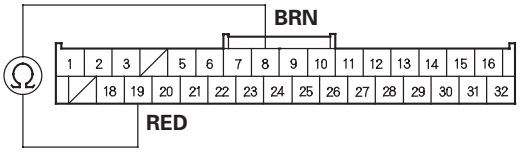
   YES—The A/C signal is OK at this time.

   NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), and disconnect the climate control unit 32P connector.

6. Measure the evaporator temperature sensor resistance between the climate control unit 32P connector terminals No. 8 and No. 19.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is resistance less than 24 kΩ ?

YES—Go to step 7.

NO—Test the evaporator temperature sensor (see page 21-70). ■

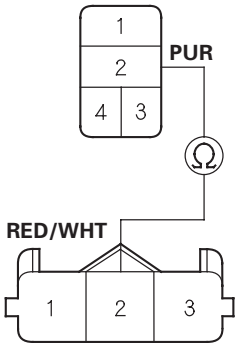
A/C Compressor Clutch Circuit Troubleshooting (cont'd)

19. Disconnect the jumper wire.

20. Disconnect the A/C compressor clutch 3P connector.

21. Check for continuity between the A/C compressor clutch relay 4P socket terminal No. 2 and the A/C compressor clutch 3P connector terminal No. 2.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



A/C COMPRESSOR CLUTCH 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the compressor clutch field coil (see page 21-85). Repair as needed. ■

NO—Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■

A/C Signal Circuit Troubleshooting

NOTE:
- Do not use this troubleshooting procedure if any of the following items are operative: A/C condenser fan, radiator fan, A/C compressor. Refer to the symptom troubleshooting index.
- Before doing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Connect the HDS to the DLC.

2. Start the engine.

3. Turn on the A/C.

4. Check the A/C SWITCH in the PGM-FI Data List with the HDS.

   Is the A/C SWITCH on?

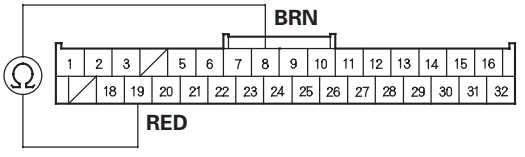
   YES—The A/C signal is OK at this time.

   NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), and disconnect the climate control unit 32P connector.

6. Measure the evaporator temperature sensor resistance between the climate control unit 32P connector terminals No. 8 and No. 19.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is resistance less than 24 kΩ ?

YES—Go to step 7.

NO—Test the evaporator temperature sensor (see page 21-70). ■

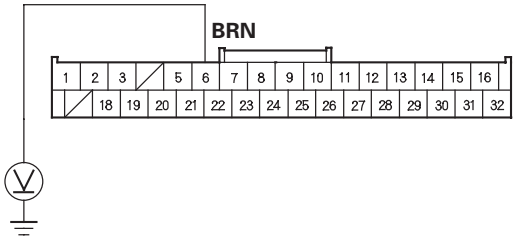
7. Reconnect the climate control unit 32P connector.
8. Turn the ignition switch to ON (II).
9. Check the blower motor operates at all speeds.

   Does the blower motor operate at all speeds?

   YES—Go to step 10.

   NO—Repair the problem in the blower motor circuit. ■
10. Turn the ignition switch to LOCK (0).
11. Disconnect the climate control unit 32P connector.
12. Turn the ignition switch to ON (II).
13. Measure the voltage between the climate control unit 32P connector terminal No. 6 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

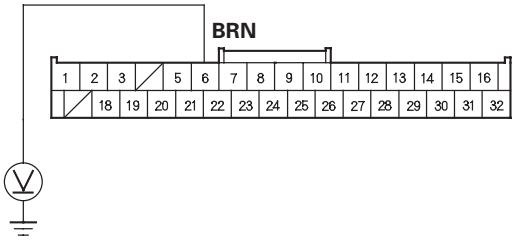
Is there battery voltage?

YES—Go to step 14.

NO—Go to step 18.

14. Turn the ignition switch to LOCK (0).
15. Reconnect the climate control unit 32P connector.
16. Set the A/C button and fan control switch ON, then turn the ignition switch to ON (II).
17. Measure the voltage between the climate control unit 32P connector terminal No. 6 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there 0.5 V or less?

YES—Substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU (see page 22-66). ■

NO—Check for loose wires or poor connections at the climate control unit 32P connector. If connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

(cont'd)

A/C Signal Circuit Troubleshooting (cont'd)

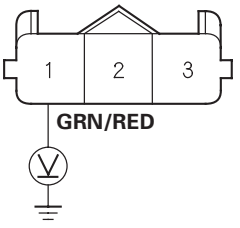
18. Turn the ignition switch to LOCK (0).

19. Disconnect the A/C compressor clutch 3P connector.

20. Turn the ignition switch to ON (II).

21. Measure the voltage between the A/C compressor clutch 3P connector terminal No. 1 and body ground.

A/C COMPRESSOR CLUTCH 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 22.

NO—Repair open in the wire between the A/C compressor and the MICU. If the wire is OK, substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU (see page 22-66). ■

22. Test the A/C compressor thermal protector (see page 21-85).

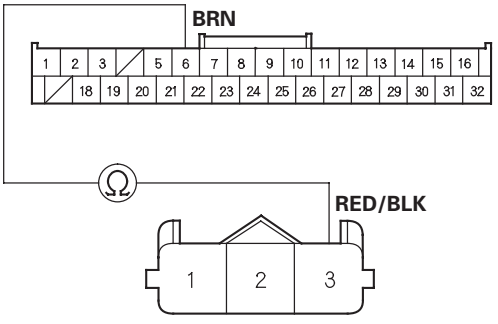
Is the A/C compressor thermal protector OK?

YES—Go to step 23.

NO—Replace the A/C compressor thermal protector (see page 21-87). ■

23. Check for continuity between the climate control unit 32P connector terminal No. 6 and the A/C compressor clutch 3P connector terminal No. 3.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



A/C COMPRESSOR CLUTCH 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the A/C compressor clutch 3P connector. ■

NO—Repair open in the wire between the climate control unit and A/C compressor. ■

In-car Temperature Sensor Test

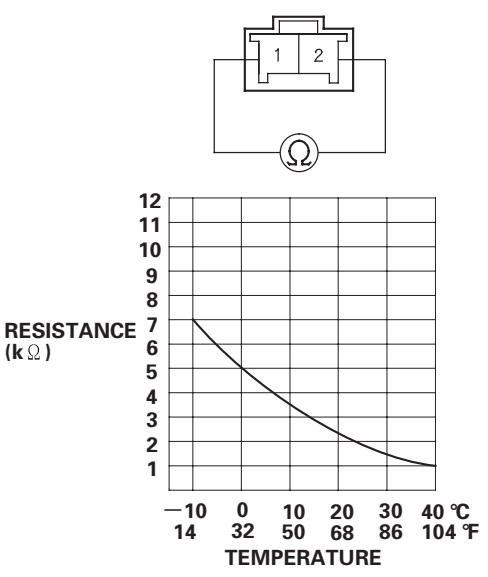
1. Remove the in-car temperature sensor (see page 21-67).

2. Test the in-car temperature sensor while holding it in front of the dashboard center vent.

   - Measure the resistance with the system set to Max Cool.
   - Measure the resistance with the system set to Max Hot.

3. Compare the resistance reading between terminals No. 1 and No. 2 of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

IN-CAR TEMPERATURE SENSOR



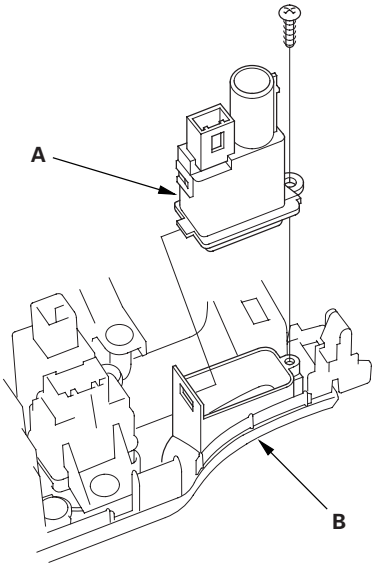
4. If the resistance is not as specified, replace the in-car temperature sensor (see page 21-67).

In-car Temperature Sensor Replacement

1. Remove the center panel:

   - '06-08 models with navigation (see page 23-155)
   - '06-08 models without navigation (see page 23-80)
   - '09 model with navigation (see page 23-355)
   - '09 model without navigation (see page 23-256)

2. Remove the self-tapping screw and the in-car temperature sensor (A) from the center panel (B).

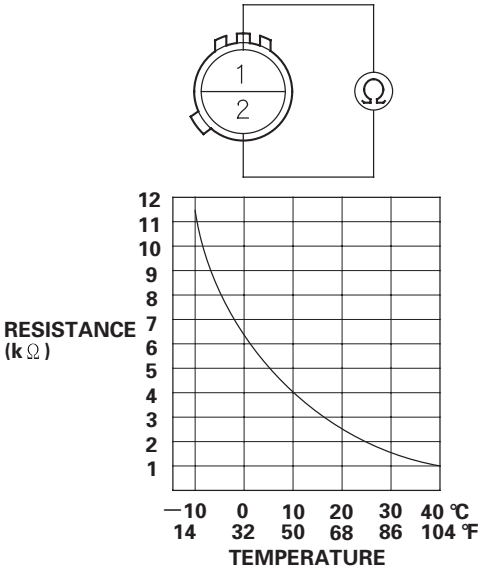


3. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

Outside Air Temperature Sensor Test

1. Remove the outside air temperature sensor (see page 21-68).
2. Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.
3. Compare the resistance reading between terminals No. 1 and No. 2 of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

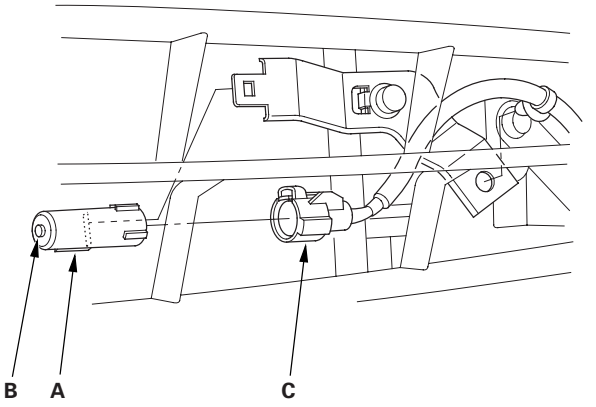
OUTSIDE AIR TEMPERATURE SENSOR



4. If the resistance is not as specified, replace the outside air temperature sensor (see page 21-68).

Outside Air Temperature Sensor Replacement

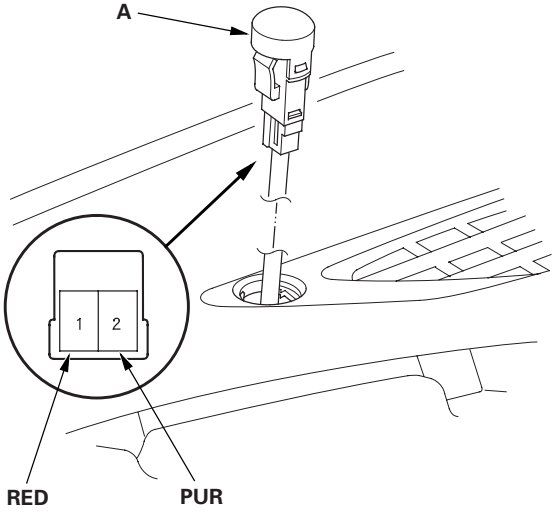
1. Remove the front grille cover (see page 20-163).
2. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the bracket. Disconnect the 2P connector (C) from the outside air temperature sensor.



3. Install the sensor in the reverse order of removal.

Sunlight Sensor Test

1. Remove the sunlight sensor (A) from the dashboard (see page 21-69).



2. Turn the ignition switch to ON (II). Measure the voltage between the terminals with the (+) probe on terminal No. 2 and the (−) probe on terminal No. 1 with the connector connected.

   NOTE: The voltage readings will not change under the light of a flashlight or a fluorescent lamp.

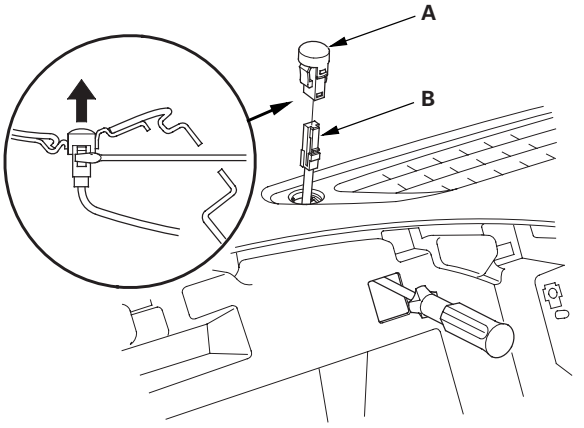
   Voltage should be:
   - 3.6—3.7 V or more with the sensor out of direct sunlight.
   - 3.3—3.5 V or less with the sensor in direct sunlight.

3. If the voltage is not as specified, replace the sunlight sensor (see page 21-69).

Sunlight Sensor Replacement

1. Remove the gauge control module (SPEEDO) (see page 22-277).

2. Remove the sunlight sensor (A) from the dashboard with a flat-tip screwdriver, then disconnect the connector (B). Be careful not to damage the sensor and the dashboard.



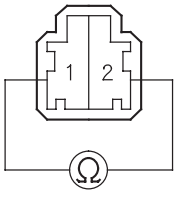
3. Install the sensor in the reverse order of removal.

Evaporator Temperature Sensor Test

1. Remove the evaporator core and the evaporator temperature sensor (see page 21-78).

2. Dip the sensor in ice water, and measure the resistance between its terminals.

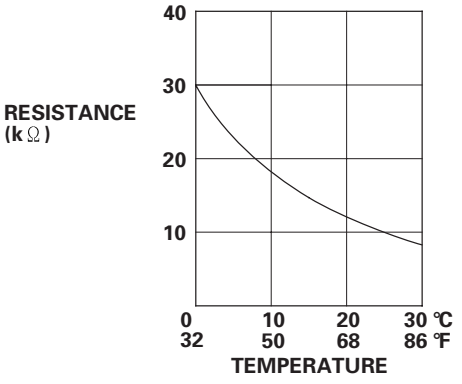
EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

3. Then pour warm water on the sensor, and check for a change in resistance.

4. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



5. If the resistance is not as specified, replace the evaporator temperature sensor (see page 21-78).

Power Transistor Test

1. Remove the passenger's dashboard undercover (see page 20-104).

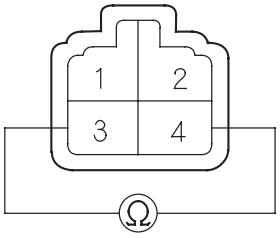
2. Disconnect the 4P connector from the power transistor.

3. Measure the resistance between terminals No. 3 and No. 4 of the power transistor. It should be about 1.5 kΩ.

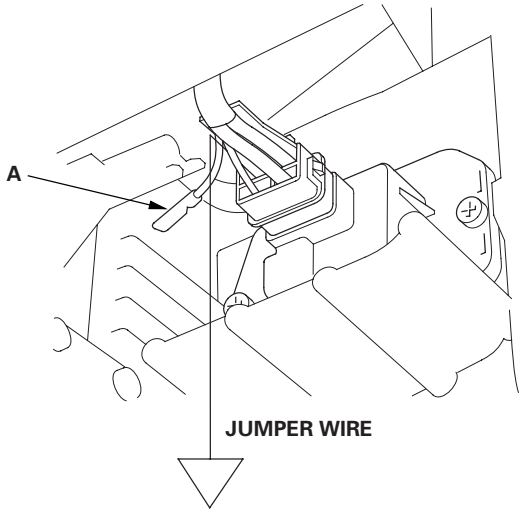
   - If the resistance is within the specifications, go to step 4.
   - If the resistance is not within the specifications, replace the power transistor.

   NOTE: Also check the blower motor. Power transistor failure can be caused by a defective blower motor.

POWER TRANSISTOR



4. Carefully release the lock tab on terminal No. 1 (YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.



5. Reconnect the 4P connector to the power transistor.

6. Make sure the YEL wire is completely isolated, then supply 12 V to cavity No. 1 with a jumper wire.

7. Turn the ignition switch to ON (II), and check that the blower motor runs.

   - If the blower motor does not run, replace the power transistor.

     NOTE: A faulty blower motor can cause the power transistor to fail. If the power transistor is replaced, also check the blower motor for binding, and replace it if necessary.

   - If the blower motor runs, the power transistor is OK.

Air Mix Control Motor Test

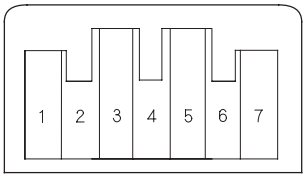
NOTE: Before testing, check for HVAC DTCs (see page 21-9).

1. Disconnect the 7P connector from the air mix control motor.

   NOTICE
   Incorrectly applying power and ground to the air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the air mix control motor, and ground terminal No. 2; the air mix control motor should run, and stop at Max Hot. If it doesn't, reverse the connections; the air mix control motor should run, and stop at Max Cool. When the air mix control motor stops running, disconnect battery power immediately.

AIR MIX CONTROL MOTOR



3. If the air mix control motor did not run in step 2, remove it, then check the air mix control linkage and door for smooth movement.

   - If the linkage and door move smoothly, replace the air mix control motor (see page 21-72).
   - If the linkage or door sticks or binds, repair them as needed.
   - If the air mix control motor runs smoothly, go to step 4.

4. Measure the resistance between terminals No. 5 and No. 7. It should be between 4.2 to 7.8 kΩ.

5. Reconnect the air mix control motor 7P connector, then turn the ignition switch to ON (II).

6. Using the backprobe set, measure the voltage between terminals No. 3 and No. 7.

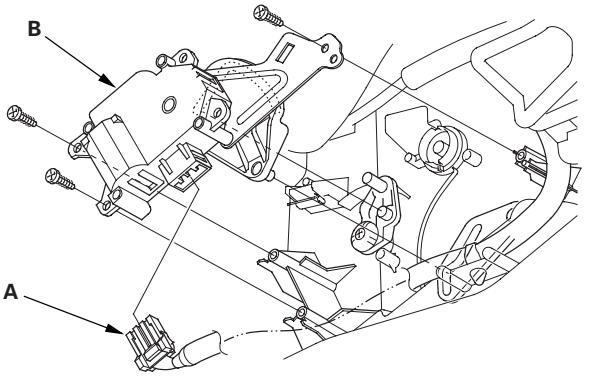
   Max Cool: About 0.5 V
   Max Hot: About 4.5 V

7. If either the resistance or voltage readings are not as specified, replace the air mix control motor (see page 21-72).

Air Mix Control Motor Replacement

1. Remove the driver's dashboard undercover (see page 20-103).

2. Disconnect the 7P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit.



3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Mode Control Motor Test

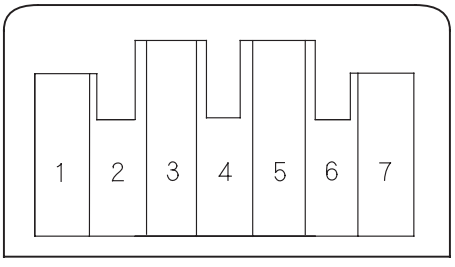
NOTE: Before testing, check for HVAC DTCs (see page 21-9).

1. Disconnect the 7P connector from the mode control motor.

   NOTICE
   Incorrectly applying power and ground to the mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the mode control motor, and ground terminal No. 2; the mode control motor should run smoothly, and stop at Vent. If it doesn't, reverse the connections; the mode control motor should run smoothly, and stop at Defrost. When the mode control motor stops running, disconnect battery power immediately.

MODE CONTROL MOTOR



3. If the mode control motor did not run in step 2, remove it, then check the mode control linkage and doors for smooth movement.

   - If the linkage and doors move smoothly, replace the mode control motor (see page 21-73).
   - If the linkage or doors stick or bind, repair them as needed.
   - If the mode control motor runs smoothly, go to step 4.

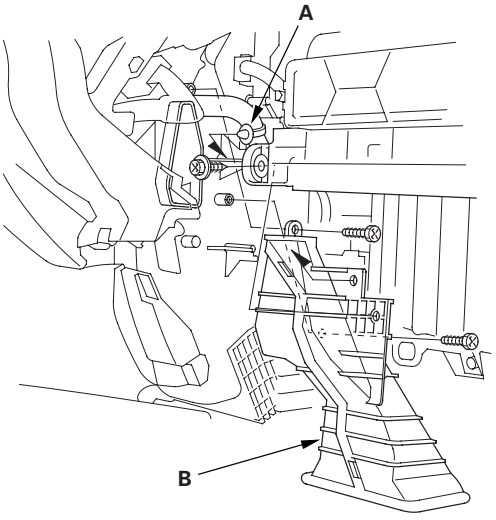
4. Use a digital multimeter with an output of 1 mA or less at the 20 kΩ range. With the mode control motor running as in step 2, check for continuity between terminals No. 3, 4, 5, and 6 and terminal No. 7 individually. There should be continuity for a moment at each terminal as the motor moves past the switch's terminal.

5. If there is no continuity for a moment at each terminal, replace the mode control motor (see page 21-73).

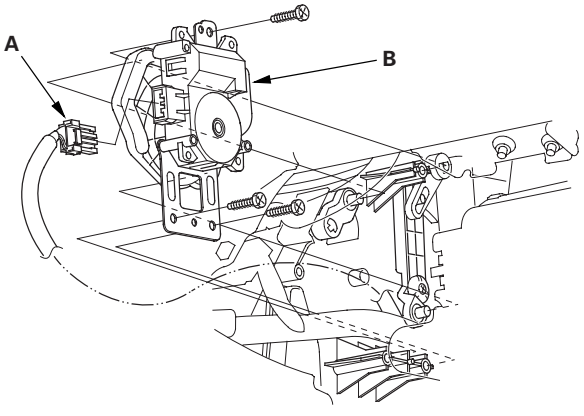
Mode Control Motor Replacement

1. Remove the glove box (see page 20-104).

2. Remove the wire harness clip (A), the self-tapping screws, and the passenger's heater duct (B).



3. Disconnect the 7P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Recirculation Control Motor Test

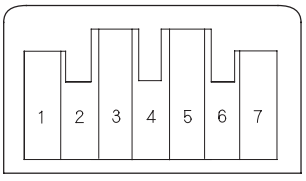
NOTE: Before testing, check for HVAC DTCs (see page 21-9).

1. Disconnect the 7P connector from the recirculation control motor.

   NOTICE
   Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the recirculation control motor, and ground terminal No. 2; the recirculation control motor should run, and stop at Recirculate. If it doesn't, reverse the connections; the recirculation control motor should run, and stop at Fresh. When the recirculation control motor stops running, disconnect battery power immediately.

RECIRCULATION CONTROL MOTOR



3. If the recirculation control motor did not run in step 2, remove it, then check the recirculation control linkage and door for smooth movement.

   - If the linkage and door move smoothly, replace the recirculation control motor (see page 21-74).
   - If the linkage or door sticks or binds, repair them as needed.
   - If the recirculation control motor runs smoothly, go to step 4.

4. Measure the resistance between terminals No. 5 and No. 7. It should be between 4.2 to 7.8 kΩ.

5. Reconnect the recirculation control motor 7P connector, then turn the ignition switch to ON (II).

6. Using the backprobe set, measure the voltage between terminals No. 3 and No. 7.

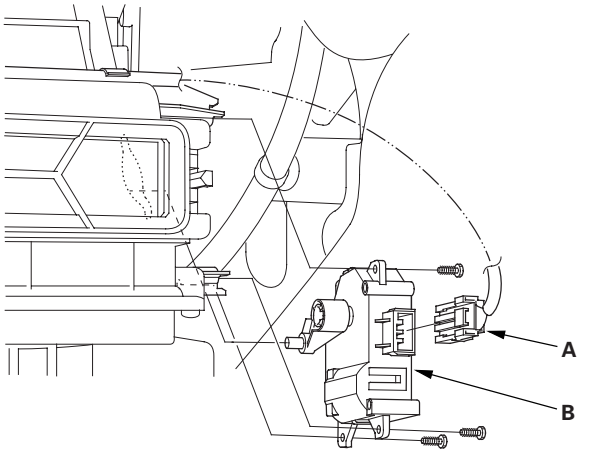
   Recirculate: About 4.0 V
   Fresh: About 1.0 V

7. If either the resistance or voltage readings are not as specified, replace the recirculation control motor (see page 21-74).

Recirculation Control Motor Replacement

1. Remove the glove box (see page 20-104) and the kick panel (see page 20-66).

2. Disconnect the 7P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.

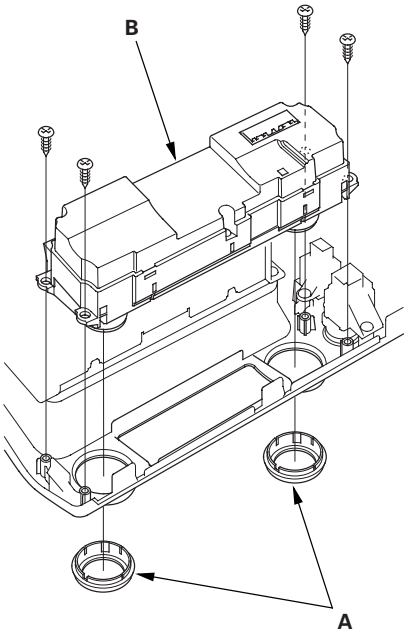


3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Climate Control Unit Removal/ Installation

1. Remove the center panel:
   - '06-08 models with navigation (see page 23-155)
   - '06-08 models without navigation (see page 23-80)
   - '09 model with navigation (see page 23-355)
   - '09 model without navigation (see page 23-256)

2. Remove the dials (A), the self-tapping screws, and the climate control unit (B).



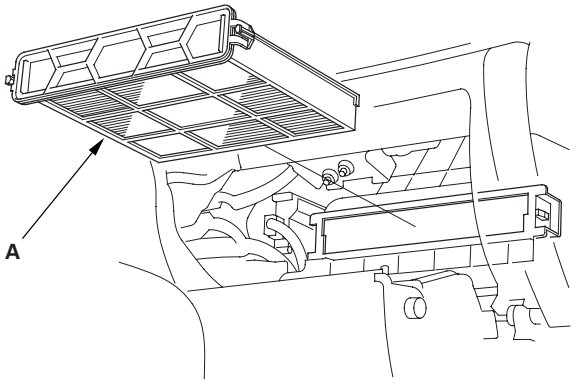
3. Install the control unit in the reverse order of removal. After installation, operate the various functions to see whether works properly.

4. Run the self-diagnostic function to confirm that there are no problems in the system (see page 21-11).

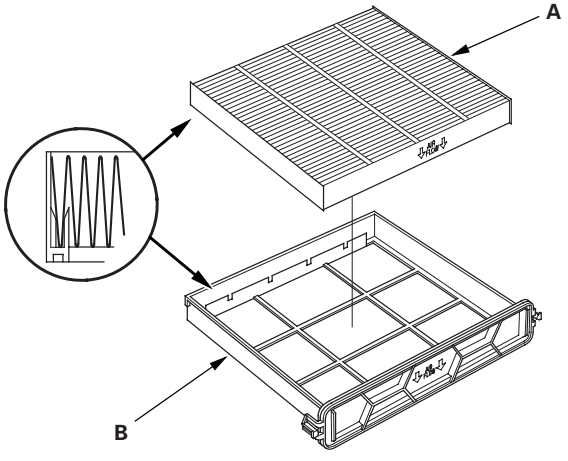
Dust and Pollen Filter Replacement

1. Open the glove box. Remove the glove box stop on each side, then let the glove box hang down (see page 20-104).

2. Remove the dust and pollen filter assembly (A) from the evaporator.



3. Remove the filter (A) from the housing (B), and replace the filter.

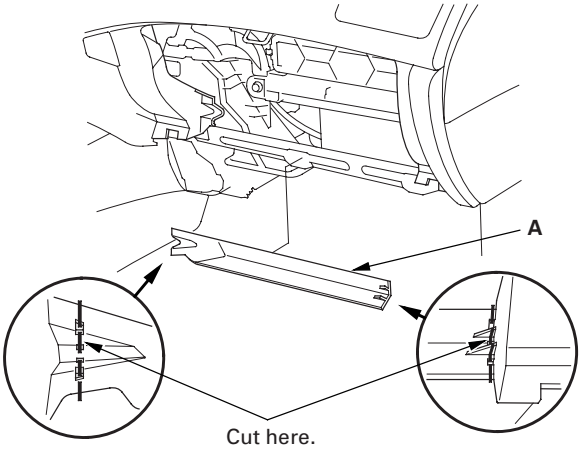


4. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the evaporator.

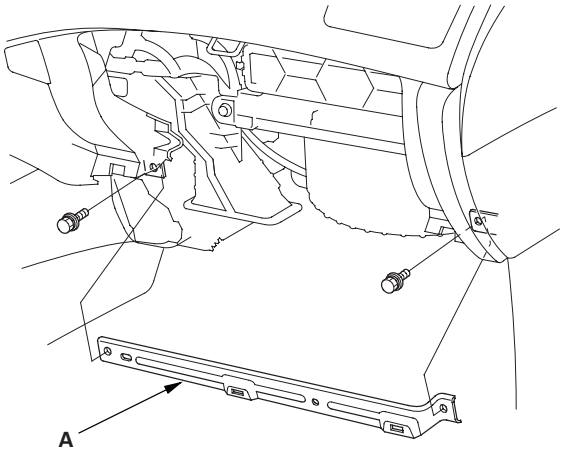
Blower Unit Removal/Installation

1. Remove the glove box (see page 20-104).

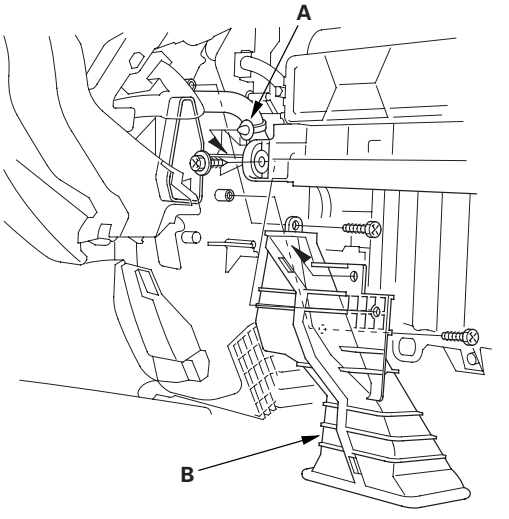
2. Cut the plastic cross brace (A) in the glove box opening with diagonal cutters in the area shown, and discard it.



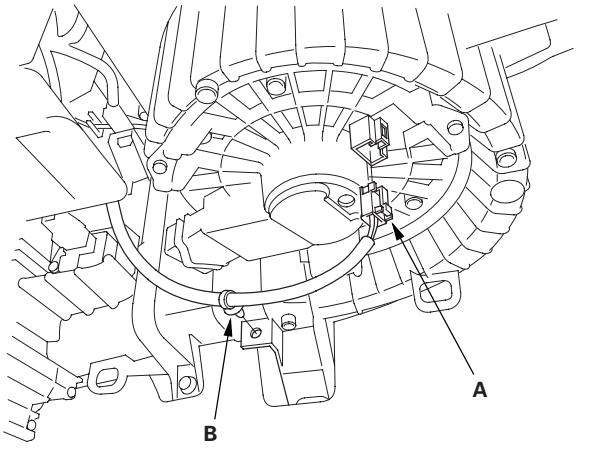
3. Remove the bolts and the glove box frame (A).



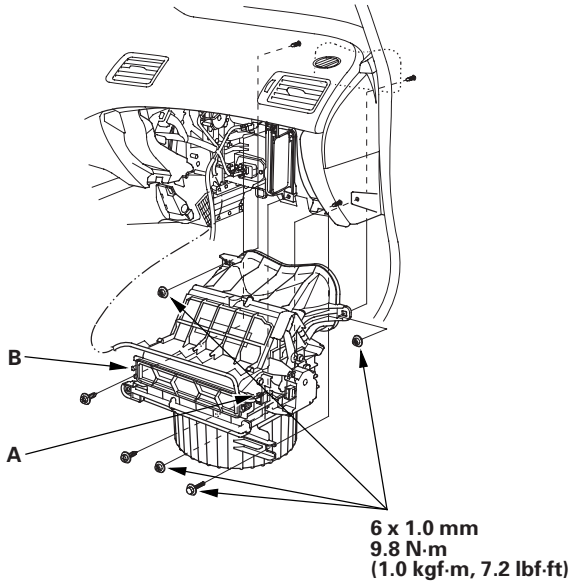
4. Remove the wire harness clip (A), the self-tapping screws, and the passenger's heater duct (B).



5. Disconnect the connector (A) from the blower motor. Remove the wire harness clip (B).



6. Disconnect the connector (A) from the recirculation control motor. Remove the self-tapping screws, the bolt, the mounting nuts, and the blower unit (B).

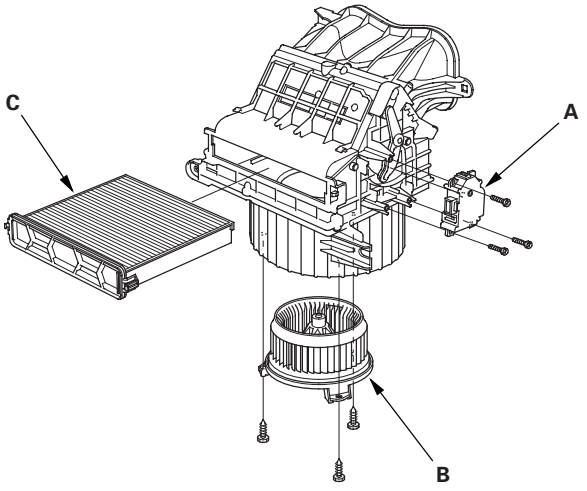


7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

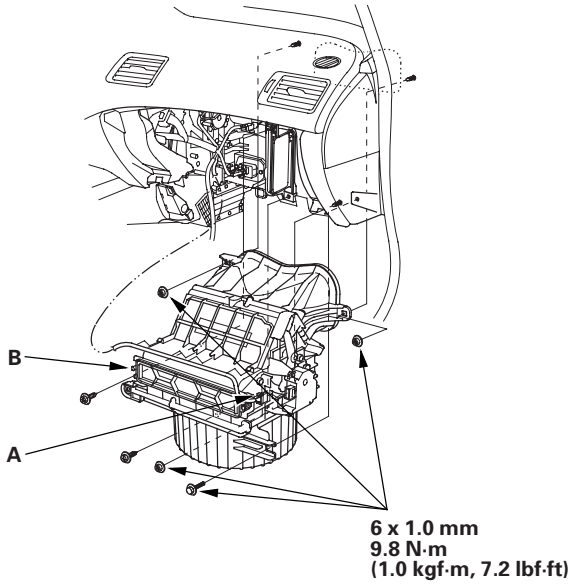
Blower Unit Component Replacement

Note these items when overhauling the blower unit:

- The recirculation control motor (A), blower motor (B), and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and door move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-74).



6. Disconnect the connector (A) from the recirculation control motor. Remove the self-tapping screws, the bolt, the mounting nuts, and the blower unit (B).

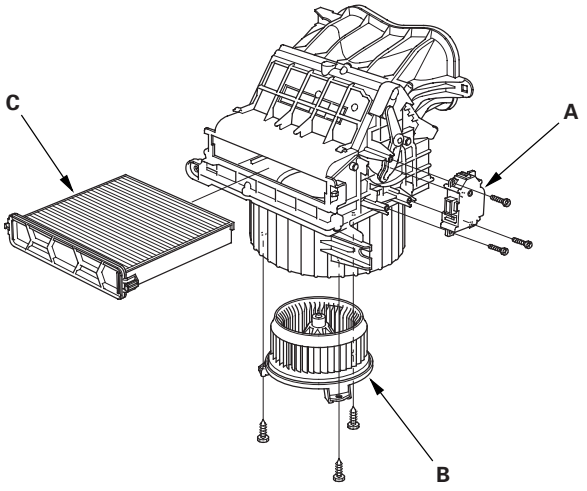


7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

Blower Unit Component Replacement

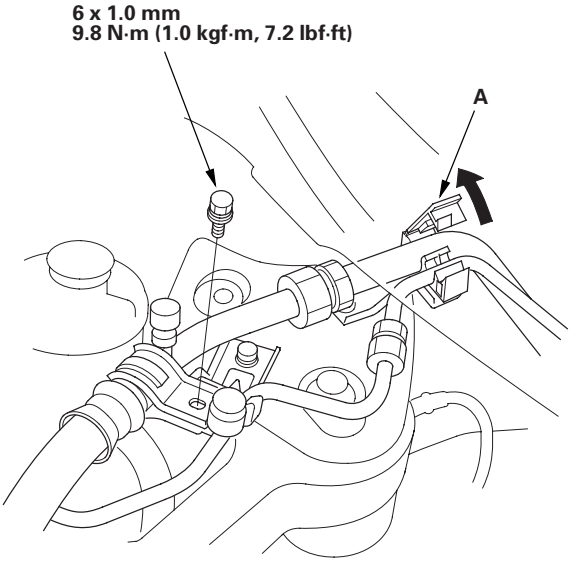
Note these items when overhauling the blower unit:

- The recirculation control motor (A), blower motor (B), and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and door move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-74).

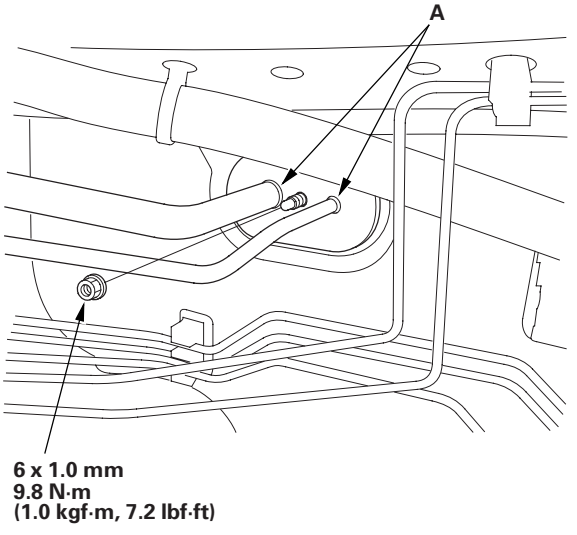


Evaporator Core Replacement

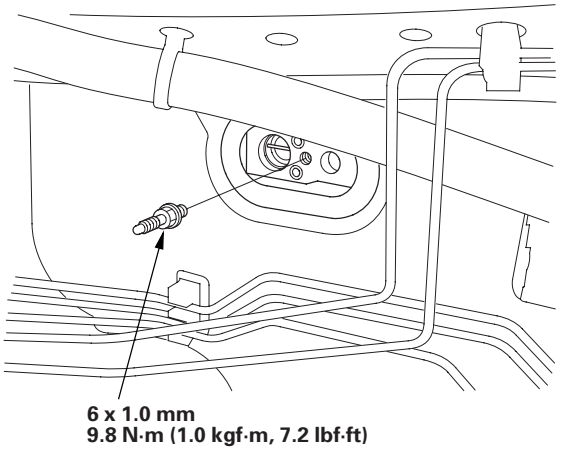
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).
2. Disconnect the clamp (A), then remove the bolt.



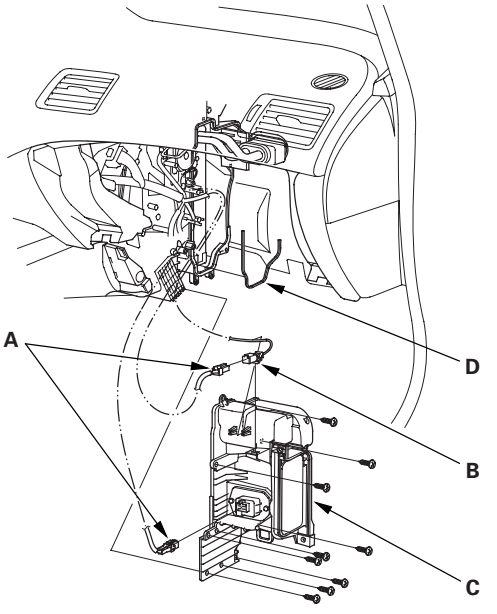
3. Remove the nut, then disconnect the A/C lines (A) from the evaporator core.



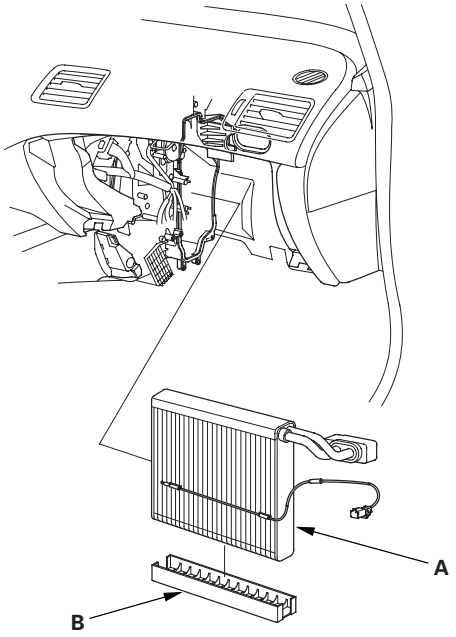
4. Remove the stud bolt.



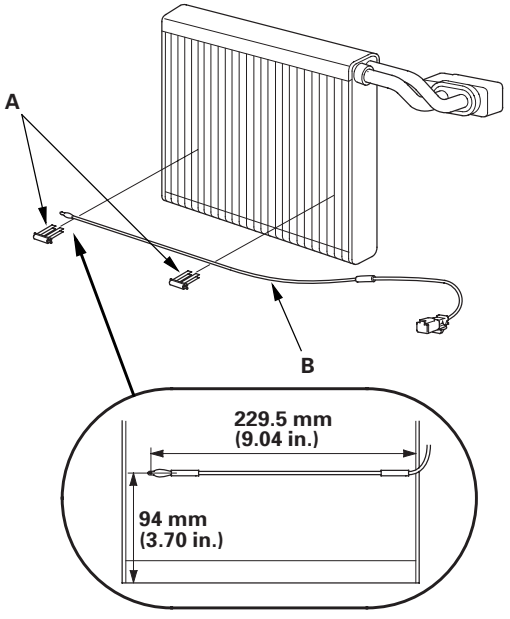
5. Remove the blower unit (see page 21-76).
6. Disconnect the connectors (A) from the evaporator temperature sensor and the power transistor, then remove the connector clip (B). Remove the self-tapping screws, the expansion valve cover (C), and the seal (D).



7. Carefully pull out the evaporator core (A) without bending the lines, then remove the plate (B).



8. Remove the clips (A) and the evaporator temperature sensor (B).



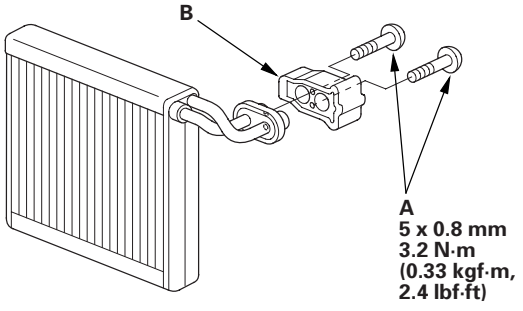
9. Install the core in the reverse order of removal, and note these items:

- If you're installing a new evaporator core, add refrigerant oil (SP-10) (see page 21-7).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Make sure that there is no air leakage.
- Charge the system (see page 21-92).

Expansion Valve Replacement

1. Remove the evaporator core (see page 21-78).

2. Remove the bolts (A) and expansion valve (B).



3. Install the expansion valve in the reverse order of removal and note these items:

   - If you're installing a new expansion valve, add refrigerant oil (SP-10) (see page 21-7).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Make sure that there is no air leakage.
   - Charge the system (see page 21-92).

Heater Unit/Core Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

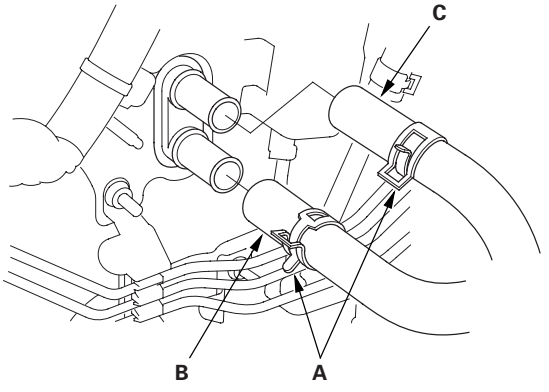
1. Do the battery terminal disconnection procedure (see page 22-68).

2. Disconnect the A/C line from the evaporator core (see page 21-78).

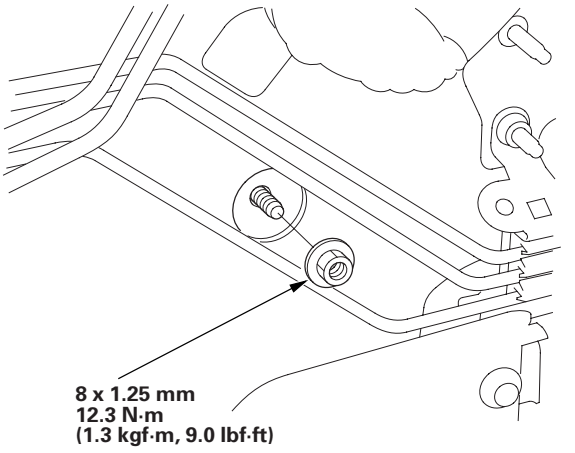
3. Remove the air cleaner housing assembly (see page 11-345).

4. When the engine is cool, drain the engine coolant from the radiator (see page 10-8).

5. From under the hood, slide the hose clamps (A) back. Disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater unit. Note the orientation of the hoses.
   Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.

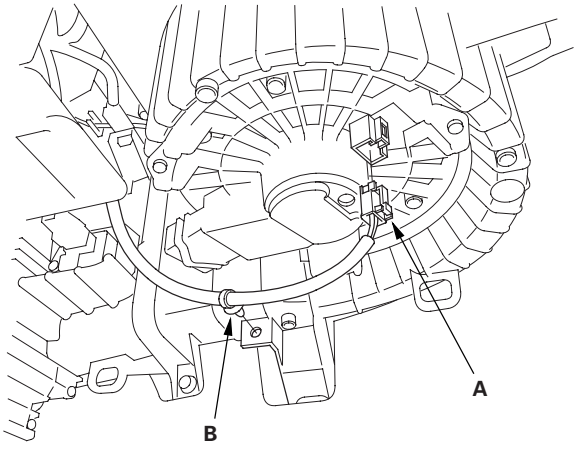


6. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines or brake lines, etc.



7. Remove the dashboard (see page 20-108).

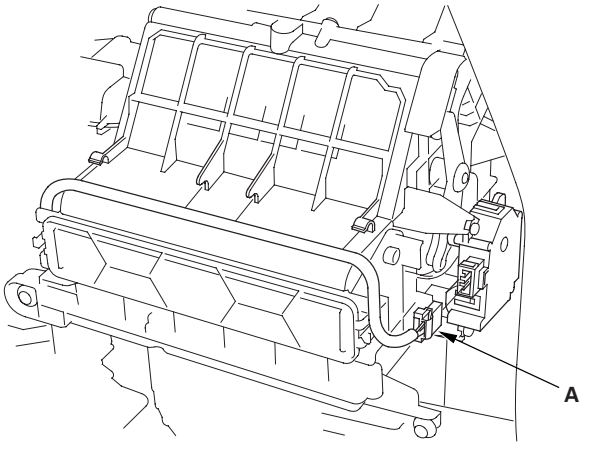
8. Disconnect the connector (A) from the blower motor. Remove the wire harness clip (B).



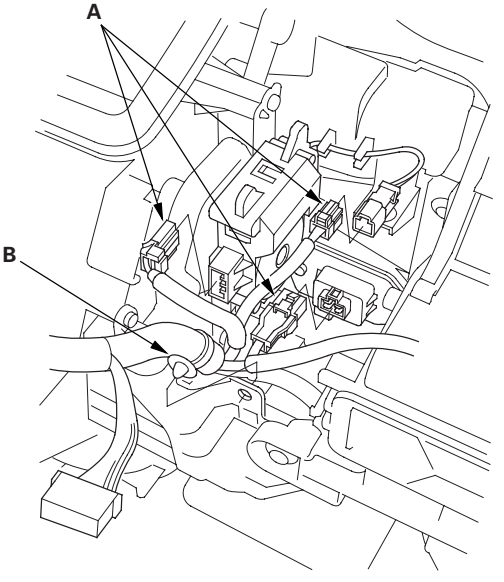
(cont'd)

Heater Unit/Core Replacement (cont'd)

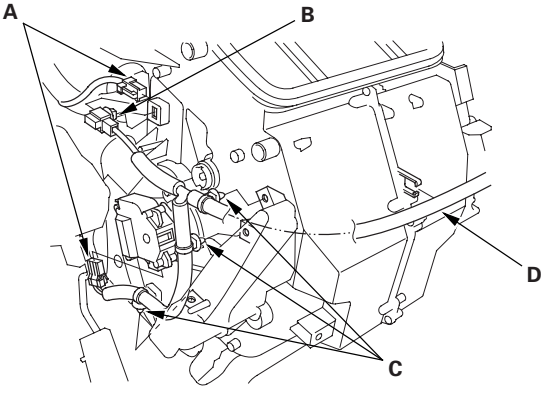
9. Disconnect the connector (A) from the recirculation control motor.



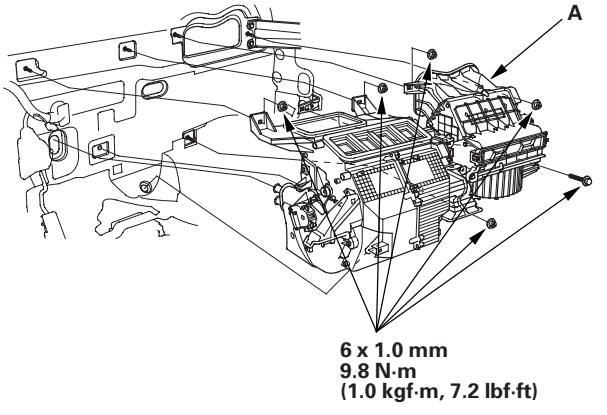
10. Disconnect the connectors (A) from the mode control motor, the evaporator temperature sensor, and the power transistor. Remove the wire harness clip (B).



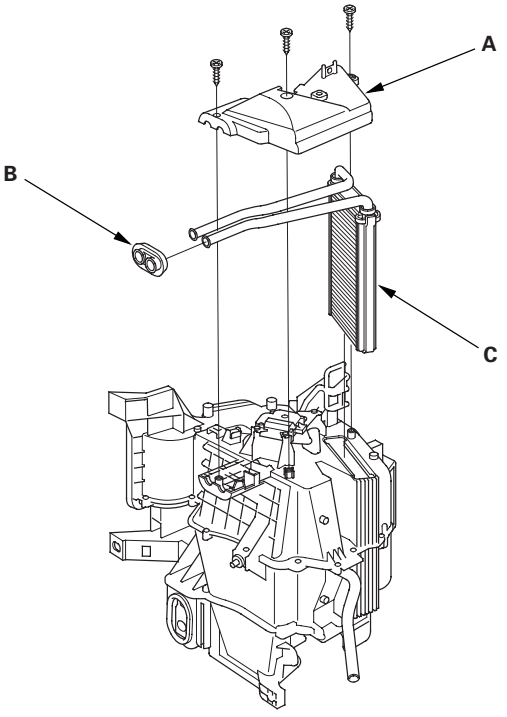
11. Disconnect the connectors (A) from the air mix control motor and A/C wire harness. Remove the connector clip (B), the wire harness clips (C), and the wire harness (D).



12. Remove the mounting bolt, mounting nuts, and blower-heater unit (A).



13. Remove the self-tapping screws, the heater core cover (A), the grommet (B). and carefully pull out the heater core (C).



14. Install the heater core and the evaporator core in the reverse order of removal.

15. Install the heater unit in the reverse order of removal, and note these items:

    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see page 10-8).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Refer to evaporator core replacement (see page 21-78).

16. Do the battery terminal reconnection procedure (see page 22-68).

A/C Compressor Replacement

NOTE: Do not install an A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.

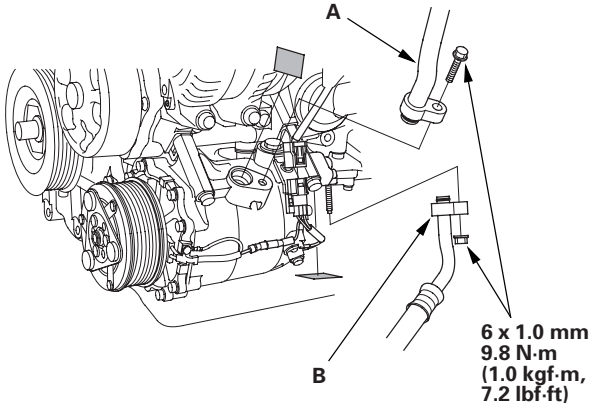
2. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).

3. Remove the drive belt (see page 4-31).

4. Remove the front bulkhead and the condenser fan shroud (see page 10-19).

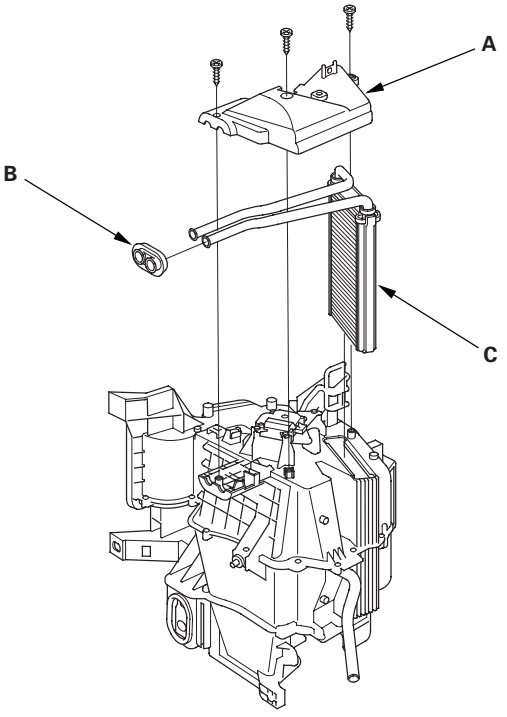
5. Remove the splash shield (see page 20-172).

6. Remove the bolt and the nut, then disconnect the suction hose (A) and discharge hose (B) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



(cont'd)

13. Remove the self-tapping screws, the heater core cover (A), the grommet (B). and carefully pull out the heater core (C).



14. Install the heater core and the evaporator core in the reverse order of removal.

15. Install the heater unit in the reverse order of removal, and note these items:

    - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
    - Refill the cooling system with engine coolant (see page 10-8).
    - Make sure that there is no coolant leakage.
    - Make sure that there is no air leakage.
    - Refer to evaporator core replacement (see page 21-78).

16. Do the battery terminal reconnection procedure (see page 22-68).

A/C Compressor Replacement

NOTE: Do not install an A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.

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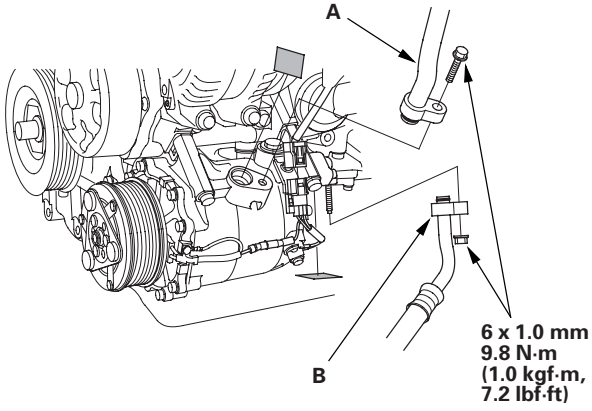
3. Remove the drive belt (see page 4-31).

4. Remove the front bulkhead and the condenser fan shroud (see page 10-19).

5. Remove the splash shield (see page 20-172).

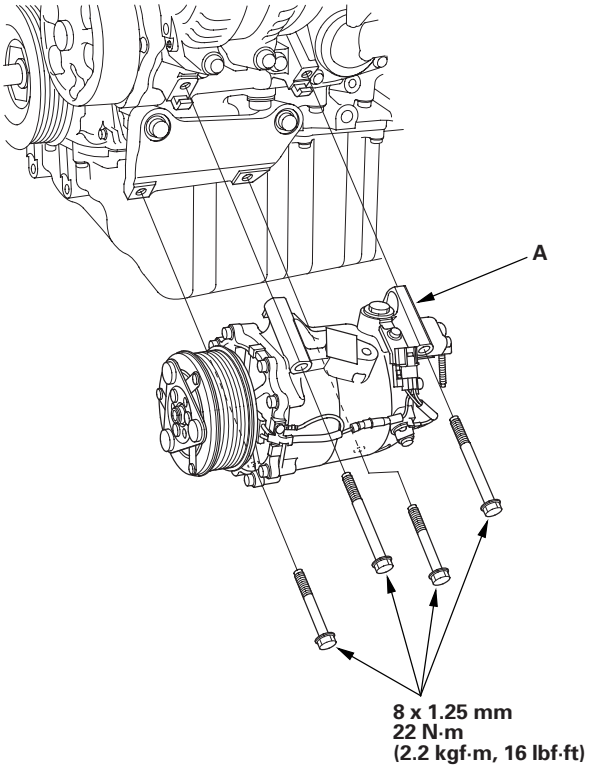
6. Remove the bolt and the nut, then disconnect the suction hose (A) and discharge hose (B) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



(cont'd)

A/C Compressor Replacement (cont'd)

7. Remove the mounting bolts and the A/C compressor (A). Be careful not to damage the radiator fins when removing the A/C compressor.



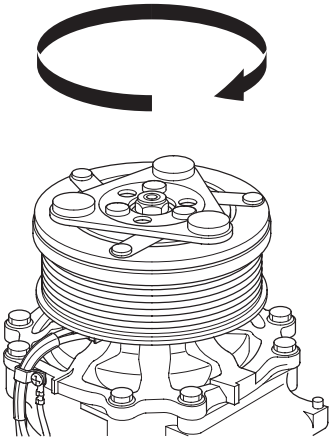
8. Install the compressor in the reverse order of removal, and note these items:

- Inspect the A/C lines for any signs of contamination.
- If you're installing a new A/C compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-7). A new A/C compressor comes with a full charge of oil.
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Use refrigerant oil (SP-10) for HFC-134a SANDEN spiral type A/C compressor only.
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Charge the system (see page 21-92).

A/C Compressor Clutch Check

1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-86).

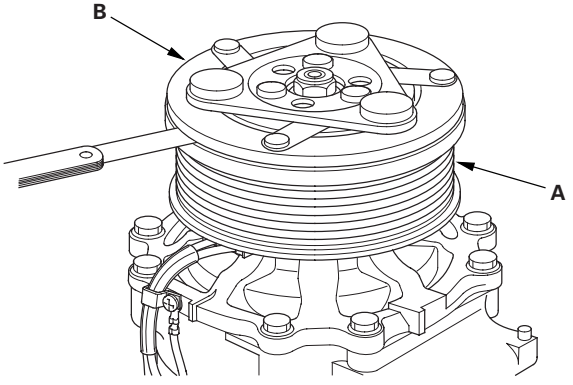
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-86).



3. Measure the clearance between the rotor pulley (A) and the armature plate (B) all the way around. If the clearance is not within specified limits, remove the armature plate (see page 21-86) and add or remove shims as needed to increase or decrease clearance.

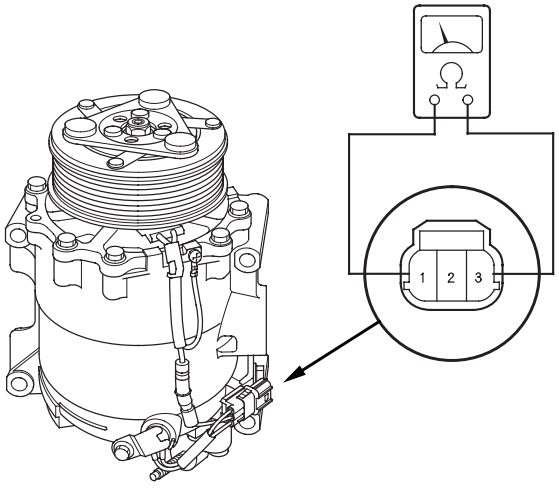
   Clearance: 0.35—0.65 mm (0.014—0.026 in.)

   NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



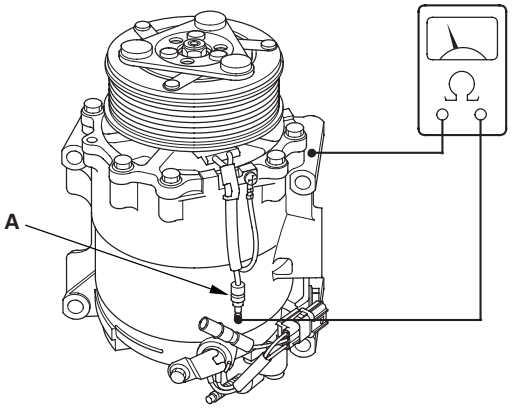
4. Check the thermal protector for continuity between the A/C compressor clutch connector terminals No. 1 and No. 3. If there is no continuity, replace the thermal protector (see page 21-87).

   NOTE: The thermal protector will have no continuity above about 122 to 128 ℃ (252 to 262 ℉). When the temperature drops below about 116 to 104 ℃ (241 to 219 ℉), the thermal protector will have continuity.



5. Disconnect the field coil connector (A). Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see page 21-86).

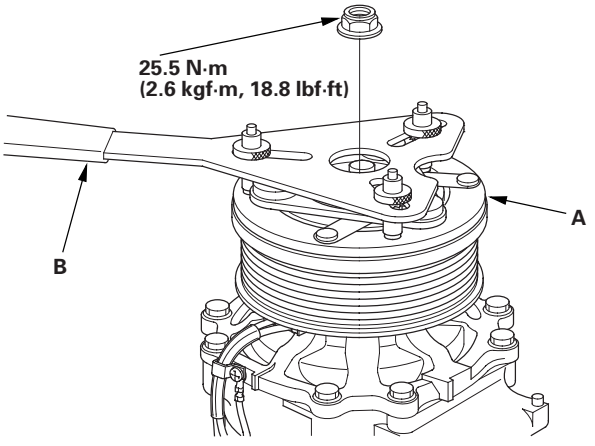
   Field Coil Resistance: 3.15—3.45 Ω 20 ℃ (68 ℉)



A/C Compressor Clutch Overhaul

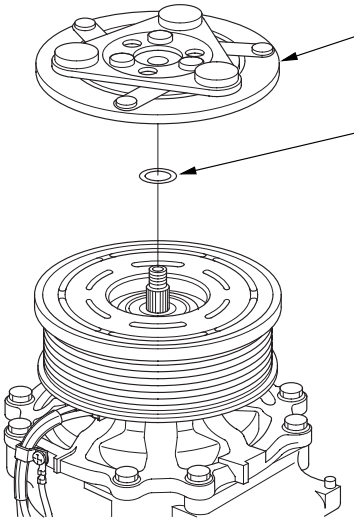
Special Tools Required
A/C clutch holder, Robinair 10204 or Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut while holding the armature plate (A) with a commercially available A/C clutch holder (B).

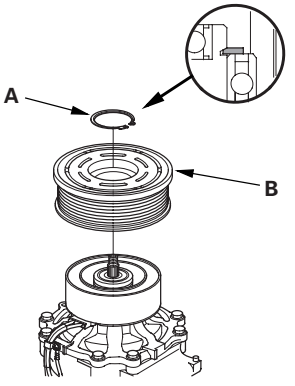


2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see page 21-85).

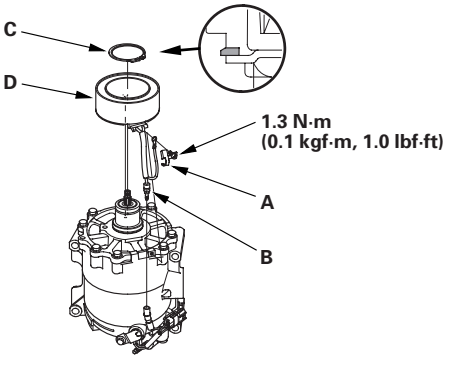
   NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley and A/C compressor.



4. Remove the bolt and holder (A), then disconnect the field coil connector (B). Remove the snap ring (C) with snap ring pliers, then remove the field coil (D). Be careful not to damage the field coil and A/C compressor.

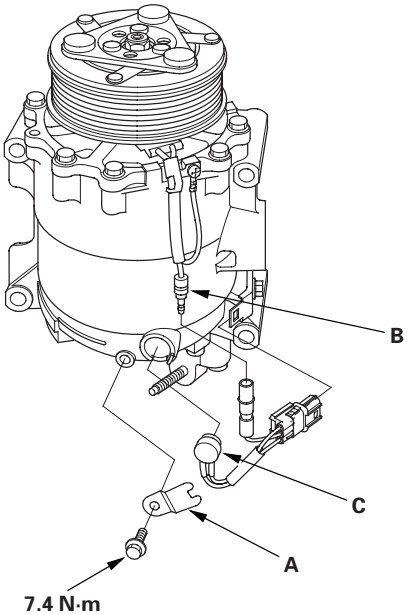


5. Reassemble the clutch in the reverse order of disassembly, and note these items:

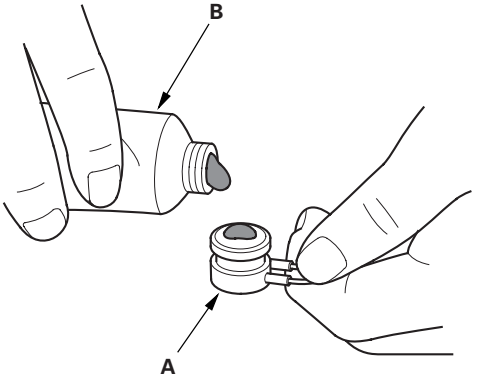
   - Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the A/C compressor.
   - Clean the rotor pulley and A/C compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
   - Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
   - Make sure that the rotor pulley turns smoothly after it's reassembled.
   - Route and clamp the wires properly or they can be damaged by the rotor pulley.

A/C Compressor Thermal Protector Replacement

1. Remove the bolt and the holder (A). Disconnect the field coil connector (B), then remove the thermal protector (C).



2. Replace the thermal protector (A) with a new one, and apply silicone sealant (B) to the bottom of the thermal protector.



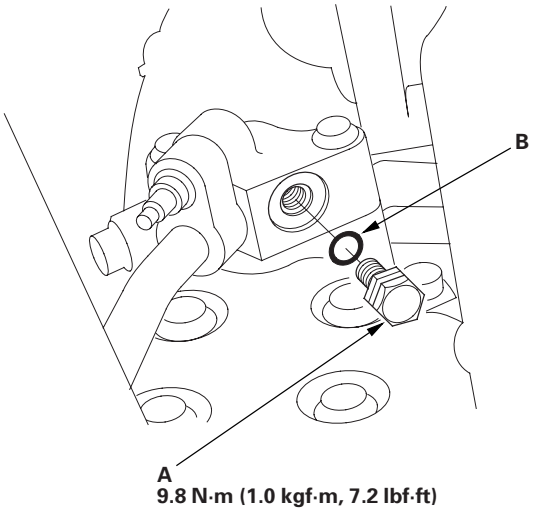
3. Install the thermal protector in the reverse order of removal.

A/C Compressor Relief Valve Replacement

NOTE: If the A/C compressor relief valve released refrigerant to the atmosphere, determine and correct the cause of the excessive system pressure, then replace the relief valve.

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).

2. Remove the relief valve (A), and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.



3. Clean the mating surfaces.

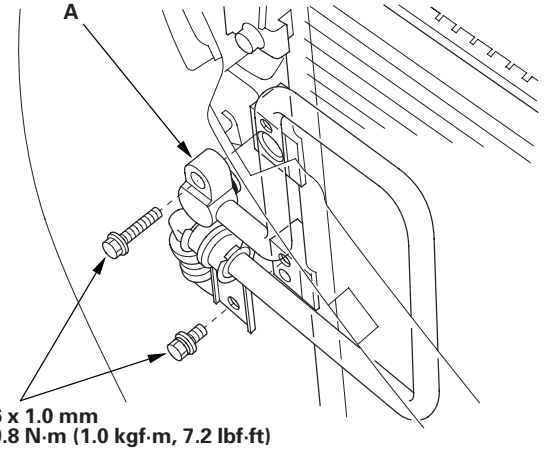
4. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.

5. Remove the plug, and install and tighten the relief valve.

6. Charge the system (see page 21-92).

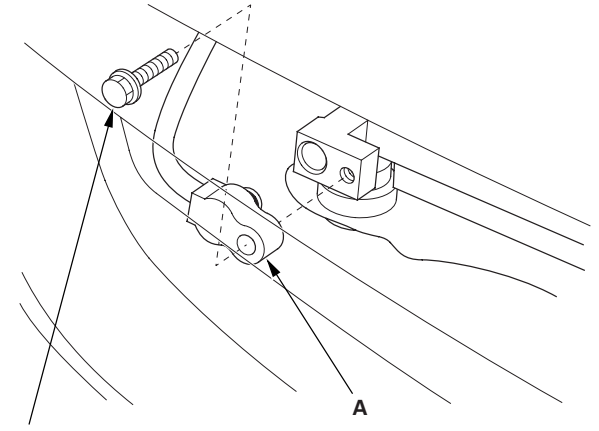
A/C Condenser Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).
2. Remove the front grille:
   - '06-08 models (see page 20-160)
   - '09 model (see page 20-161)
3. Remove the bolts, then disconnect the discharge hose (A) from the A/C condenser.



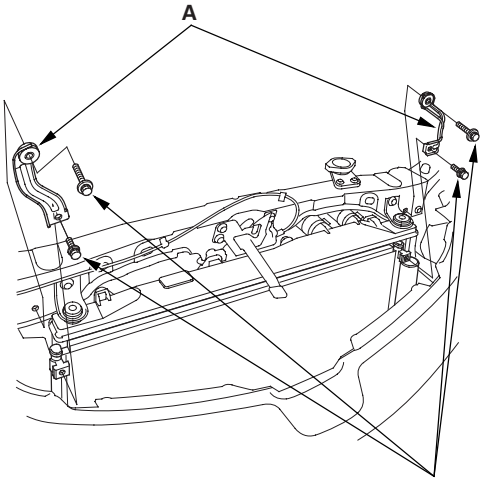
6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

4. Remove the bolt, then disconnect the receiver line (A) from the A/C condenser.



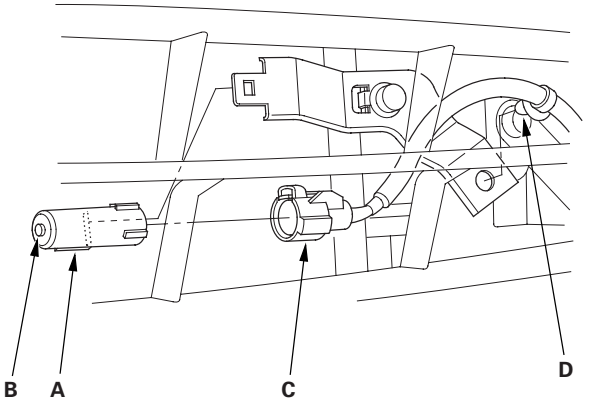
6 x 1.0 mm
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

5. Remove the bolts and the A/C condenser upper mount brackets (A).



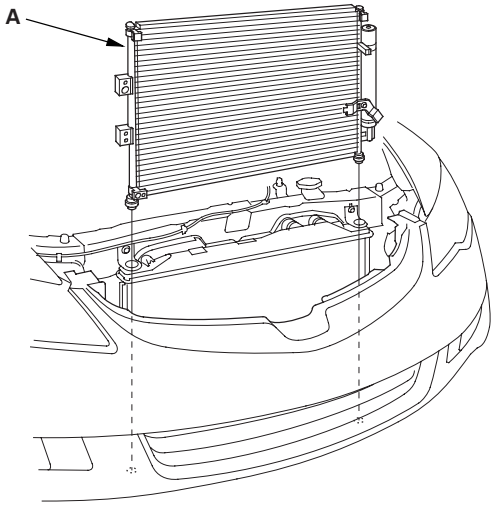
6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

6. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the bracket. Disconnect the 2P connector (C), then remove the clip (D).



7. Remove the hood latch (see page 20-181).

8. Remove the A/C condenser (A) by lifting it up. Be careful not to damage the radiator and A/C condenser fins when removing the A/C condenser.



9. Install the A/C condenser in the reverse order of removal, and note these items:

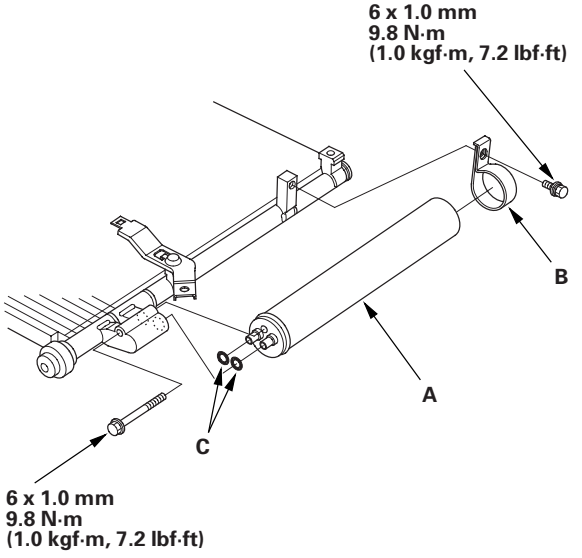
   - If you're installing a new A/C condenser, add refrigerant oil (SP-10) (see page 21-7).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see page 21-92).
   - Adjust the hood latch (see page 20-152).

Receiver/Dryer Desiccant Replacement

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

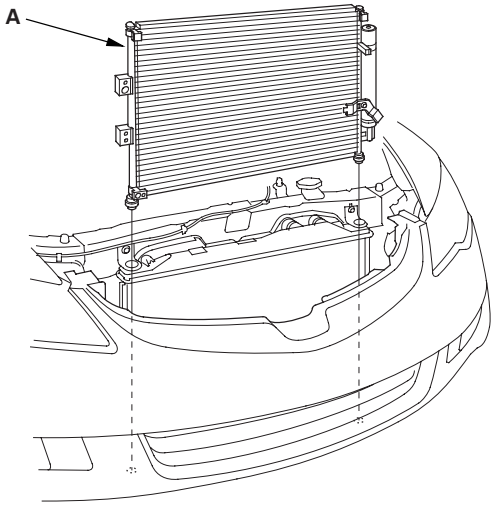
1. Remove the A/C condenser (see page 21-88).

2. Remove the bolts from the A/C condenser, then remove the receiver/dryer (A), the bracket (B), and the O-rings (C).



3. Install the receiver/dryer in the reverse order of removal. Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.

8. Remove the A/C condenser (A) by lifting it up. Be careful not to damage the radiator and A/C condenser fins when removing the A/C condenser.



9. Install the A/C condenser in the reverse order of removal, and note these items:

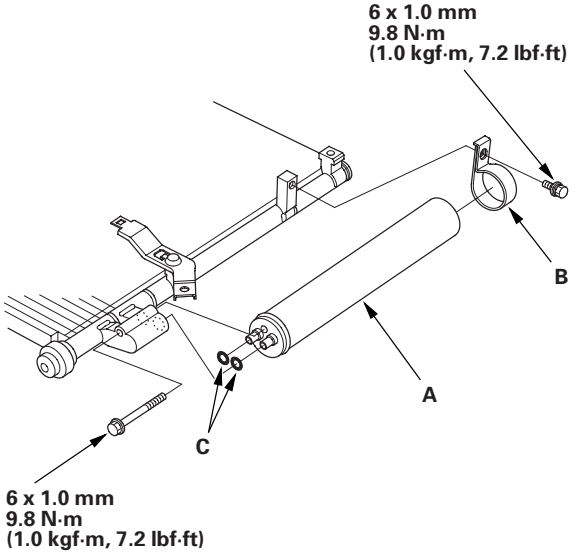
   - If you're installing a new A/C condenser, add refrigerant oil (SP-10) (see page 21-7).
   - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
   - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
   - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
   - Charge the system (see page 21-92).
   - Adjust the hood latch (see page 20-152).

Receiver/Dryer Desiccant Replacement

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

1. Remove the A/C condenser (see page 21-88).

2. Remove the bolts from the A/C condenser, then remove the receiver/dryer (A), the bracket (B), and the O-rings (C).



3. Install the receiver/dryer in the reverse order of removal. Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.

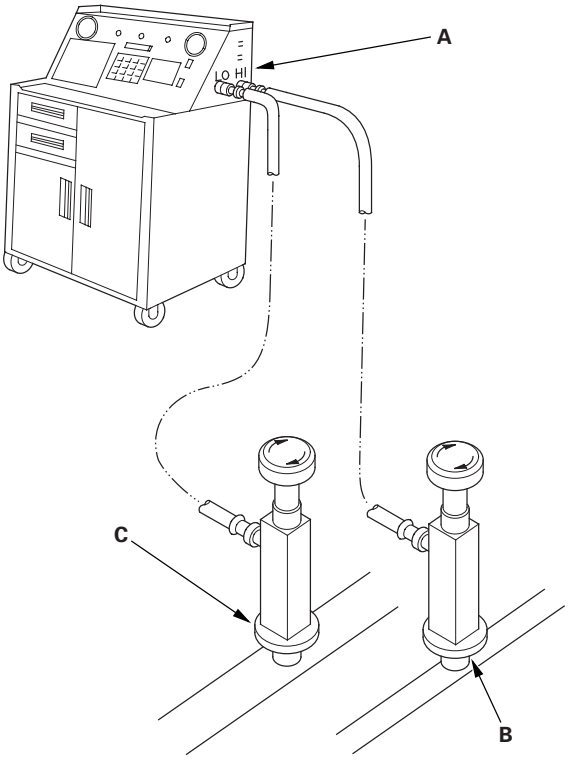
Refrigerant Recovery

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.

System Evacuation

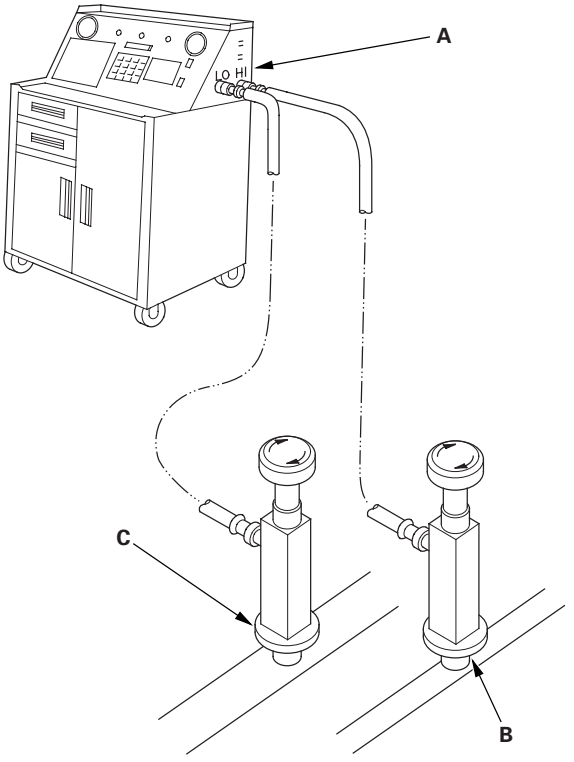
⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
- Do not allow moisture to contaminate the A/C system oil. Moisture in the oil is difficult to remove, and it can damage the A/C compressor.

1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant recovery/recycling/charging station. If the system has been open for several days, the receiver/dryer should be replaced, recover the refrigerant, if any, from the A/C system (see page 21-90). And the system should be evacuated for several hours.

2. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Recover the refrigerant, if any, from the A/C system (see page 21-90).



3. Evacuate the system. The vacuum pump should run for a minimum of 45 minutes to eliminate all moisture from the system. When the suction gauge reads —93.3 kPa (700 mmHg, 27.6 in.Hg) for at least 45 minutes, close all valves, and turn off the vacuum pump.

4. If the suction gauge does not reach approximately —93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see page 21-93).

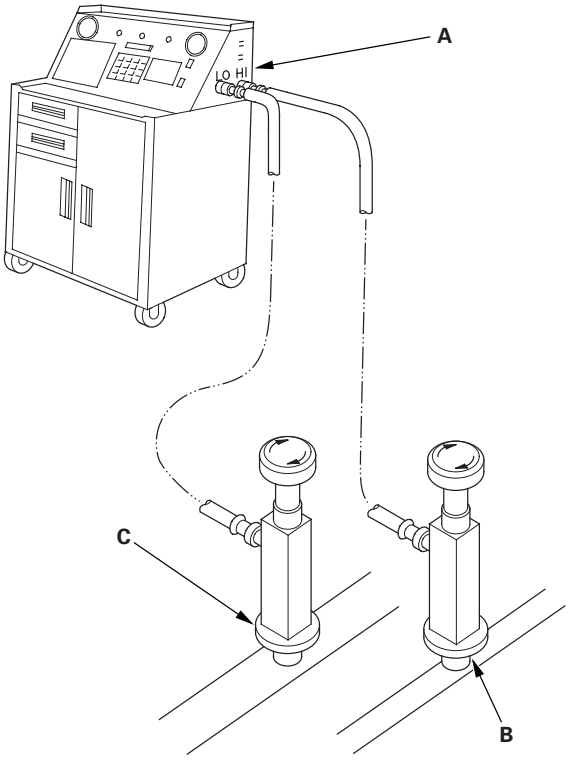
System Charging

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Recover the refrigerant in the A/C system (see page 21-90).

3. Evacuate the system (see page 21-91). If the system cannot reach a vacuum of —93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, or cannot hold a vacuum for at least 15 minutes, there is probably a leak. Do the Refrigerant Leak Check (see page 21-93), and repair any leaks before charging the system.

4. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only SP-10 refrigerant oil.

5. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the A/C compressor will be damaged.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant Capacity:
   400 to 450 g
   0.40 to 0.45 kg
   0.9 to 1.0 lbs
   14.1 to 15.9 oz

6. Check for refrigerant leaks (see page 21-93).

7. Check the system performance (see page 21-99).

Refrigerant Leak Check

Special Tools Required
- Leak detector YGK-H-10PM
- Leak detector HLD-100
- Leak detector TIFZX-1, or commercially available
- OPTIMAX Jr. A/C Leak Detection Kit (TRP124893)

These tools are available through the Honda Tool and Equipment Program; call 888-424-6857

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
- Check the system for leaks using an R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.

Leak Detector Usage Tips (Refer to the Operator's Manual for complete operating instructions)

- Position the vehicle in a wind-free work area. This will aid in detecting small leaks.
- When using the leak detector for the first time, allow it to warm up for 2 minutes with the probe in a clean atmosphere. This lets the temperature sensor in the detector stabilize.
- The calibration check should be done in the ''Search 2'' mode. Once that is done, the other check modes do not need calibrating.
- When leak checking through the HVAC module drain hose, avoid drawing water into the probe. Water can damage the internal pump and sensor.
- Avoid creasing the flexible probe extension. Creases can restrict air flow and give false readings.
- Because the detector recalibrates itself for ambient gases, it may be necessary to move the detector away from the leak to clear the sensor. Once the sensor has cleared, recheck the suspected leak.
- When removing the clear probe tip, be careful not to lose the flow ball.
- R-134a is heavier than air; always check below and to the sides of all potential leak sources.
- Halogen leak detectors are sensitive to chemicals: windshield washing solutions, solvents/cleaners, and some vehicle adhesives. Keep these chemicals out of the area when doing leak detection.

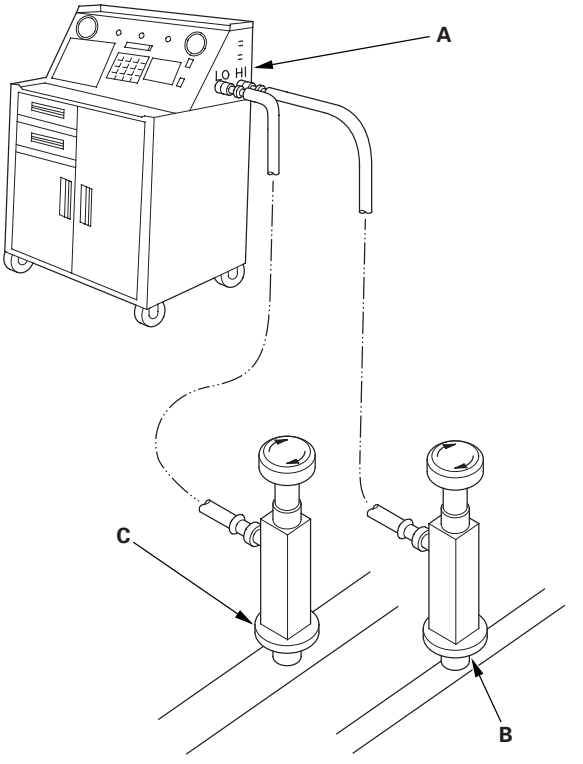
(cont'd)

Refrigerant Leak Check (cont'd)

Fluorescent Dye Usage Tips

- Use only Tracer-Stick single dose fluorescent dye capsules from Tracerline®. Other dyes contain solvents that may contaminate the refrigerant oil, leading to component failure.
- Adding excessive amounts of dye can damage the compressor.
- PAG oil is water soluble, so condensation on the evaporator core or the refrigerant lines may wash the PAG oil and fluorescent dye away from the actual leak. Condensation may also carry dye through the evaporator module drain.
- After checking and repairing leaks, thoroughly clean any residual dye from the areas where leaks were found. Use GLO-AWAY dye cleaner, from Tracerline®, and hot water to remove the dye (follow the instructions on the bottle). Residual dye stains can cause misdiagnosis of any future A/C system leaks.
- If any refrigerant dye contacts an exterior paint surface, remove it by doing this:
  – Carefully wash the affected surfaces to remove any dirt, and to prevent paint scratching.
  – Mix water and isopropyl alcohol in a 50/50 mixture.
  – Soak a soft 100 percent cotton towel with the water/alcohol mixture, and place the cloth on the affected areas to remove the dye.
  – After removing the dye with the water/alcohol-soaked cloth, carefully wash the affected areas, and check that there is no remaining dye.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Recover refrigerant from the A/C system (see page 21-90), and evacuate the system (see page 21-91). If the system achieves a vacuum of approximately 93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, and holds the vacuum for 15 minutes, then the system does not have a leak at this time. If the system cannot achieve or hold a vacuum, continue the refrigerant leak check.

3. Open the high pressure valve to charge the system to the specified capacity.

   Select the appropriate units of measure for your refrigerant charging station.

   Refrigerant Capacity:
   400 to 450 g
   0.40 to 0.45 kg
   0.9 to 1.0 lbs
   14.1 to 15.9 oz

4. With the engine OFF, use a halogen leak detector first to detect the leak source. Follow a continuous path in order to ensure that you will not miss any possible leaks. Test the following areas of the system for leaks:

Possible Leak Area	Diagnostic Procedure with the Leak Detector	Notes
Service Ports	• Check the service ports with the detector. • If the detector ''sniffs'' a leak, use fluorescent dye to confirm it.	When capping the service ports, ensure that the seals on the port caps are in place, and that the caps are tight. The caps are used as the final seals in the system.
Condenser	If the detector ''sniffs'' a leak, use fluorescent dye to confirm it.	• Check for joints or connections coated with oily dust. • Check for damaged and corroded areas. • Check all fittings, couplings, brazed/welded areas and areas around attachment points. • Move the probe slowly (1 inch/second or less), and keep it within 1/4 inch of the component being checked. This maximizes the chance of detecting a leak. • If you detect a leak, blow compressed air over the area, then recheck for leaks. For large leaks, clearing the area with compressed air may help you pinpoint the leak source.
A/C Lines (Low pressure side)	• Wiggle the rubber hoses when checking crimped metal ends. • If the detector ''sniffs'' a leak, use fluorescent dye to confirm it.	• Check all fittings, couplings, pressure switches, brazed/welded areas, and areas around attachment points on A/C lines and components. • Check for damaged and corroded areas. • Move the probe slowly (1 inch/second or less), and keep it within 1/4 inch of the component being checked. This maximizes the chance of detecting a leak.

5. Close the quick coupler valves, then disconnect the quick couplers from the vehicle service ports.

6. Attach the universal connect set, from the Optimax Jr. Leak Detection Kit, to the service valve fitting. Close the control valve (the black knob on the connect set).

7. Attach the charging station low pressure hose quick coupler to the service valve fitting, and open the quick coupler valve. Evacuate the connect set using the charging station vacuum pump, then close the quick coupler valve.

8. Detach the universal connect set, and install a Tracer-Stick® dye capsule between the connect set and the service valve fitting (see the manufacturer's instructions for more detail).

9. Attach the quick coupler on the universal connect set to the low pressure service port on the vehicle. Open the charging station low pressure hose quick coupler valve, but do not open the control valve.

10. Start the engine, and set the A/C system to MAX A/C. Open the control valve to let refrigerant and the dye enter the A/C system through the low pressure service port. Close the control valve when the Tracer-Stick® dye capsule is empty.

11. Run the engine and A/C system for 15 minutes to thoroughly circulate the dye. Then shut the engine off, and inspect the following areas of the system for leaks.

(cont'd)

Refrigerant Leak Check (cont'd)

NOTE:
- Check for leaks in a dark work area, and use the UV light and the special glasses from the leak check kit. Other UV lights may not work well with the Tracer-Stick® dye.
- Small leaks may take up to 1 week of vehicle operation (with normal A/C use) to become visible.

Possible Leak Area	Diagnostic Procedure with Fluorescent Dye
Service Ports	If a leak is found, replace the Schrader valve on the service port.
A/C Lines	• Use a permanent marker pen to circle the leak area. • If a leak is found, remove and replace the A/C line (see page 21-8).
Condenser	• If a leak is found, remove the condenser (see page 21-88). • Determine whether leak is in the condenser or the receiver/dryer. • Use a permanent marker pen to circle the leak area. • Replace either the receiver/dryer (see page 21-89), or the condenser (see page 21-88), depending upon which is leaking.
A/C Compressor	• Check for leaks at all of the compressor joints, the clutch center, the compressor front housing bolts, and the scroll bolts on the back of the compressor. • If a leak is found, use a permanent marker pen to circle the leak area. • If the compressor relief valve appears to be leaking, determine whether the leak is coming from the relief valve, or the joint between the compressor casing and the valve. • If the leak is from the relief valve, check the A/C system pressures, and refer to the pressure test table in the A/C system test (see page 21-99). If the leak is from the casing/valve joint, replace the A/C compressor relief valve (see page 21-87). • If the leak is coming from the suction hose and/or discharge hose fittings on the compressor, clean the A/C fittings and replace the suction/discharge fitting O-rings. • For all other compressor leaks, remove and replace the A/C compressor (see page 21-83).
Evaporator	• Start checking for evaporator leaks by illuminating the evaporator drain tube area. • If a leak is found, remove the evaporator core (see page 21-78). • Determine whether leak is from evaporator or expansion valve. • Use a permanent marker pen to circle the leak area. • Replace the expansion valve (see page 21-80), or the evaporator core (see page 21-78), depending upon which is leaking.

A/C System Noise Check

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The A/C system noise check will help you determine the source of abnormal A/C system noise.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
- Identify the conditions when the noise occurs. The weather, the vehicle speed, the vehicle being in gear or in neutral, the engine temperature, or other conditions may be factors in determining the noise source.
- Do an A/C system inspection (see page 21-6), and correct any problems found prior to diagnosing abnormal noises.
- Abnormal A/C noises can be misleading. For example, a sound similar to a failed bearing may be caused by loose fasteners, loose mounting brackets, or faulty compressor clutch assembly.

1. Inspect the air inlet grille in the cowl cover for debris. If debris is present, remove it.

2. Sit inside the vehicle, close the doors and windows, and turn the ignition switch to ON (II), but do not start the engine. Cycle the HVAC system through all blower speeds and all air distribution modes to determine where and when the noise occurs.

3. Operate the blower at each speed with the engine and A/C off, and check for unusual noises and excessive vibration. If noise and/or vibration are present, do the following checks:

   1 If the noise or vibration occurs only in a specific mode or setting, then check these items:
   - Operation of the mode control motor, door, and linkage
   - Operation of the air mix control motor(s), door(s), and linkage
   - Operation of the recirculation motor, door, and linkage

   2 If there is a squeaking or chirping noise, but no unusual vibration, replace the blower motor (see page 21-77).

   3 Remove the blower unit (see page 21-76), and check for foreign material (leaves or twigs, for example) on the blower motor and fan. If foreign material is present, remove it, and recheck for noise. If you don't find any foreign material, remove the blower motor (see page 21-77), and check these items:
   - Check if the fan blades are cracked or broken
   - Make sure the fan retainer is tight
   - Inspect the fan alignment on the blower motor shaft

   Replace the blower motor if any problems are present.

4. Set up the vehicle for the running A/C checks:

   - Select a quiet area for testing
   - Apply the parking brake
   - Shift the vehicle in PARK or in Neutral
   - Start the engine
   - Set the temperature control dial to Max Cool
   - Set the mode control switch to Vent
   - Set the fan control dial to minimum (but not OFF)
   - Turn the A/C switch ON

   Switch the compressor on and off several times to clearly identify the sound during A/C compressor operation. Listen to the noise while the A/C compressor clutch is engaged and disengaged. Probe the A/C system with a stethoscope to pinpoint the noise.

   NOTE: If the noise does not change when the A/C compressor clutch engages or disengages, the noise may be caused by an engine-related component. Probe the engine area with a stethoscope to pinpoint the noise.

(cont'd)

A/C System Noise Check (cont'd)

5. Turn the ignition switch to LOCK (0), and check the drive belt for excessive wear, oil contamination, improper routing, or a faulty belt tensioner (see page 4-30). Correct any problems found. Start the engine, run the A/C system, and check if the noise is coming from the drive belt, the belt tensioner or any of the pulleys. Repair or replace any faulty components.

6. Listen for noises coming from the A/C lines, the A/C hoses, the condenser, the evaporator, the receiver/drier, or the expansion valve, and check these items:

   - Noises caused by A/C components touching other components or the body. Reroute or insulate the A/C component(s) as needed, and recheck for noise.
   - Loose, damaged or excessively worn A/C components or mounting hardware. Repair or replace the faulty component(s) or hardware, and recheck for noise.
   - A moaning noise coming from the A/C suction line. If there is a moaning noise, check the system refrigerant charge (see page 21-92). If the refrigerant charge is OK, replace the receiver/dryer.

7. Check the operation of the A/C compressor clutch:

   - Make sure compressor clutch engages without slipping. If the clutch does not engage, troubleshoot the A/C compressor clutch circuit (see page 21-62). If the compressor clutch slips, replace the complete clutch assembly (see page 21-86).
   - Make sure the compressor clutch disengages. If the clutch does not disengage, do the A/C compressor clutch check (see page 21-85). If the compressor clutch is OK, replace the A/C compressor (see page 21-83).
   - Make sure the compressor clutch cycles normally. If the compressor clutch is cycling rapidly, the A/C system is probably low on refrigerant due to a leak. Do the refrigerant leak check (see page 21-93). If the refrigerant charge is OK, and there are no leaks, troubleshoot the A/C compressor clutch circuit.

8. Listen with a stethoscope for noises coming from the A/C compressor, and check these items:

   - The noise changes when the compressor clutch disengages. If the noise does not change when the A/C compressor disengages, the noise may be caused by an engine-related component. Probe the engine area with a stethoscope to pinpoint the noise.
   - The A/C system operating pressures are normal. If the system pressures are abnormal, troubleshoot the problem using the pressure test table in the A/C system check (see page 21-99). Correct the pressure-related problem(s), and recheck for noise.
   - The compressor hose connections, mounting brackets, and fasteners are in good condition. If any of these components are loose, damaged, or excessively worn, repair or replace the faulty component(s), and recheck for noise. If these components are in good condition, and the noise is still present, replace the A/C compressor (see page 21-83).

A/C System Test

Performance Test

⚠CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The performance test will help determine if the A/C system is operating within specifications.

NOTE:
- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

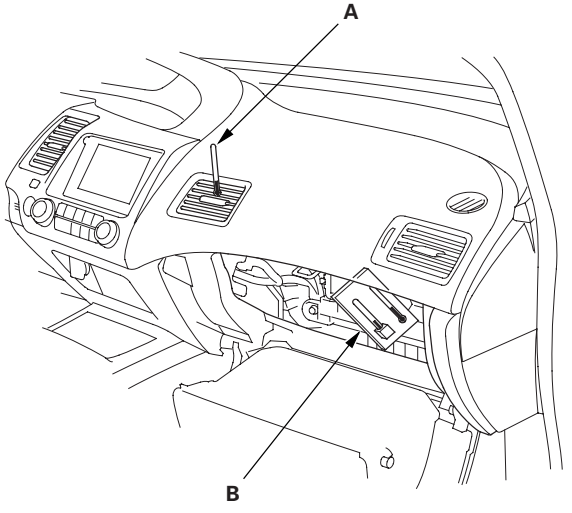
1. Do the A/C system inspection (see page 21-6), and correct any problems found.

2. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.

3. Determine the relative humidity and air temperature.

4. Open the glove box. Remove the glove box stop on each side, then let the glove box hang down (see page 20-104).

5. Insert a thermometer (A) in the center vent.



6. Place a thermometer (B) near the blower unit's recirculation inlet duct.

7. Test conditions:

   - Move the vehicle out of direct sunlight and let it cool down to the surrounding (ambient) temperature. If necessary, wash the vehicle to cool it down more quickly.
   - The ambient temperature must be at least 16 ℃ (60 ℉).
   - Open the hood.
   - Open the front doors.
   - Set the temperature control dial to Max Cool, the mode control switch to Vent, and the recirculation control switch to Recirculate.
   - Turn the A/C switch ON and the fan switch to Max.
   - Hold the engine speed at 1,500 rpm.
   - No driver or passengers in the vehicle.

8. Inspect the A/C components for the following conditions:

   - A/C compressor clutch not engaged.
   - Abnormal frost areas.
   - Unusual noises.

   If you observe any of these conditions, refer to the Symptom Troubleshooting Index.

9. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the discharge (high) and suction (low) pressures on the A/C gauges.

(cont'd)

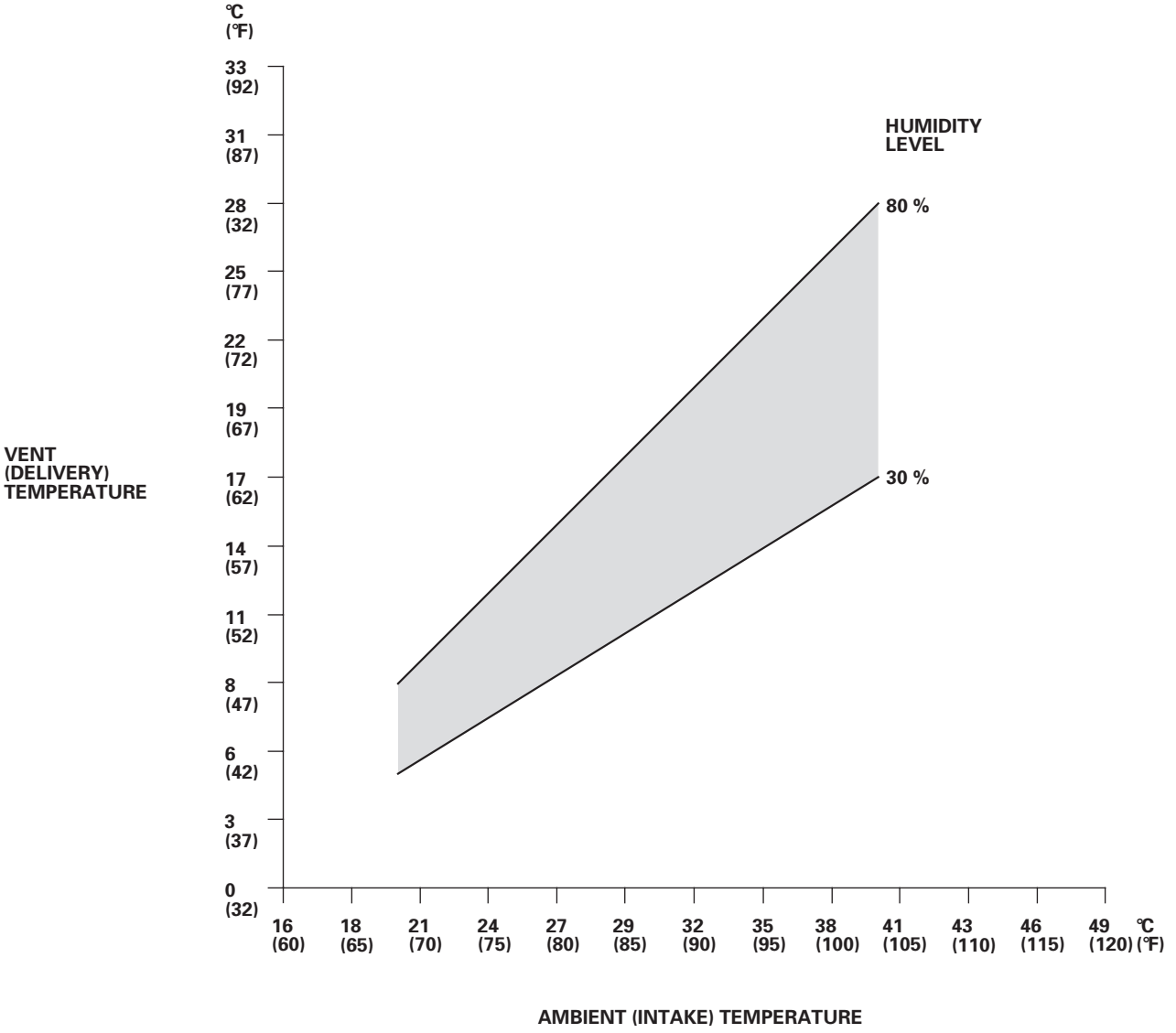
A/C System Test (cont'd)

10. To complete the vent (delivery)/ambient air (intake) temperature chart:

    - Mark the vent (delivery) temperature on the vertical line.
    - Mark the ambient air (intake) temperature on the bottom line.
    - Draw a vertical line from the ambient air (intake) temperature mark.
    - Draw a horizontal line from the vent (delivery) temperature mark unit it intersects the vertical line.

    NOTE: The low side and intake temperatures should intersect in the shaded area within about 10 % of the measured humidity level. Any measurements outside the line may indicate the need for further inspection.

Ambient (Intake) Temperature vs. Vent (Delivery) Temperature

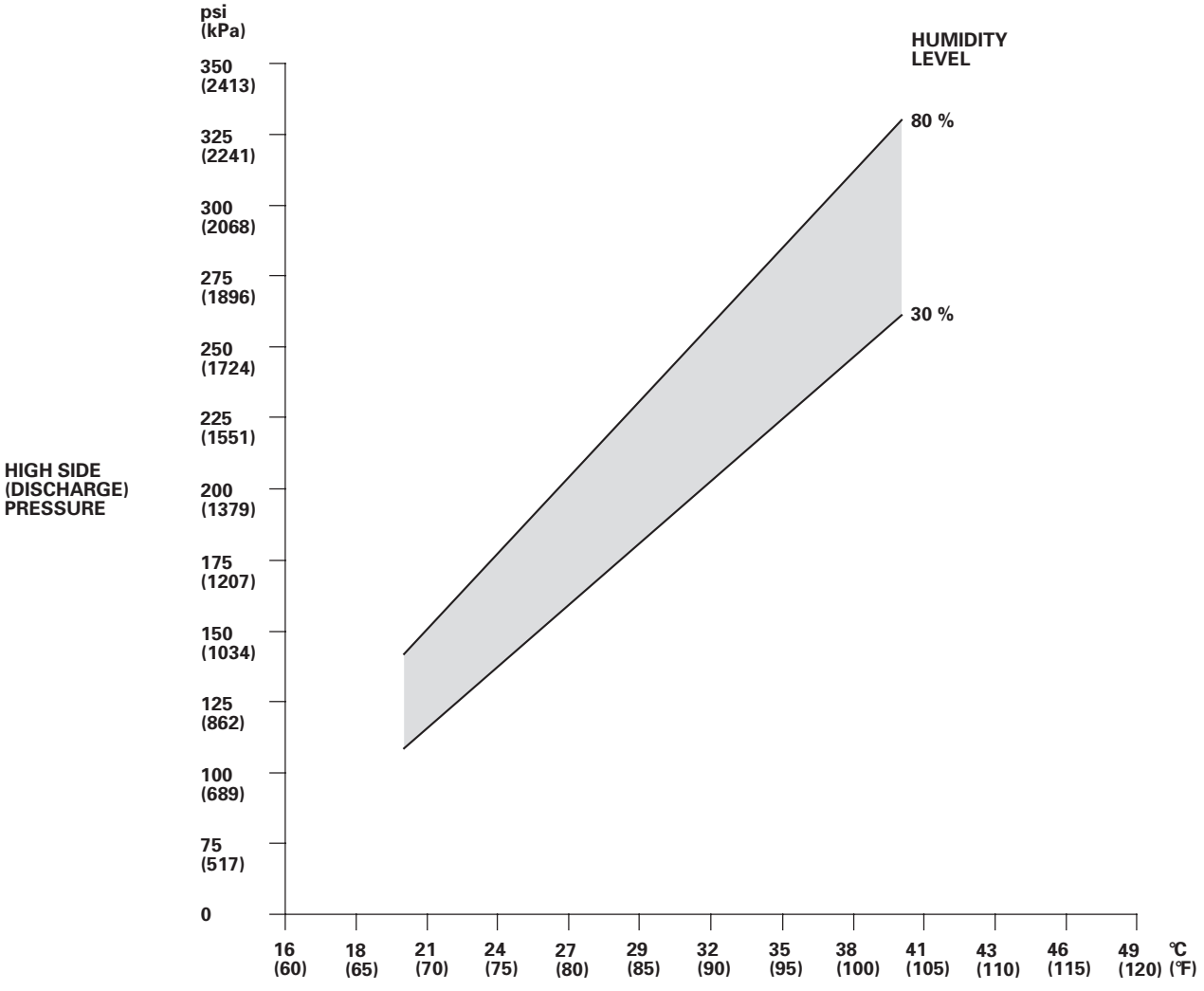


11. To complete the high side (discharge pressure)/ambient air (intake) temperature chart:

- Mark the high side (discharge pressure) temperature on the vertical line.
- Mark the ambient air (intake) temperature on the bottom line.
- Draw a vertical line from the high side (discharge pressure) temperature mark.
- Draw a horizontal line from the vent (delivery) temperature mark unit it intersects the vertical line.

NOTE: The low side and intake temperatures should intersect in the shaded area within about 10 % of the measured humidity level. Any measurements outside the line may indicate the need for further inspection.

Ambient (Intake) Temperature vs. High Side (Discharge) Pressure



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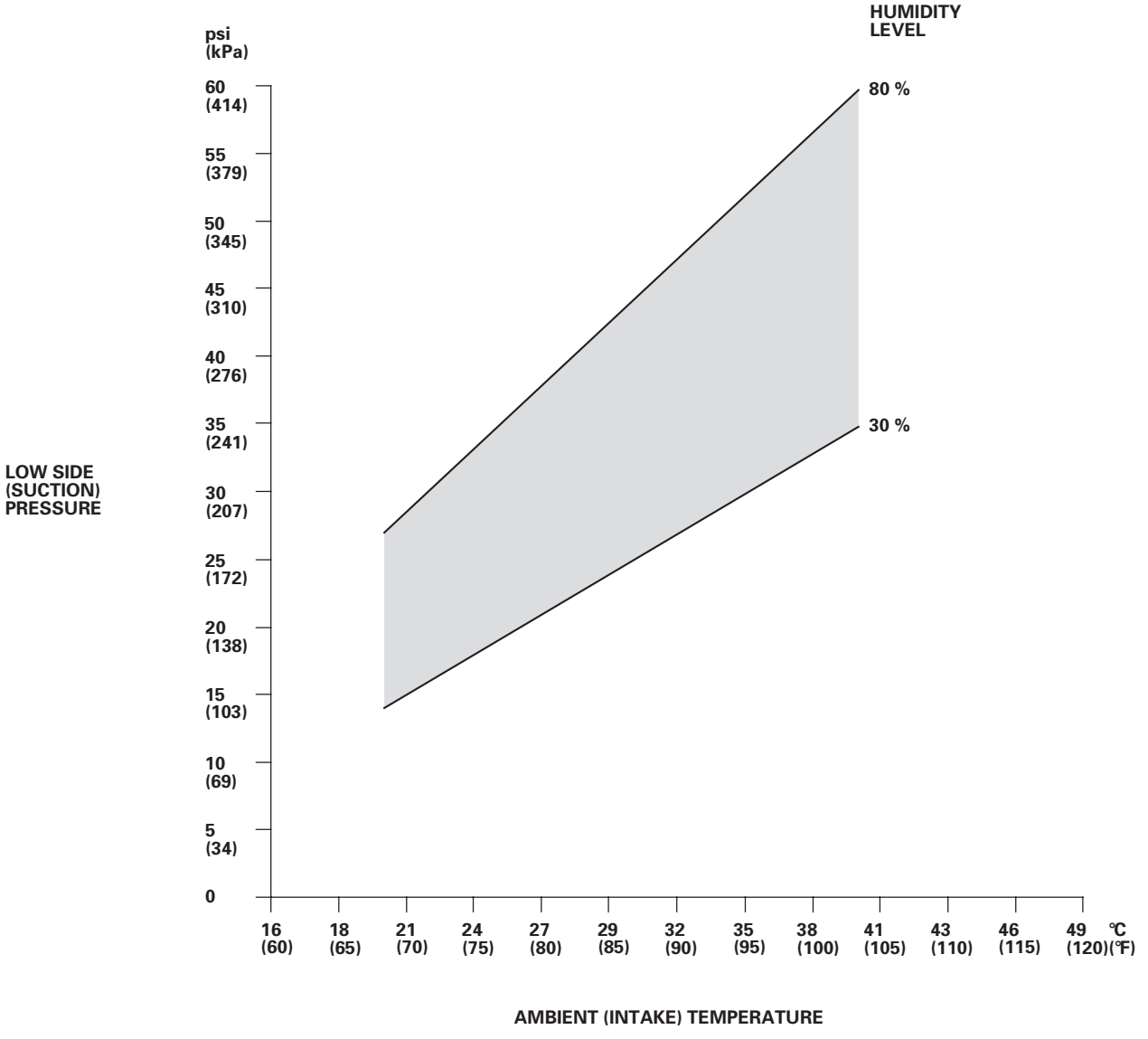
A/C System Test (cont'd)

12. To complete the low side (suction pressure)/ambient air (intake) temperature chart:

    - Mark the low side (suction pressure) temperature along the vertical line.
    - Mark the ambient air (intake) temperature along the bottom line.
    - Draw a vertical line from the ambient air (intake) temperature mark.
    - Draw a horizontal line from the vent (delivery) temperature mark unit it intersects the vertical line.

    NOTE: The low side and intake temperatures should intersect in the shaded area within about 10 % of the measured humidity level. Any measurements outside the line may indicate the need for further inspection.

Ambient (Intake) Temperature vs. Low Side (Suction) Pressure



Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Suction and discharge pressures are normal	Warm air from the vents.	The A/C system contains too much refrigerant oil. The air mix door is not operating properly.	• Recover refrigerant (see page 21-90) and evacuate the system (see page 21-91). Adjust the amount of oil in the system, then recharge the system (see page 21-92). • Check air mix door operation (see page 21-72), and repair as needed.
Suction and discharge pressures are roughly equal and steady	The suction and discharge pressures equalize when the engine is revved.	The A/C compressor clutch or the drive belt is slipping, or the compressor shaft seal is leaking.	• Check whether the A/C compressor clutch or the drive belt is slipping. • If the drive belt is slipping, replace the drive belt (see page 4-31). Also inspect the drive belt auto-tensioner (see page 4-31). • If the A/C compressor clutch is slipping, replace it (see page 21-86). • Check the A/C compressor shaft seal. If it's leaking, replace the A/C compressor (see page 21-83).
Suction and discharge pressures are roughly equal but fluctuate	Suction and discharge pressures fluctuate while running. Pressures equalize as soon as the A/C compressor disengages.	The compressor discharge valve or the compressor gasket is faulty.	Replace the A/C compressor (see page 21-83).
Suction and discharge pressures are roughly equal and abnormally low	The suction and discharge pressures do not change during continued operation.	The A/C system is undercharged.	Recover refrigerant (see page 21-90), then do the refrigerant leak check (see page 21-93). Repair any leaks, then recharge the system (see page 21-92).
Suction and discharge pressures are abnormally high, but normalize when the condenser is cooled	The suction pressure decreases when cool water is sprayed on the A/C condenser.	The A/C system is overcharged.	Recover refrigerant (see page 21-90), evacuate the system (see page 21-91), and recharge the system to specifications (see page 21-92).

(cont'd)

A/C System Test (cont'd)

Test results	Related symptoms	Probable cause	Remedy
Suction and discharge pressures are abnormally high, and refrigerant line temperatures are abnormal	• The high pressure vapor line to the condenser is too hot. • The low pressure liquid line from the expansion valve is not cold. • There is an abrupt temperature drop along a refrigerant line, or in the condenser or evaporator.	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.
Suction and discharge pressures are abnormally high, but drop rapidly when the compressor disengages	• After stopping the A/C compressor, the discharge pressure quickly drops about 196 kPa (28 psi), then falls gradually. • The input and output temperatures at the expansion valve are not similar.	There is excess air in the A/C system.	Recover refrigerant (see page 21-90), evacuate the system (see page 21-91), and recharge the system (see page 21-92).
Suction and discharge pressures are abnormally high, and there is little or no airflow through the A/C condenser		• The condenser and/or radiator fins are clogged. • The condenser fins are damaged. • The condenser and/or radiator fans are not working properly.	• Clean debris from the condenser and/or radiator fins. • Comb the condenser fins to repair any damage. • Troubleshoot the A/C condenser fan and/or the radiator fan circuit(s).
The suction pressure is high and the discharge pressure is low. Both pressures are steady	• The liquid line temperature is similar on both sides of expansion valve. • System pressures do not vary at a steady engine speed.	The expansion valve is stuck open.	Replace the expansion valve (see page 21-80).
The suction pressure is low, the discharge pressure is high, and the refrigerant temperature changes abnormally somewhere in the system	• The high pressure liquid line going into the expansion valve is cold. • There is an abrupt temperature drop in the line between the compressor and the condenser, or in the line between the condenser and the expansion valve.	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.

Test results	Related symptoms	Probable cause	Remedy
The suction pressure is high, the discharge pressure is low, and there are particle contaminants in the refrigerant lines	The expansion valve and/or the compressor discharge hose are contaminated with metal flakes or desiccant particles.	The A/C compressor is malfunctioning.	Replace the A/C compressor (see page 21-83). If the system is contaminated with desiccant, replace the receiver/ dryer (see page 21-89).
The suction pressure is high, the discharge pressure is low, and the pressures quickly change when the A/C disengages	The discharge and suction pressures equalize soon after the A/C compressor stops.	The A/C compressor seal is faulty.	Replace the A/C compressor (see page 21-83).
Suction and discharge pressures are both low and none of the refrigerant lines are cold	There is no frost on the expansion valve, and the low-pressure liquid line is not cold.	The A/C system has a leak (very low refrigerant charge).	Do the refrigerant leak check (see page 21-93), repair any leaks, and recharge the A/C system (see page 21-92).
Suction and discharge pressures are both low, and the expansion valve or the suction line is abnormally cold	• The temperature around the expansion valve is too low compared to the temperature around the receiver/dryer. • The low pressure (suction) hose/line is cooler than the evaporator.	The discharge hose/ line is clogged or kinked, which is restricting refrigerant flow. The suction hose/line is clogged or kinked, which is restricting refrigerant flow.	Repair or replace the faulty A/C line (see page 21-8).
Initially, the suction and discharge pressure are normal, but both become abnormally low during operation	During extended operation, the air flow from the vents decreases.	The evaporator is freezing up.	Run the fan with A/C compressor off to warm the evaporator, then test the evaporator temperature sensor (see page 21-70). If necessary, replace the evaporator temperature sensor.
Suction and discharge pressures are both low and there are abnormal temperature changes at the expansion valve	• During extended operation, warm air comes out of the vents, the suction pressure decreases, and heavy frost occurs on the low pressure liquid line. • The low pressure liquid line is cold at the expansion valve, but warm after the valve. • There is frost on the expansion valve.	The expansion valve is stuck closed.	• Replace the expansion valve (see page 21-80), and the receiver/ dryer (see page 21-89). • Check the old expansion valve for contamination. If contaminants are found, replace the component that caused the contamination.

(cont'd)

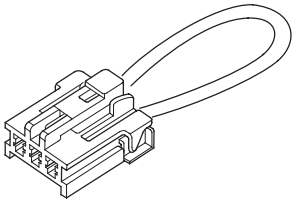
A/C System Test (cont'd)

Test results	Related symptoms	Probable cause	Remedy
The discharge pressure is low, the suction pressure is extremely low, and the expansion valve outlet is abnormally warm	There is no frost on the expansion valve outlet, and the liquid line temperature changes significantly across the expansion valve.	There is excessive moisture in the A/C system.	Recover refrigerant (see page 21-90), then replace the receiver/dryer (see page 21-89). Evacuate the system (see page 21-91), and recharge the system (see page 21-92).
The discharge pressure is low, the suction pressure is extremely low, and the suction line is abnormally cold	There is frost on the line from the evaporator to the compressor.	The evaporator is internally contaminated or plugged.	Recover refrigerant (see page 21-90), then replace the evaporator. Evacuate the system (see page 21-91), and recharge the system (see page 21-92).
The discharge pressure is low, the suction pressure is extremely low, and the refrigerant temperature doesn't change going through the expansion valve	• There is no frost on the expansion valve, and the low pressure liquid line is not cold. • The liquid line temperatures are similar on both sides of expansion valve.	The expansion valve is faulty.	Replace the expansion valve (see page 21-80).
The discharge pressure is low, the suction pressure is extremely low, and the expansion valve is abnormally cold	There is frost on the expansion valve.	Excessive moisture in the system is freezing the expansion valve.	Recover refrigerant (see page 21-90), the replace the receiver/dryer (see page 21-89). Evacuate the system (see page 21-91), and recharge the system (see page 21-92).
The discharge pressure is low, the suction pressure is extremely low, and the high pressure liquid line is abnormally cold	There is frost on the line from the receiver/dryer to the expansion valve.	The receiver/dryer is clogged.	Recover refrigerant (see page 21-90), then replace the receiver/dryer (see page 21-89). Evacuate the system (see page 21-91), and recharge the system (see page 21-92).

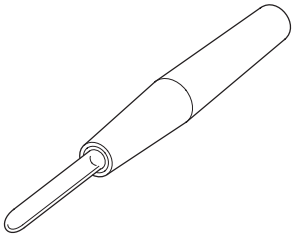
Body Electrical

Special Tools

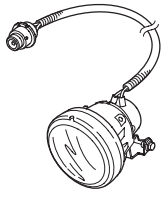
Ref. No.	Tool Number	Description	Qty
①	07WAZ-001010A	MPCS (MCIC) Service Connector	1
②	07TAZ-001020A	Back Probe Adaptor	2
③	07AAJ-S3MA100	HID Bulb Test Light	1
④	07AAC-000A1A0	Relay Puller	1



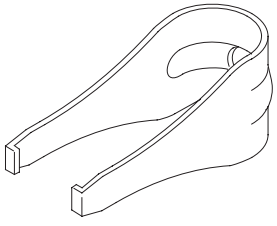
①



②



③



④

General Troubleshooting Information

Tips and Precautions

Before Troubleshooting

1. Check applicable fuses in the appropriate fuse/relay box.

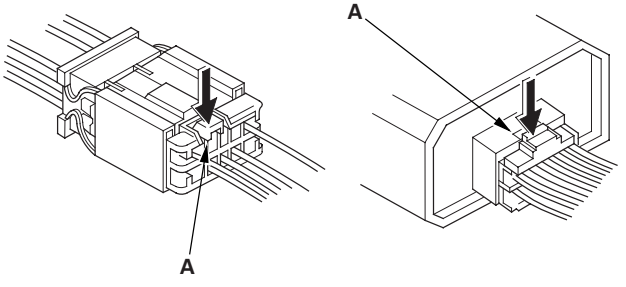
2. Check the battery for damage, state of charge, and clean and tight connections.

NOTICE

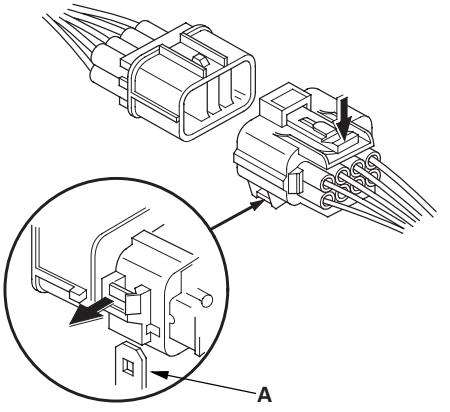
- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

Handling Connectors

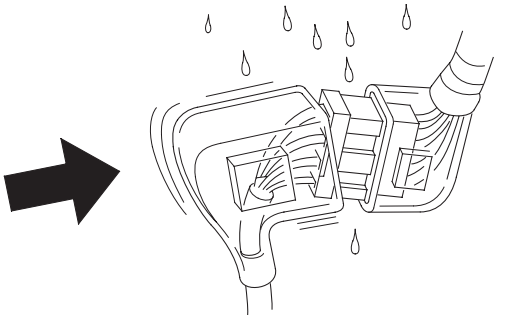
- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with dielectric grease (except watertight connectors).
- All connectors have push-down release type locks (A).



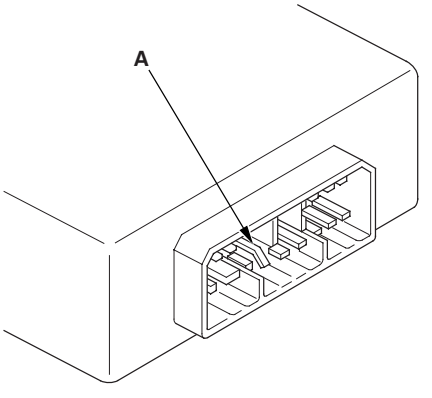
- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.



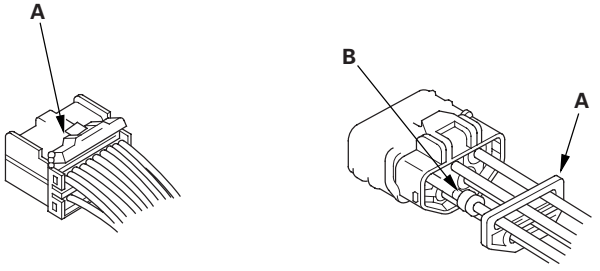
- Before connecting connectors, make sure the terminals (A) are in place and not bent.



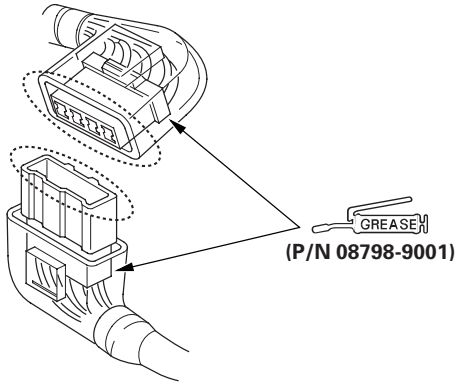
(cont'd)

General Troubleshooting Information (cont'd)

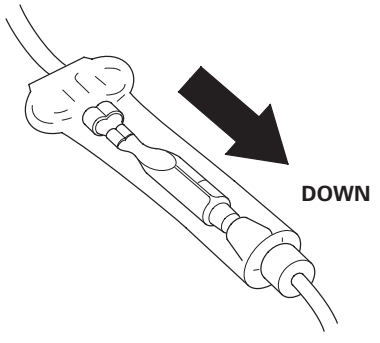
- Check for loose retainers (A) and rubber seals (B).



- The backs of some connectors are packed with dielectric grease. Add grease if necessary. If the grease is contaminated, replace it.

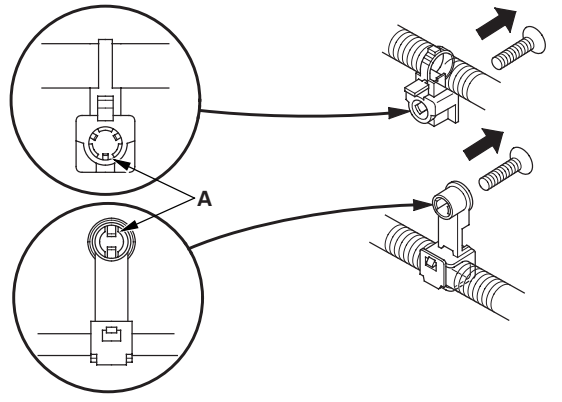


- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

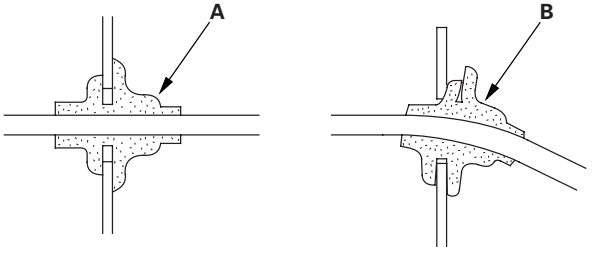


Handling Wires and Harnesses

- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; don't damage their locks (A).

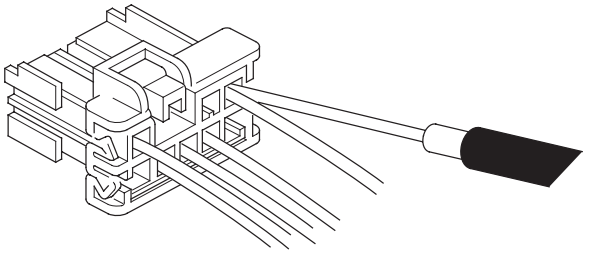


- After installing harness clips, make sure the harness doesn't interfere with any moving parts.
- Keep wire harnesses away from exhaust components and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).

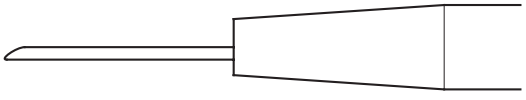


Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage is SRS wiring or terminals, replace the harness.
- After installing parts, make sure that no wires are pinched under them.
- When using electrical test equipment, follow the manufacturer's instructions and those described in this manual.
- If possible, insert the probe of the tester from the wire side (except waterproof connector).



- Use back probe adaptor 07TAZ-001020A.



- Refer to the instructions in the Honda Terminal Kit for identification and replacement of connector terminals.

Five-step Troubleshooting

1. Verify The Complaint:
   Turn on all the components in the problem circuit to verify the client complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.

2. Analyze The Schematic:
   Look up the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or a ground is a likely cause.

   Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.

3. Isolate The Problem By Testing The Circuit:
   Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting. Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.

4. Fix The Problem:
   Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.

5. Make Sure The Circuit Works:
   Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

(cont'd)

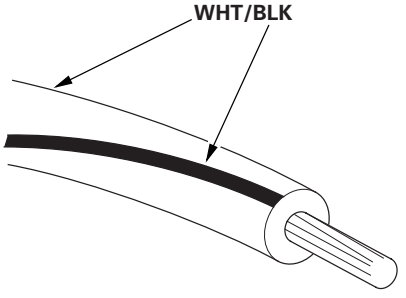
General Troubleshooting Information (cont'd)

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics:

WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Gray
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

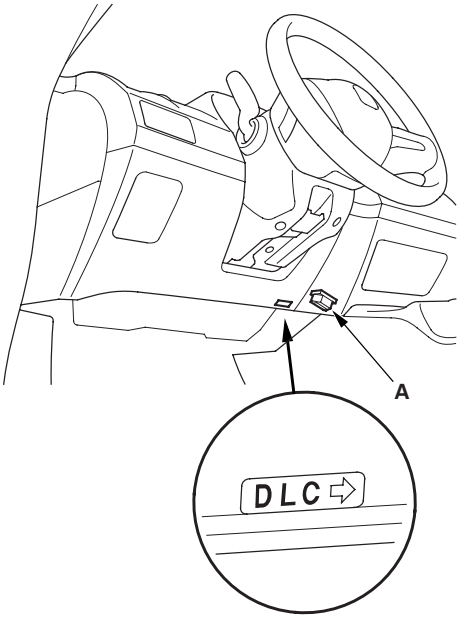
The wire insulation has one color or one color with another color stripe. The second color is the stripe.



How to Check for DTCs with the Honda Diagnostic System (HDS)

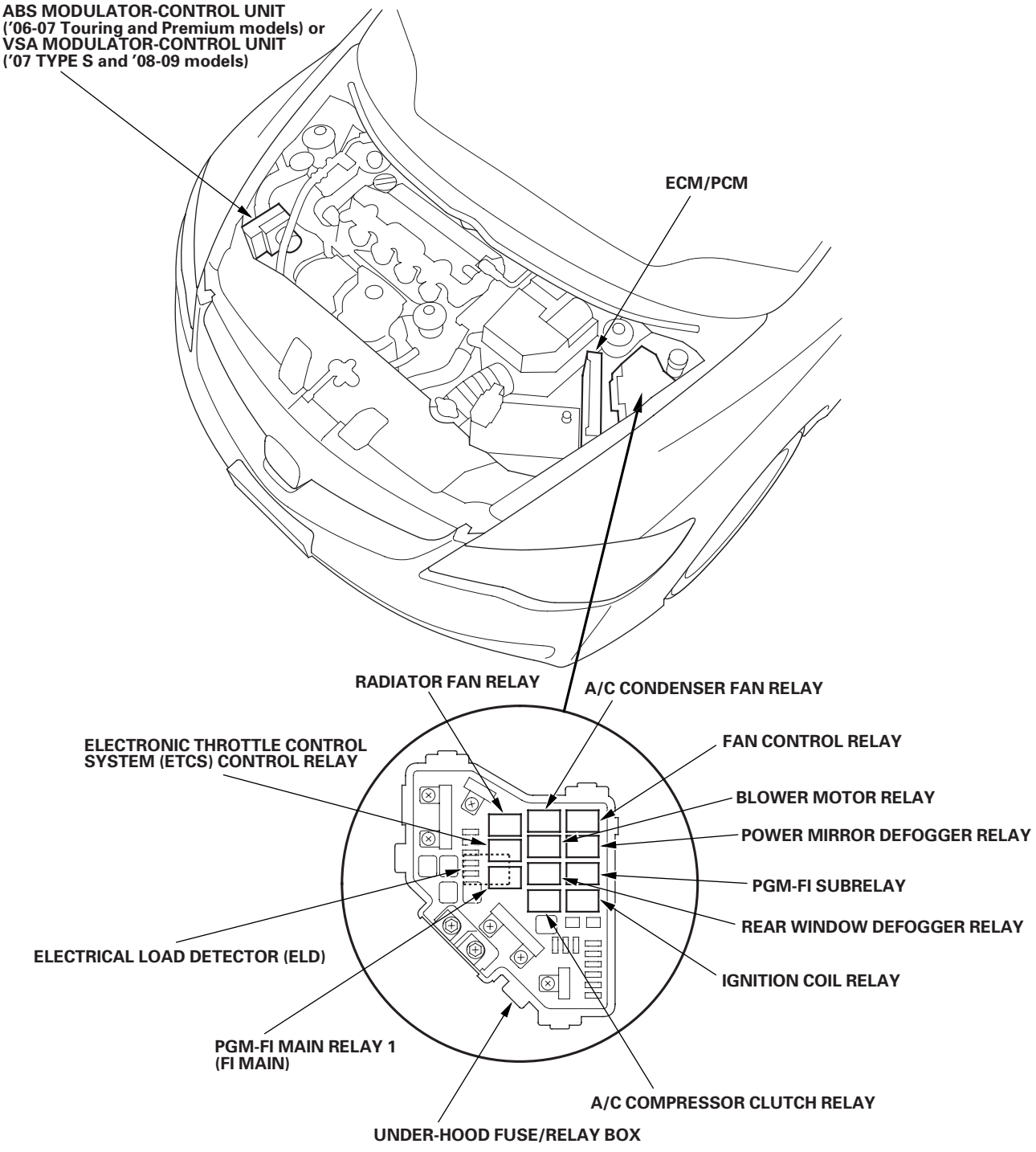
NOTE: For specific operations, refer to the user's manual that came with the Honda Diagnostic System (HDS).

1. Connect the HDS to the data link connector (A) located under the driver's side of the dashboard.



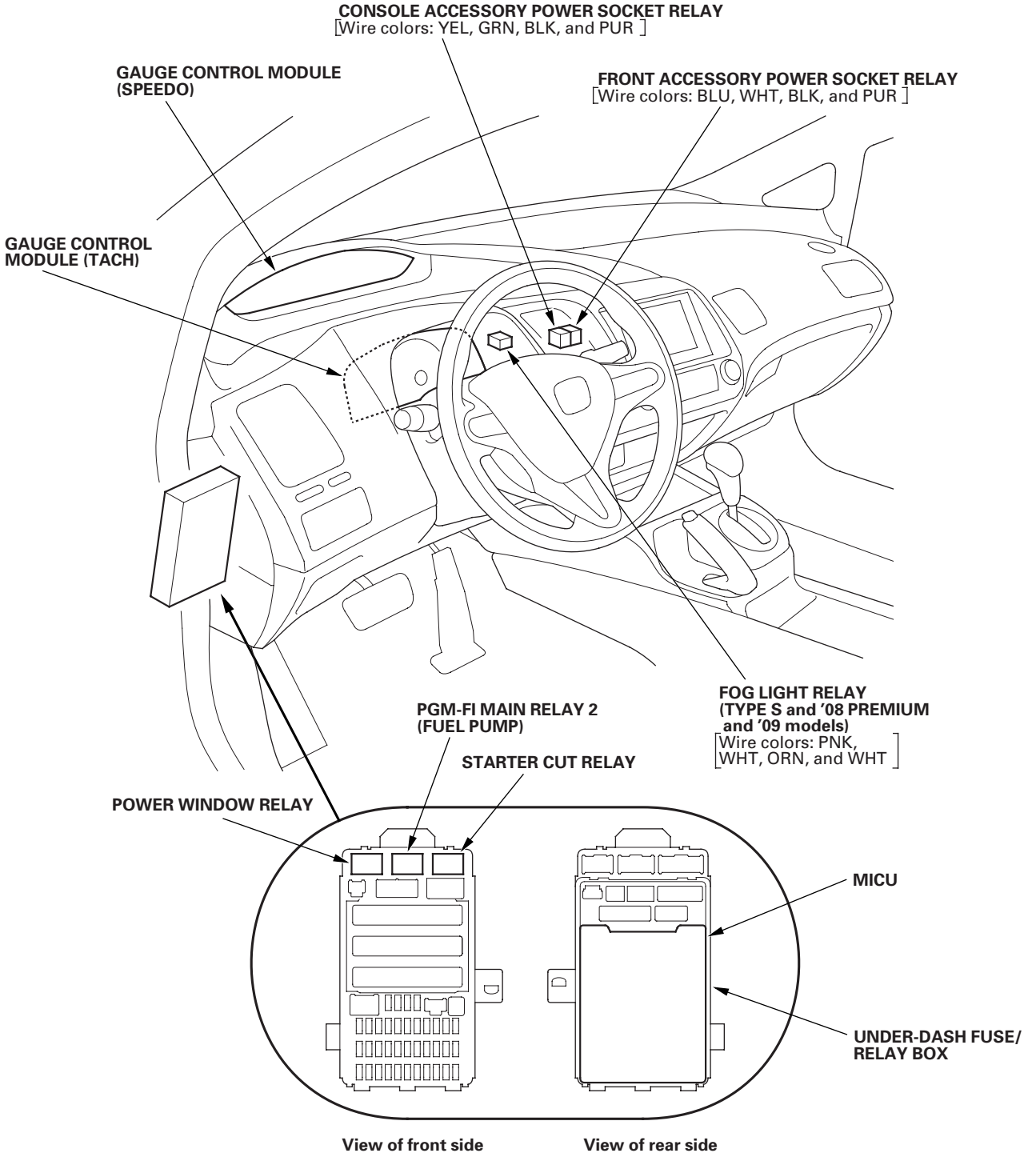
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle, if it doesn't, do the DLC circuit troubleshooting (see page 11-204).
4. Enter the BODY ELECTRICAL, then select the TEST MODE menu.
5. Check for DTCs with the HDS.
6. If any DTCs are indicated, note them, and go to the indicated DTC troubleshooting.

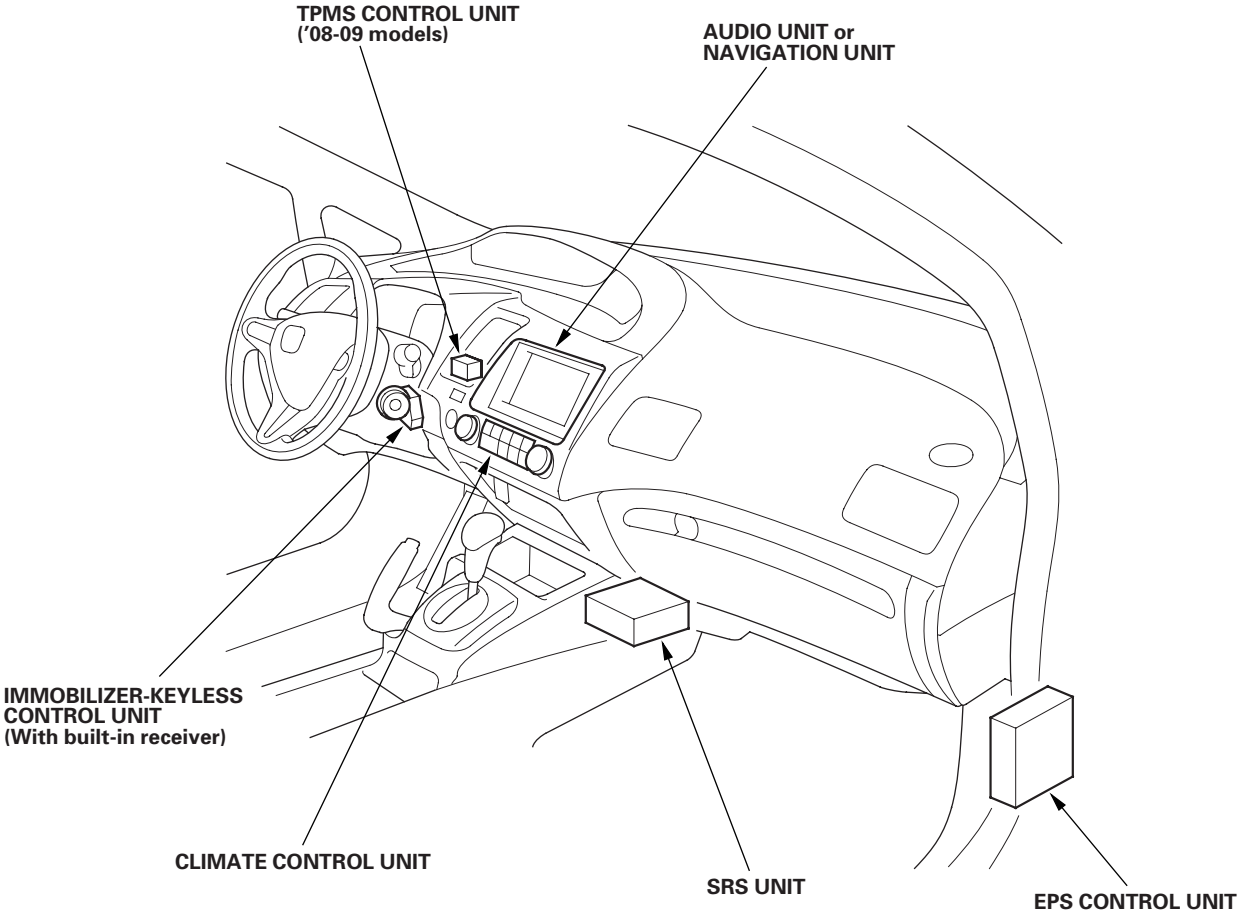
Engine Compartment



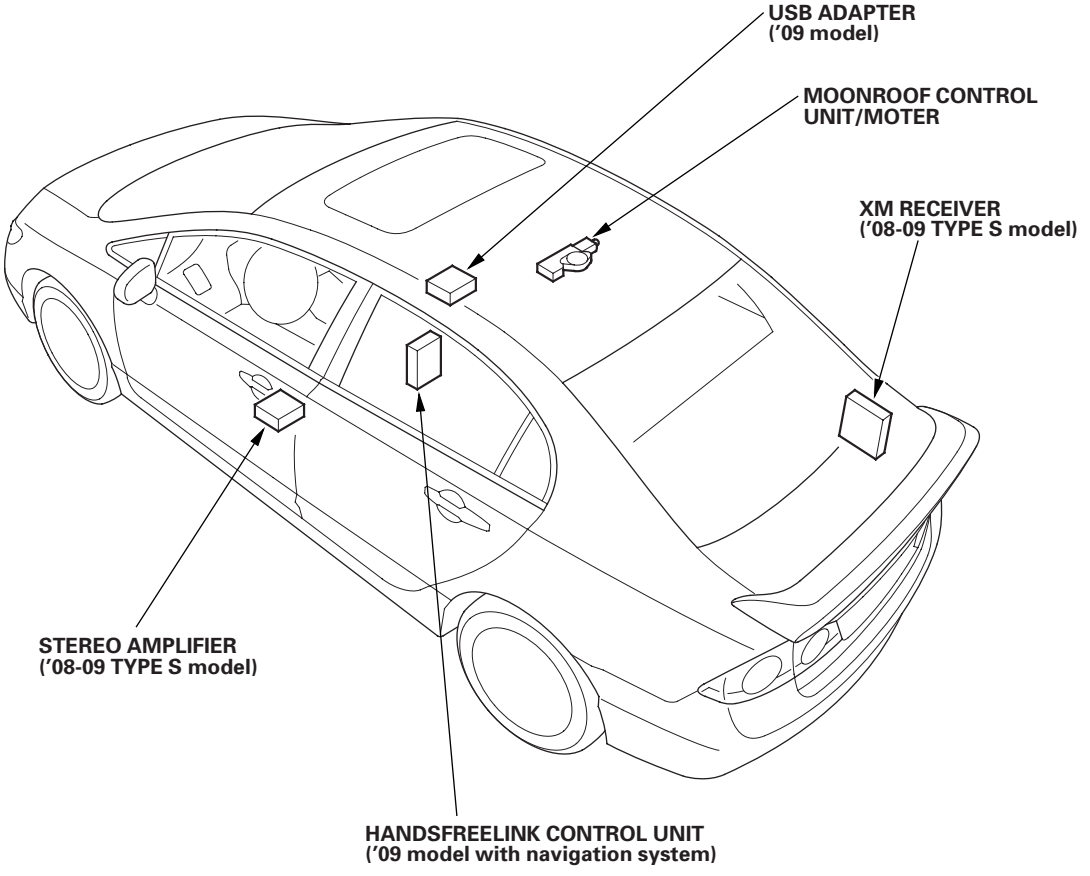
Relay and Control Unit Locations

Dashboard



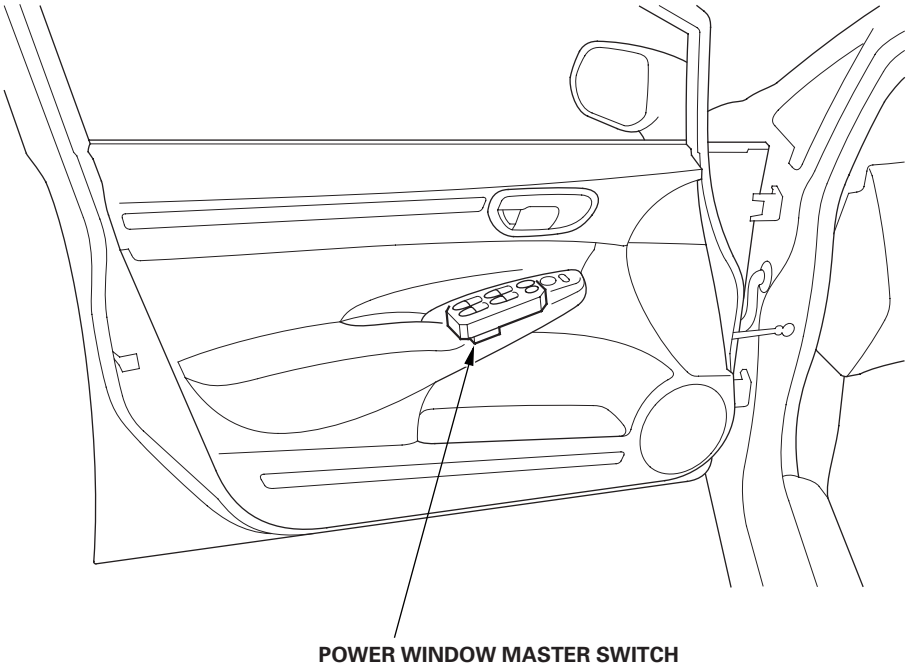


Roof and Floor



Door

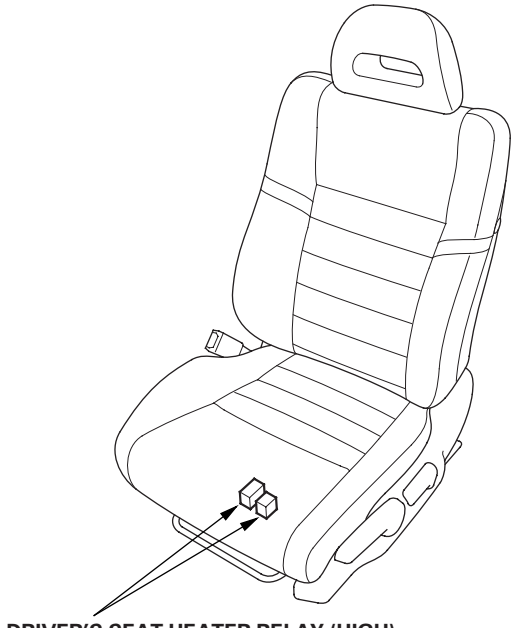
Driver's Door



POWER WINDOW MASTER SWITCH
(Has built-in control unit)

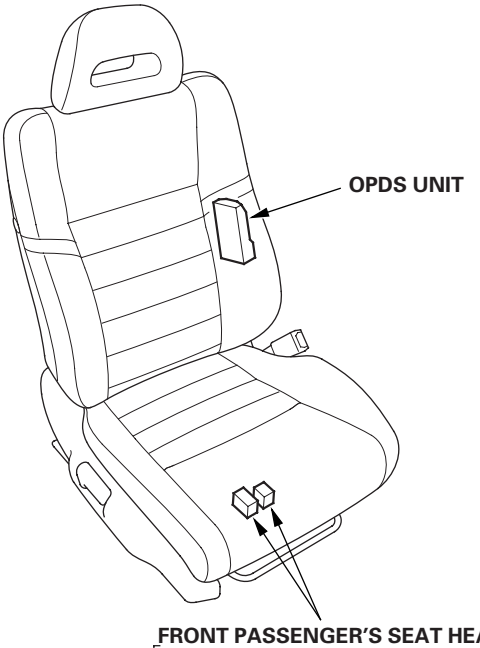
Seat

Driver's Seat



DRIVER'S SEAT HEATER RELAY (HIGH)
[Wire colors: RED, ORN, GRN/RED, and BLK]
DRIVER'S SEAT HEATER RELAY (LOW)
[Wire colors: BRN, RED, BLK, BLK, and BLU/YEL]

Front Passenger's Seat



FRONT PASSENGER'S SEAT HEATER RELAY (HIGH)
[Wire colors: RED, ORN, GRN/RED, and BLK]
FRONT PASSENGER'S SEAT HEATER RELAY (LOW)
[Wire colors: BRN, RED, BLK, BLK, and BLU/YEL]

Connector Index

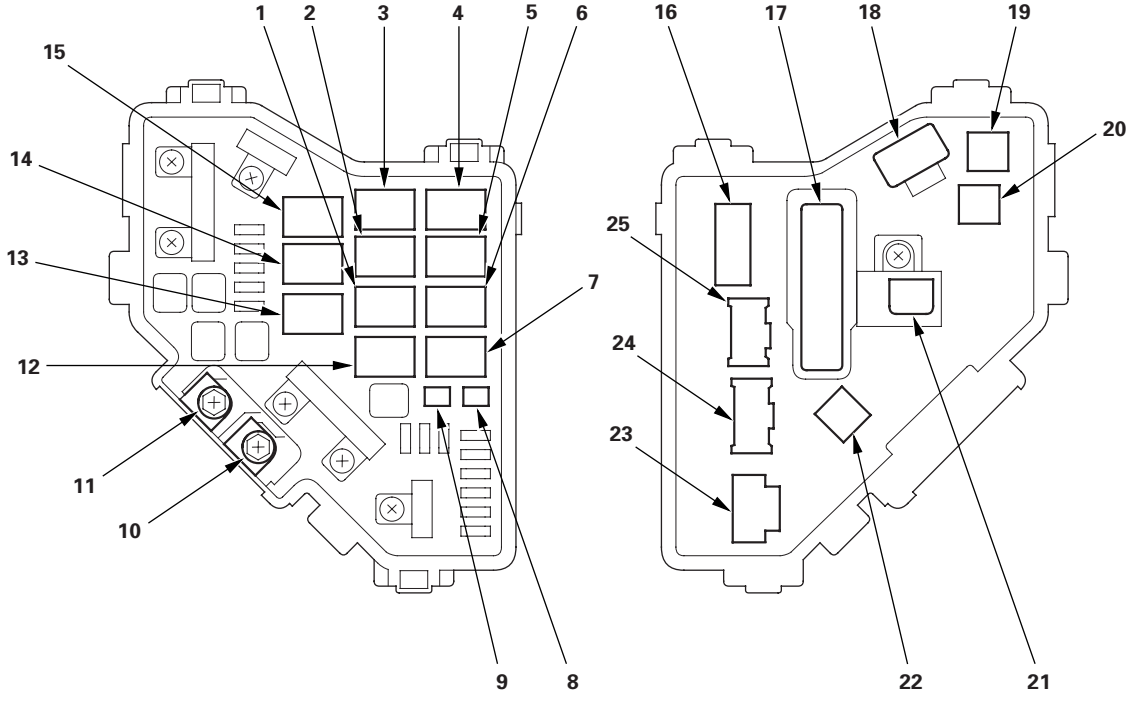
Identification numbers have been assigned to in-line connectors, junction connectors, and terminals. The number is preceded by the letter "C" for connectors, "G" for ground terminals, or "T" for non-ground terminals.

Harness	Location			
	Engine Compartment	Dashboard	Others (Floor, Door, Trunk, and Roof)	Notes
A/C wire harness		C205, C504		(see page 22-56)
Battery ground cable	(—), G1			(see page 22-14)
Console subharness		C551, C601, C603		(see page 22-57)
Dashboard wire harness (View of driver's side)		C201, C202, C203, C501, C502, C751, C752, C801 G501, G503		(see page 22-28)
Dashboard wire harness (View of middle section)		C503, C506, C551 G504, G506		(see page 22-30)
Dashboard wire harness (View of passenger's side)		C504, C761, C762 G502, G505		(see page 22-32)
Driver's door subharness			C754	(see page 22-46)
Driver's door wire harness		C751, C752	C753, C754	(see page 22-46)
Driver's seat position sensor harness (With seat heater)			C602	(see page 22-52)
Driver's seat position sensor harness (Without seat heater)			C602	(see page 22-53)
Driver's seat wire harness			C602, C604	(see page 22-52)
Engine compartment wire harness (Left branch)	C101, C102, C103 G301	C201 through C205, C209 G401		(see page 22-22)
Engine compartment wire harness (Right branch)	C206, C207 G201, G202	G402, G403		(see page 22-26)
Engine ground cable A	T1, G2			(see page 22-14)
Engine ground cable B	T2, G3			(see page 22-14)
Engine wire harness (A/T)	C101, C103, C105, C106, C107 G101			(see page 22-16)
Engine wire harness (M/T)	C101, C105, C106 G101			(see page 22-18)
Floor wire harness (Left branch)		C204, C209, C501, C502, C506, C601, C603	C602, C604, C701, C702, C771 G601, G603	(see page 22-34)
Floor wire harness (Right branch)			C781, C782, C783 G602	(see page 22-38)
Front passenger's door subharness			C763	(see page 22-48)
Front passenger's door wire harness		C761, C762	C763	(see page 22-48)
Front passenger's seat wire harness (With seat heater)			C782, C783	(see page 22-54)
Left rear door wire harness			C771	(see page 22-50)
ODS unit harness (With seat heater)			C782	(see page 22-54)
ODS unit harness (Without seat heater)			C782	(see page 22-55)
Rear window defogger ground wire			G801	(see page 22-42)
Rear wire harness (Left branch)			C701, C702, C703 G701	(see page 22-40)
Rear wire harness (Right branch)				(see page 22-42)
Right rear door wire harness			C781	(see page 22-51)
Roof wire harness (With moonroof)		C801		(see page 22-44)
Roof wire harness (Without moonroof)		C801		(see page 22-45)
Shift solenoid wire harness (A/T)	C107			(see page 22-16)
Starter subharness	(+) C102, C106 T3, T4 T101, T102			(see page 22-20)
Trunk lid spoiler subharness (TYPE S model)			C703	(see page 22-40)
USB harness			C671	(see page 22-34)
USB subharness			C671	(see page 22-57)

Connector to Fuse/Relay Box Index

Under-hood Fuse/Relay Box

Socket	Ref	Terminal	Connects to	Notes
A (ELD)	21	3	Engine compartment wire harness (see page 22-22)	
A/C compressor clutch relay	12	4		
A/C condenser fan relay	3	4		
B	22	1	Engine compartment wire harness (see page 22-22)	
Blower motor relay	2	4		
C	23	2	Engine compartment wire harness (see page 22-22)	
D	25	8	Engine compartment wire harness (see page 22-22)	
Diode (for A/C condenser fan)	9	———		
Diode (for radiator fan)	8	———		
E	24	10	Engine compartment wire harness (see page 22-22)	
Electronic throttle control system (ETCS) control relay	14	4		
F	17	20	Engine compartment wire harness (see page 22-22)	
Fan control relay	4	5		
G	19	1	Engine compartment wire harness (see page 22-22)	
H	20	1	Engine compartment wire harness (see page 22-22)	
Ignition coil relay	7	4		
J	16	4	Engine compartment wire harness (see page 22-22)	
K	18	2	Engine compartment wire harness (see page 22-22)	
PGM-FI main relay 1 (FI MAIN)	13	4		
PGM-FI subrelay	6	4		
Power mirror defogger relay	5	5		
Radiator fan relay	15	4		
Rear window defogger relay	1	4		
T3	10		Starter subharness (see page 22-20)	
T101	11		Starter subharness (see page 22-20)	

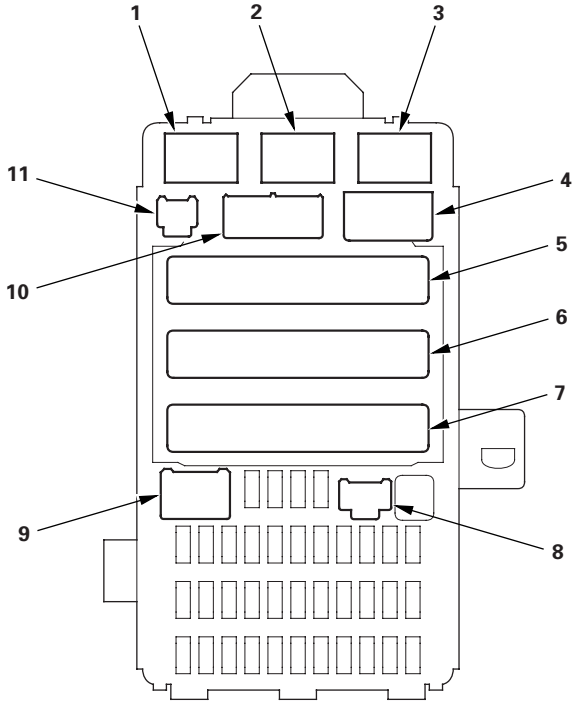


(View of front side)

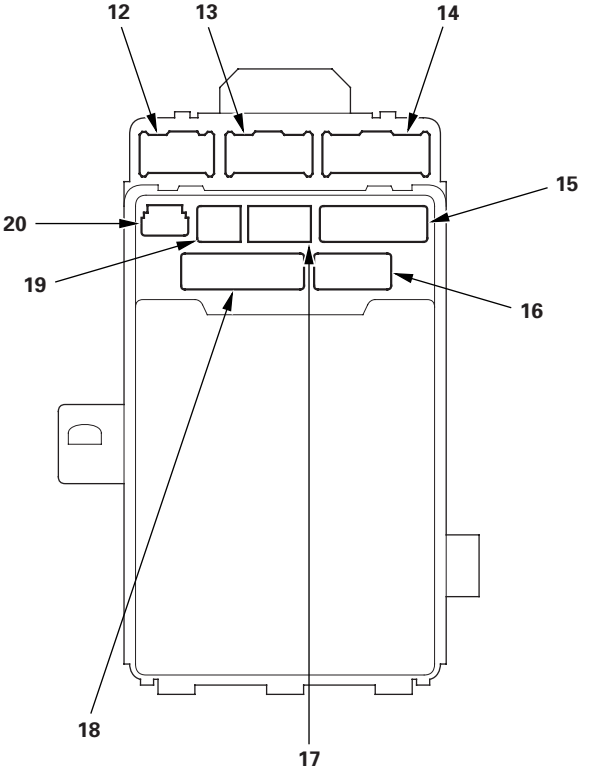
(View of back side)

Under-dash Fuse/Relay Box

Socket	Ref	Terminal	Connects to	Notes
A (Optional connector)	9	6	Not used	
C	10	4	Dashboard wire harness (see page 22-28)	
D	4	2	Dashboard wire harness (see page 22-28)	
E	5	42	Floor wire harness (see page 22-34)	
F	6	34	Engine compartment wire harness (see page 22-22)	
G	7	21	Engine compartment wire harness (see page 22-22)	
H (MICU service check connector)	8	3		
J	20	4	Dashboard wire harness (see page 22-28)	
K	12	8	Dashboard wire harness (see page 22-28)	
M	13	10	Dashboard wire harness (see page 22-28)	
Memory erase signal (MES) connector socket	11	———		
N	14	14	Dashboard wire harness (see page 22-28)	
P	19	10	Dashboard wire harness (see page 22-28)	
PGM-FI main relay 2 (FUEL PUMP)	2	4		
Power window relay	1	4		
Q	17	16	Dashboard wire harness (see page 22-28)	
R	15	20	Dashboard wire harness (see page 22-28)	
Starter cut relay	3	4		
S	16	20	Dashboard wire harness (see page 22-28)	
T	18	34	Dashboard wire harness (see page 22-28)	



(View of front side)



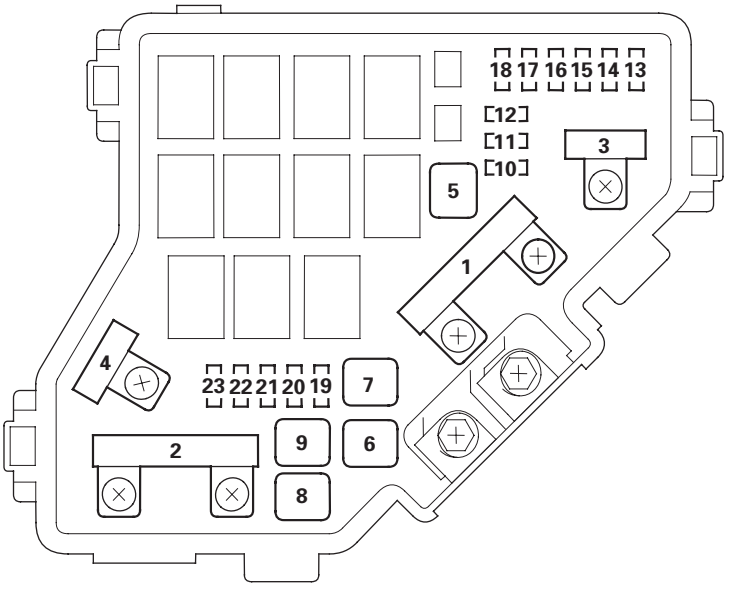
(View of back side)

Fuse to Components Index

Under-hood Fuse/Relay Box

Fuse Number	Amps	Component(s) or Circuit(s) Protected
1	100 A (BAT)	Battery, Power distribution
	70 A (EPS)	EPS control unit
2	50 A (IG)	Ignition switch
	80 A *1 60 A *2 (OPTION)	No. 5, No. 6, No. 7, No. 27, No. 28, No. 29, and No. 31 fuses (in the under-dash fuse/relay box)
3	30 A (ABS MTR)	ABS modulator-control unit *3, VSA modulator-control unit *4
	30 A *3 40 A *4 (ABS FSR)	ABS modulator-control unit *3, VSA modulator-control unit *4
4	50 A (H/L)	No. 18, No. 19, No. 20, and No. 21 fuses (in the under-dash fuse/relay box)
	40 A (P/W)	No. 24, No. 25, No. 26, No. 30, No. 32, and No. 33 fuses (in the under-dash fuse/relay box), Power window relay (in the under-dash fuse/relay box)
5	———	Not used
6	20 A	A/C condenser fan motor (via A/C condenser fan relay)
7	20 A	Radiator fan motor (via radiator fan relay)
8	30 A	Noise condenser (via rear window defogger relay), Rear window defogger (via rear window defogger relay)
9	40 A	Blower motor (via blower motor relay)
10	10 A	MICU (turn signal/hazard warning lights circuit)
11	15 A	A/F sensor (Sensor 1) (via PGM-FI subrelay), EVAP canister vent shut valve (via PGM-FI subrelay), PGM-FI subrelay, No. 15 fuse (in the under-hood fuse/relay box) (via PGM-FI subrelay)
12	15 A	Brake lights, ECM/PCM, Horn, MICU
13	———	Not used
14	———	Not used
15	7.5 A	A/C condenser fan relay
16	———	Not used
17	15 A *6	Stereo amplifier
18	15 A	Ignition coil relay, Ignition coils (via Ignition coil relay)
19	15 A	CKP sensor (via PGM-FI main relay 1), CMP sensor B (via PGM-FI main relay 1), ECM/PCM, ETCS control relay, Injectors (via PGM-FI main relay 1), PGM-FI main relay 1 (FI MAIN), PGM-FI main relay 2 (FUEL PUMP)
20	7.5 A	A/C compressor clutch (via A/C compressor clutch relay)
21	15 A	ECM/PCM (via ETCS control relay)
22	7.5 A	Ceiling light, Courtesy lights, Front individual map lights, Ignition key light, Trunk light, Vanity mirror lights *5
23	10 A	Audio unit *7, Data link connector (DLC), Gauge control module (speedo), Gauge control module (tach), HandsFreeLink control unit *9, Immobilizer-keyless control unit, MICU, Moonroof switch, Navigation unit *8

* 1: '06-07 models
* 2: '08-09 models
* 3: '06-07 Touring and Premium models
* 4: '07 TYPE S and '08-09 models
* 5: '08-09 models
* 6: TYPE S model
* 7: Without navigation system
* 8: With navigation system
* 9: '09 model with navigation system



(cont'd)

Fuse to Components Index (cont'd)

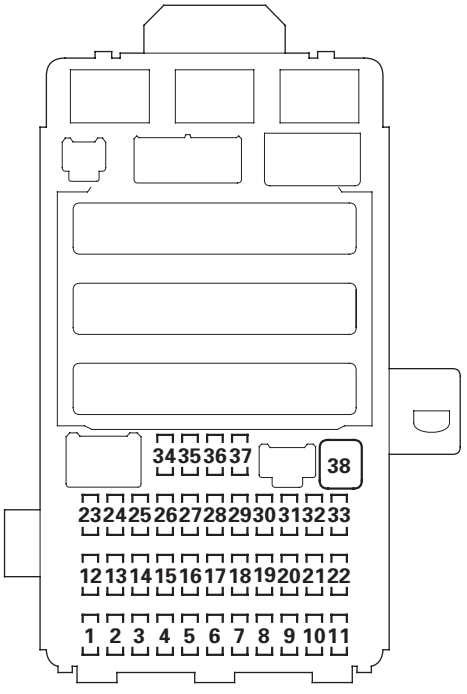
Under-dash Fuse/Relay Box

Fuse Number	Amps	Component(s) or Circuit(s) Protected
1	7.5 A	Power mirror switch light
2	15 A	ECM/PCM, Fuel pump (via PGM-FI main relay 2), Immobilizer-keyless control unit
3	10 A	Alternator, CMP sensor A, ECM/PCM (via brake pedal position switch), ELD, EVAP canister purge valve, MAF sensor/IAT sensor, Reverse lockout solenoid*4, Secondary HO2S (sensor 2)
4	7.5 A	ABS modulator-control unit*1, EPS control unit, VSA modulator-control unit*2, Yaw rate-lateral acceleration sensor*2
5	15 A	Seat heaters (via seat heater relays)
6	20 A*7	Fog light relay, Fog lights (via fog light relay)
7	———	Not used
8	———	Not used
9	7.5 A	ODS unit, Passenger's airbag cutoff indicator, SRS unit
10	7.5 A	Back-up light (M/T), Gauge control module (speedo), Gauge control module (tach), MICU, Shift lock solenoid (A/T), TPMS control unit*3
11	10 A	SRS unit
12	10 A	Right headlight (high beam)
13	10 A	Left headlight (high beam)
14	7.5 A	Audio unit light*8, Climate control unit light, Dash lights brightness controller and odometer select/reset switch light, Driver's footwell light*4, Driver's seat heater switch light, Glove box light, Hazard warning switch light, Moonroof switch light, Navigation unit*9, Park pin switch light (A/T), Passenger's airbag cutoff indicator light, Passenger's footwell light*4, Passenger's seat heater switch light, Steering wheel switches light (via cable reel), VSA OFF switch light
15	7.5 A	Parking lights, Taillights, License plate lights, Side marker lights
16	10 A*6	Right headlight (low beam)
	15 A*5	Right HID unit
17	10 A*6	Left headlight (low beam)
	15 A*5	Left HID unit
18	20 A	MICU (+B H/L HI)
19	15 A	MICU (+B SMALL LT)
20	———	Not used

* 1: '06-07 Touring and Premium models
* 2: '07 TYPE S and '08-09 models
* 3: '08-09 models
* 4: TYPE S model
* 5: With HID
* 6: Without HID
* 7: TYPE S and '08 Premium and '09 models
* 8: Without navigation system
* 9: With navigation system

Fuse Number	Amps	Component(s) or Circuit(s) Protected
21	20 A *3	MICU (+B H/L LO)
	30 A *4	MICU (+B H/L LO)
22	———	Not used
23	———	Not used
24	20 A	Moonroof control unit/motor
25	20 A	MICU (+B DR LOCK)
26	20 A	Driver's power window motor (via power window master switch)
27	———	Not used
28	15 A	Console accessory power socket (via console accessory power socket relay)
29	15 A	Front accessory power socket (via front accessory power socket relay)
30	20 A	Front passenger's power window motor
31	———	Not used
32	20 A	Moonroof control unit/motor, Moonroof switch *1, Right rear power window motor
33	20 A	Left rear power window motor
34	———	Not used
35	7.5 A	Audio unit *6, Console accessory power socket relay, Front accessory power socket relay, HandsFreeLink control unit *5, Ignition key switch, Navigation unit *7, Stereo amplifier *2
36	10 A	Climate control unit, Driver's seat heater switch, Fan control relay and radiator fan relay (via A/C diode), Passenger's seat heater switch, Power mirrors (via power mirror switch), Under-hood fuse/relay box (A/C compressor clutch relay, Blower motor relay, Power mirror defogger relay, Rear window defogger relay)
37	7.5 A	MICU (daytime running lights power supply)
38	30 A	MICU (IG 1 WIPER)

* 1: '06-07 models
* 2: TYPE S model
* 3: Without HID
* 4: With HID
* 5: '09 model with navigation system
* 6: Without navigation system
* 7: With navigation system



Ground Distribution

Ground to Components Index

Ground	Component or Circuit Grounded
G1	Battery
G2	Engine
G3	Transmission housing
G101	A/T clutch pressure control solenoid valves A, B, C (A/T), CKP sensor, CMP sensor A, CMP sensor B, Data link connector (DLC), ECM/PCM (LG1), ECM/PCM (LG2), ECM/PCM (PG1), ECM/PCM (PG2), ECM/PCM (PGMETCS), EGR valve (K20Z2 engine), Ignition coils, Immobilizer-keyless control unit, Rocker arm oil control solenoid, Rocker arm oil pressure switch, Transmission range switch (A/T), VTC oil control solenoid valve
	Shielding between the ECM/PCM and Knock sensor (KS) has wire. Shielding between the ECM/PCM and Secondary HO2S (Sensor 2) has wire.
G201	Right fog light *4, Right front parking light, Right front side marker light, Right front turn signal light, Right headlight (high/low beams), Right HID unit *5, Windshield washer motor, Windshield wiper motor
G202	ABS modulator-control unit *1, VSA modulator-control unit *2
G301	A/C condenser fan motor, Blower motor relay, ELD, Left fog light *4, Left front parking light, Left front side marker light, Left front turn signal light, Left headlight (high/low beams), Left HID unit *5, Radiator fan motor (via fan control relay)
G401	Brake fluid level switch, Clutch interlock switch (M/T), Clutch pedal position switch (M/T), Hood switch, MICU (PG), Power transistor, Washer fluid level switch (G401 connects to G601 via under-dash fuse/relay box)
G402	EPS control unit
G403	Torque sensor
G501	Dash lights brightness controller and odometer select/reset switch, Driver's door key cylinder switch, Driver's door lock knob switch, HandsFreeLink control unit *8, MICU (SG), VSA OFF switch *2
G502	Data link connector (DLC), Front accessory power socket, Glove box light, Right power mirror defogger, Right side turn signal light
G503	Accessory power socket relays (front and console), Driver's door lock switch, Gauge control module (tach), Left power mirror defogger, Left side turn signal light, Moonroof control unit/motor, Power mirror switch light, Power mirror switch, Power window master switch (main switch), Power window master switch, Vanity mirror lights (driver's and front passenger's) *3
G504	Cable reel (steering wheel switches ground), Climate control unit, Front passenger's door lock knob switch, Front passenger's door lock switch, Gauge control module (speedo), Gauge control module (tach), Ignition key switch, Navigation unit *7, TPMS control unit *3
G505	Audio unit *6, Navigation unit *7
G506	Memory erase signal (MES) connector, SRS unit (2 wires)
G601	A/T gear position console panel light/Park-pin switch (A/T), Console accessory power socket *9, Fuel pump, MICU (PG), Seat heater relays (driver's and front passenger's), Seat heater switches (driver's and front passenger's), Seat heaters (driver's and front passenger's), Stereo amplifier *10 (G601 connects to G401 via under-dash fuse/relay box)
	Shielding between the left side impact sensor (FIRST) and rear safing sensor has wire. Shielding between the SRS unit and left side impact sensor (FIRST) has wire.
G602	Driver's seat belt buckle switch, Front passenger's seat belt buckle switch, Left rear door lock knob switch, MICU (SG), MICU service check connector, ODS unit, Right rear door lock knob switch, Yaw rate-lateral acceleration sensor *2
	Shielding between the right side impact sensor (FIRST) and right side impact sensor (SECOND) have wires. Shielding between the SRS unit and right side impact sensor (FIRST) has wire.
G603	Noise condenser
	Shielding between the rear safing sensor and left side impact sensor (SECOND) has wire.
G701	High mount brake light, Left back-up light, Left inner taillight, Left rear side marker light, Left rear turn signal light, Left taillight/brake light, License plate lights, Right back-up light, Right inner taillight, Right rear side marker light, Right rear turn signal light, Right taillight/brake light, Trunk lid release actuator/Trunk lid latch switch
G801	Rear window defogger (—)

* 1: '06-07 Touring and Premium models
* 2: '07 TYPE S and '08-09 models
* 3: '08-09 models
* 4: TYPE S and '08 premium and '09 models
* 5: With HID
* 6: Without navigation system
* 7: With navigation system
* 8: '09 model with navigation system
* 9: '06-08 models, and '09 model without navigation system
* 10: TYPE S model

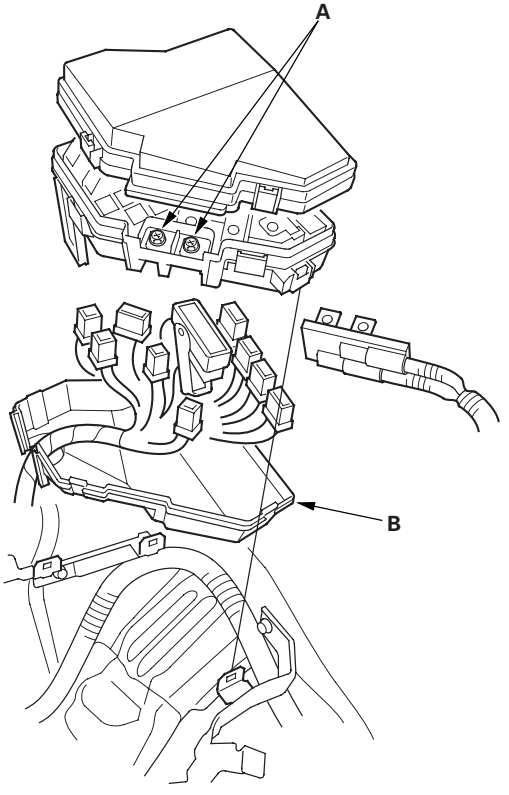
Under-hood Fuse/Relay Box

Removal and Installation

Special Tools Required
Relay puller 07AAC-000A1A0

Removal

1. Do the battery terminal disconnection procedure (see page 22-68).
2. Remove the screws (A) for the alternator and battery cable terminals from the under-hood fuse/relay box.



3. Remove the bottom cover (B) from the under-hood fuse/relay box.
4. Disconnect the connectors from the under-hood fuse/relay box.
5. Carefully remove the relays using the relay puller.

   NOTE: Do not use pliers. Pliers will damage the relays, which could cause the engine to stall or not start.

Installation

1. Install the relays and connect the connectors to the under-hood fuse/relay box, then install the under-hood fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Do the battery terminal reconnection procedure (see page 22-68).
4. Confirm that all systems work properly.

Under-dash Fuse/Relay Box

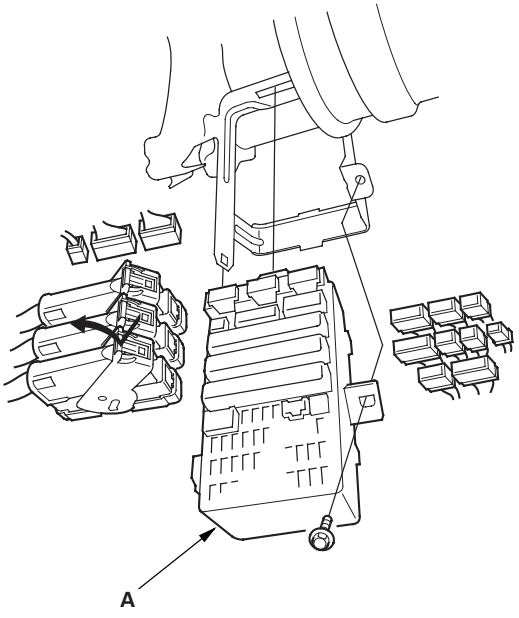
Removal and Installation

Special Tools Required
Relay puller 07AAC-000A1A0

SRS components are located in this area. Review the SRS component locations (see page 24-11), and precautions and procedures (see page 24-13) before doing repairs or serving.

Removal

1. Do the battery terminal disconnection procedure (see page 22-68).
2. Remove the driver's dashboard lower cover (see page 20-102).
3. Disconnect the connectors from the fuse side of the under-dash fuse/relay box (A).



4. Remove the mounting bolt, and pull the fuse/relay box away from the body.
5. Disconnect the connectors from the back side of the under-dash fuse/relay box, then remove the under-dash fuse/relay box.
6. Carefully remove the relays using the relay puller.

   NOTE: Do not use pliers. Pliers will damage the relays, which could cause the engine to stall or not start.

Installation

1. Install the relays and connect the connectors to the under-dash fuse/relay box, then install the under-dash fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Do the battery terminal reconnection procedure (see page 22-68).
4. Register the immobilizer system with the HDS (see page 22-329).

   NOTE: The imoes unit is built into the MICU which is part of the under-dash fuse/relay box. Because of this construction, the imoes must be registered, or the vehicle will not start.

5. Confirm that all systems work properly.

Battery Test

⚠ WARNING

A battery can explode if you do not follow the proper procedure, causing serious injury to anyone nearby. Follow all procedures carefully and keep sparks and open flames away from the battery.

Required Test Equipment
Honda Electrical System Analyzer (ED-18 Battery tester): T/N INBED18LLH

Ordering Information
To order an Electrical System Analyzer, go to the Honda Tool and Equipment catalog on the iN, or call 888-424-6857.

Software Version
Make sure you have the latest software in the ED-18. To check the version on the do this:

- Press the POWER button.
- Select Reports, then press ENTER.
- Select i Version, then press ENTER.

If you do not have the correct version, Tools Hotline at 800-346-6327.

Using the ED-18 Battery Tester

NOTE: For set up, customization, and other available features, refer to the ED-18 user's manual.

1. Connect the leads to the positive and negative terminal of the battery.

2. Use the arrow keys to select the battery test, then press enter, then follow the prompts.

   NOTE: Make sure to enter the correct cold cranking ampere rating of the battery. If the number is not entered correctly, the result will not be accurate.

3. Here are the five possible battery conditions:

   - Good Battery: The battery has at least 60 percent of its charge and requires no action.
   - Good-Recharge: The battery condition appears to be good, but charging is recommended and then retest. See your battery charger's instructions to fully charge the battery, then recheck. Do not charge the battery using the vehicle's alternator.
   - Charge and Retest: The battery condition is not known because its charge is too low. Recharge the battery, then retest. See your battery's instructions to fully charge the battery, then recheck. Do not charge the battery using the vehicle's alternator.
   - Replace Battery: The battery condition is poor. Replace it.
   - Bad Cell: There is a problem with the battery. Replace it.

Battery Terminal Disconnection and Reconnection

Disconnection

Some systems store data in memory that is lost when the battery is disconnected. Do the following steps before disconnecting the battery.

1. Make sure you have the anti-theft code(s) for the audio and/or the navigation system (if equipped).
2. If you are replacing the audio unit, write down the audio presets (AM and FM), and the XM audio presets (if equipped), because the audio unit does not retain the presets after the battery is disconnected.
3. Make sure the ignition switch is in LOCK (0).
4. Disconnect and isolate the negative cable from the battery.

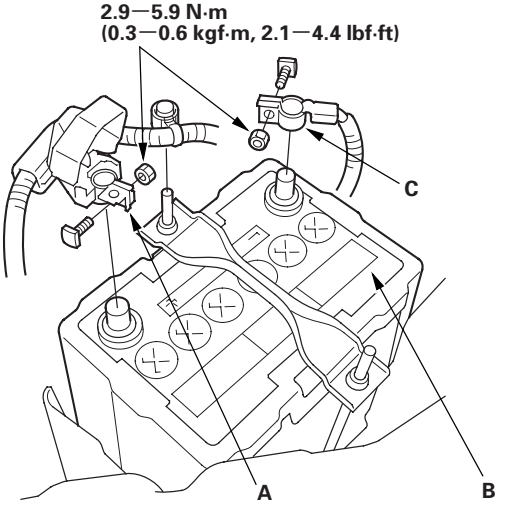
   NOTE: Always disconnect the negative cable from the battery first.
5. Disconnect the positive cable from the battery.

Reconnection

Some systems store data in memory that is lost when the battery is disconnected. Do the following steps to restore the systems back to normal operation.

1. Clean the battery terminals.
2. Test the battery (see page 22-67).
3. Reconnect the positive cable (A) to the battery (B) first, then reconnect the negative cable (C) to the battery.

   NOTE: Always connect the positive cable to the battery first.



4. Apply multipurpose grease to the terminals to prevent corrosion.
5. Enter the anti-theft code(s) for the audio system and/or the navigation system (if equipped).
6. Enter the audio presets (if applicable), and enter the XM audio presets (if equipped).
7. Set the clock (for vehicles without navigation).

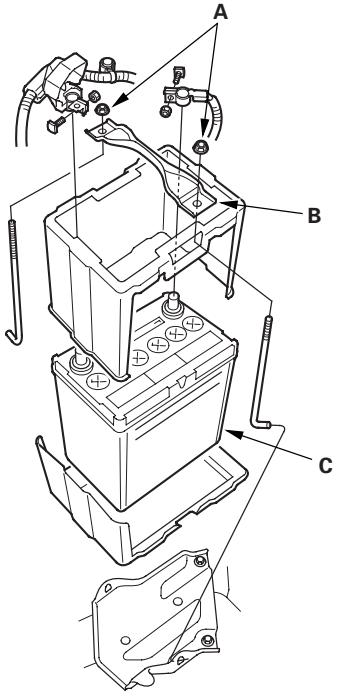
Battery Removal and Installation

NOTE: The battery terminal disconnection/reconnection procedure (see page 22-68) must be done before and after doing this procedure. Some systems store data in memory that is lost when the battery is disconnected.

Removal

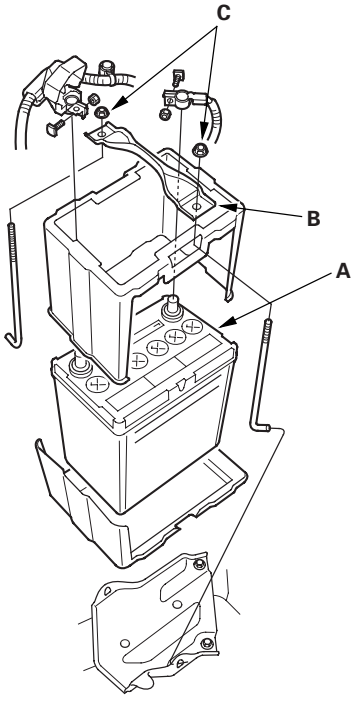
1. Do the battery terminal disconnection procedure (see page 22-68).

2. Remove the two nuts (A) securing the battery setting plate, then remove the battery setting plate (B) and the battery (C).



Installation

1. Install the battery (A), then install the battery setting plate (B).



2. Tighten the two nuts (C) equally until the battery is stable.

   NOTE: Do not deform the battery setting plate by over-tightening the nuts.

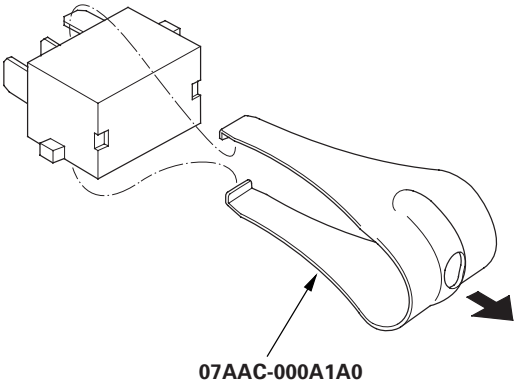
3. Do the battery terminal reconnection procedure (see page 22-68).

   NOTE: Make sure the positive terminal and the negative terminal are not reverse-connected.

Power Relay Test

Special Tools Required
Relay puller 07AAC-000A1A0

Use this chart to identify the type of relay, then do the test listed for it. Carefully remove the relays using the relay puller. Do not use pliers. Pliers will damage the relay.



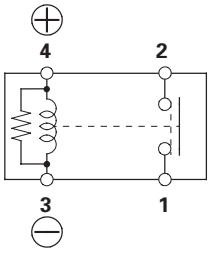
Relay	Test
A/C compressor clutch relay	Normally-open type
A/C condenser fan relay	
Blower motor relay	
Console accessory power socket relay	
Electronic throttle control system (ETCS) control relay	
Fog light relay *	
Front accessory power socket relay	
Ignition coil relay	
PGM-FI main relay 1 (FI MAIN)	
PGM-FI main relay 2 (FUEL PUMP)	
PGM-FI subrelay	
Power window relay	
Radiator fan relay	
Rear window defogger relay	
Seat heater relay (HIGH)	
Starter cut relay	
Fan control relay	Five-terminal type
Power mirror defogger relay	
Seat heater relay (LOW)	

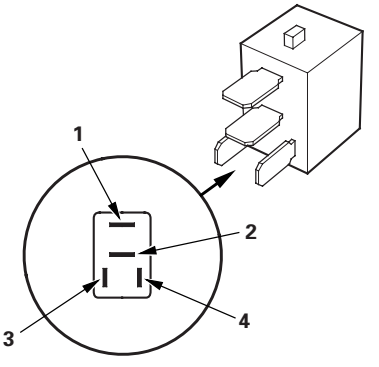
*: TYPE S and '08 PREMIUM and '09 models

Normally-open type

Check for continuity between the terminals.

- There should be continuity between terminals No. 1 and No. 2 when the battery positive terminal is connected to terminal No. 4, and the battery negative terminal is connected to terminal No. 3.
- There should be no continuity between terminals No. 1 and No. 2 when power is disconnected.

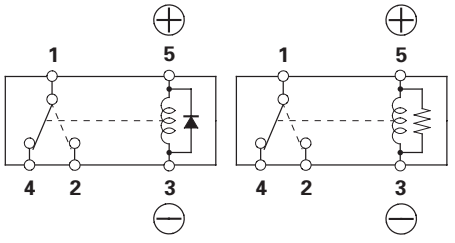


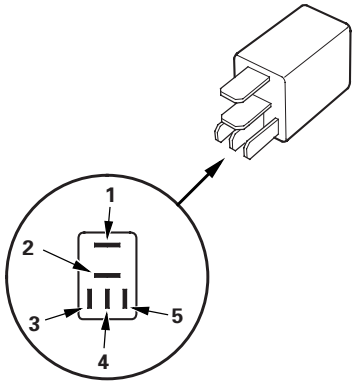


Five-terminal type

Check for continuity between the terminals.

- There should be continuity between terminals No. 1 and No. 2 when the battery positive terminal is connected to terminal No. 5, and the battery negative terminal is connected to terminal No. 3.
- There should be continuity between terminals No. 1 and No. 4 when power is disconnected.



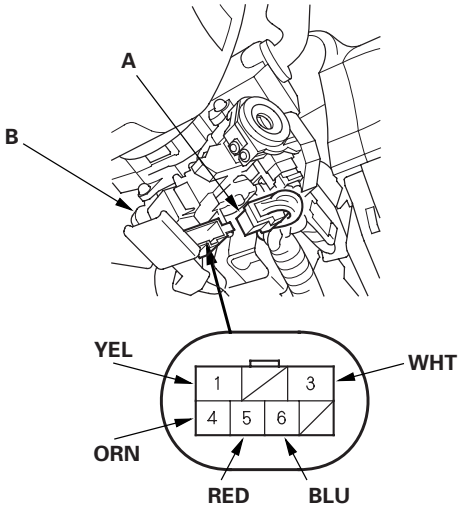


Ignition Switch

Test

SRS components are located in the area. Review the SRS component locations (see page 24-11), and precautions and procedures (see page 24-13) before doing repairs or serving.

1. Do the battery terminal disconnection procedure (see page 22-68).
2. Remove the driver's dashboard lower cover (see page 20-102), and the steering column covers (see page 17-9).
3. Disconnect the 7P connector (A) from the ignition switch (B).



4. Check for continuity between the terminals in each switch position according to the table.

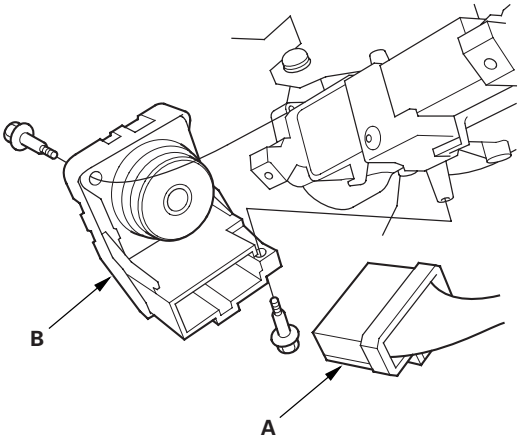
Terminal / Position	RED (ACC)	WHT (BAT)	BLU (IG1)	ORN (IG2)	YEL (ST)
0 (LOCK)					
I (ACC)	○	○			
II (ON)	○	○	○	○	
III (START)		○	○		○

5. If the continuity checks do not agree with the table, replace the ignition switch (see page 22-72).
6. Do the battery terminal reconnection procedure (see page 22-68).

Replacement

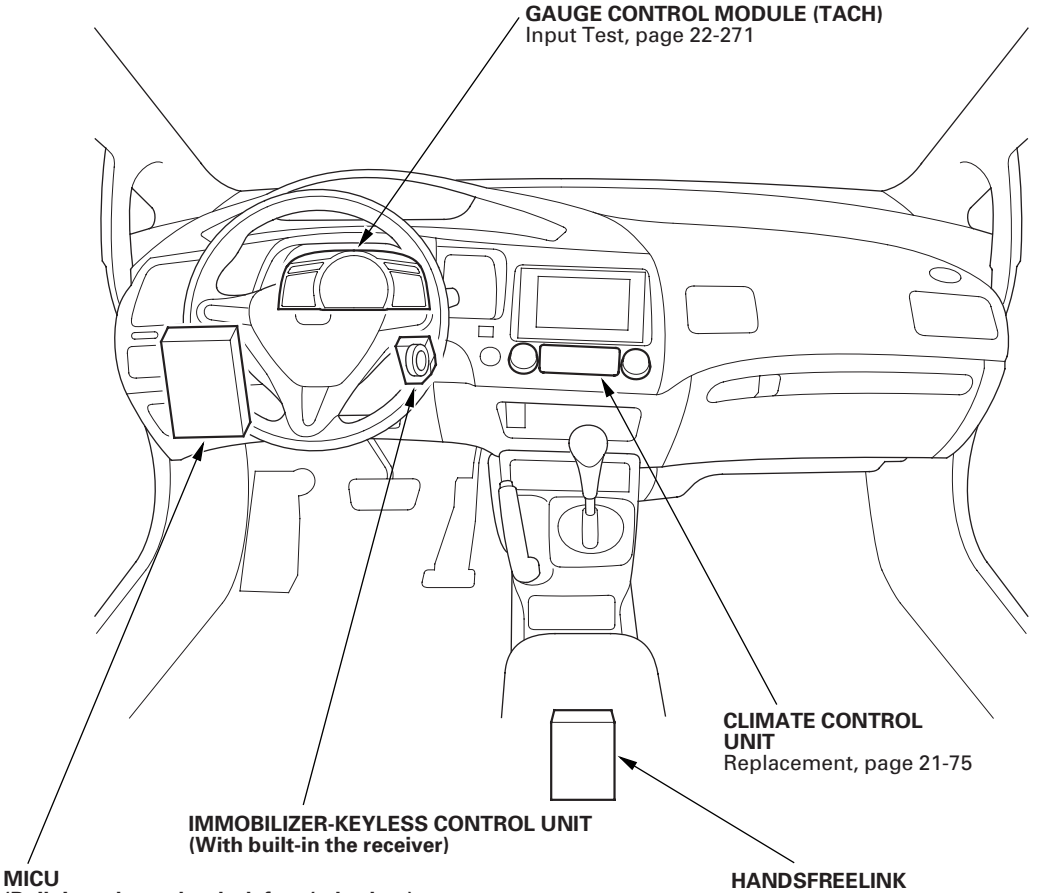
SRS components are located in the area. Review the SRS component locations (see page 24-11), and precautions and procedures (see page 24-13) before doing repairs or serving.

1. Do the battery terminal disconnection procedure (see page 22-68).
2. Remove the driver's dashboard lower cover (see page 20-102), and the steering column covers (see page 17-9).
3. Disconnect the 7P connector (A) from the ignition switch (B).



4. Remove the two screws and the ignition switch.
5. Install the parts in the reverse order of removal.
6. Do the battery terminal reconnection procedure (see page 22-68).

Component Location Index



General Troubleshooting Information

Troubleshooting CAN Circuit Related Problems

NOTE: Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see page 11-3) or F-CAN loss of communication errors first.

Using the HDS (Preferred method)

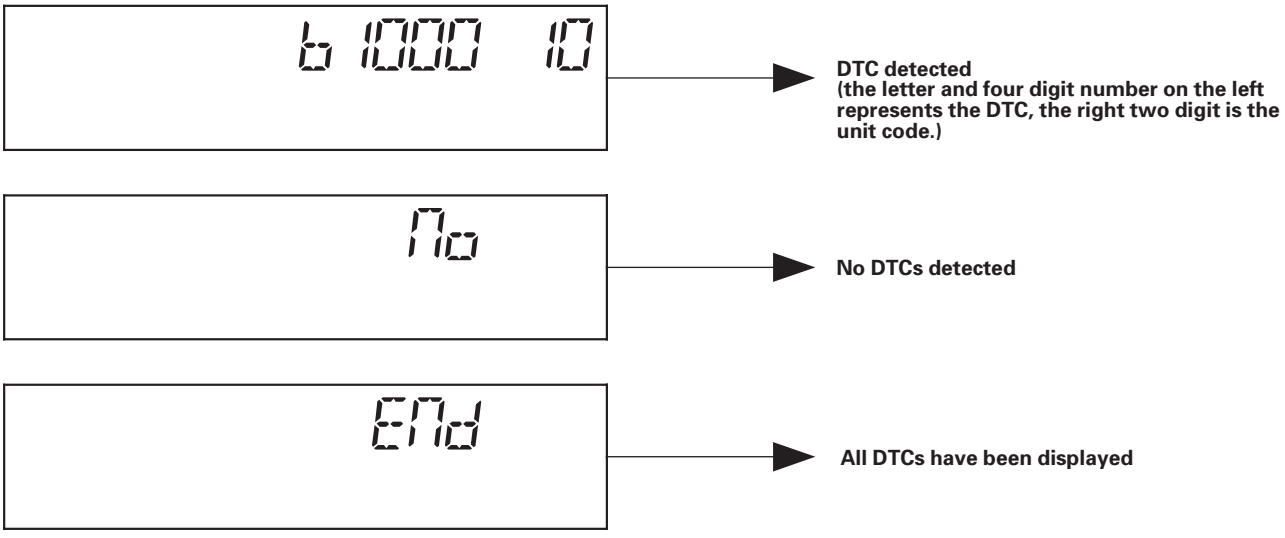
1. Go to B-CAN System Diagnosis Test Mode A to check for ''Connected units'' and DTCs (see page 22-93).
2. If no DTCs are retrieved, go to B-CAN System Diagnosis Test Mode C (see page 22-95) or D (see page 22-96).

Without HDS (Use only if the HDS is unavailable)

1. Check for communication circuit problems using B-CAN System Diagnostic Test (see page 22-97).
2. Check for DTCs.
3. Sort, and then troubleshoot the DTCs in the order.
   - 1 Battery voltage DTCs
   - 2 Internal error DTCs
   - 3 Loss of communication DTCs
     NOTE: If the DTC B1000 is stored, troubleshoot DTC B1000 first.
   - 4 Signal error DTCs
4. If no DTCs are retrieved, use B-CAN System Diagnostic Test Mode 2 to check all inputs related to failure (see step 10 on page 22-97).

How to display DTCs on the gauge control module (tach)

While in Test Mode 1, the DTCs which have been detected and stored individually by various B-CAN (Body-controller Area Network) units, will be shown one by one on the odometer display when the communication between the MICU and the gauge control module is normal. To scroll through the DTCs, press the select/reset button.



The unit that has stored the code can be identified by the number shown on the multi-information display.

MICU	10
Gauge control module	50
Climate control unit	51
HandsFreeLink control unit	94
Immobilizer-keyless control unit	96

How to clear the DTC

While in Test Mode 1, press and hold down the SELECT/RESET button for more than 10 seconds.

(cont'd)

General Troubleshooting Information (cont'd)

Loss of Communication DTC cross-reference chart

When an ECU on the CAN circuit is unable to communicate with other ECUs on the CAN circuit, one or more of the control units will set a loss of communications DTC. Use this chart to find the control unit that is not communicating.

1. Find the Transmitting Control Unit that is in the same row as all of the loss of communication DTCs retrieved.
2. Do the input test for the transmitting control unit.

BUS OFF and Internal Error Codes

DTC type	Related Unit				
	MICU	Gauge Control Module	Climate Control Unit	HandsFreeLink Control Unit	Immobilizer-Keyless Control Unit
BUS OFF	B1000	B1150	B1200	B1750	B1900
ECU (CPU) Error	B1001				
ECU (EEPROM) Error	B1002	B1152	B1202		
ECU (Internal) Error				B1792	

Transmitting Control Unit	Message	Receiving Unit/Loss of Communication DTC			
		MICU	Gauge Control Module	Climate Control Unit	Immobilizer-Keyless Control Unit
MICU	RM		B1188		
	HLSW		B1155		
	WIPSW		B1156		
	MICU		B1157		
	DOORSW		B1159		
	DRLOCKSW		B1160		B1905
Gauge Control Module	VSP/NE	B1011		B1205	
	A/T	B1008			B1906
	CDS (SRS)	B1032			
	ECT			B1206	
ECM/PCM	ENG		B1168		
	A/T		B1169		
ABS or VSA modulator-control unit	ABS or VSA		B1170		
TPMS Control unit	TPMS		B1173		
EPS Control unit	EPS		B1183		
SRS	SRS		B1187		

DTC Troubleshooting Index

NOTE: Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see page 11-3) or F-CAN loss of communication errors first, then record all DTCs, and sort them by DTC type using the DTC troubleshooting index, then troubleshoot the DTC(s) in this order.

- Battery voltage DTCs
- Internal error DTCs
- Loss of communication DTCs (beginning with the lowest number first; for example, if B1008 and B1011 are retrieved, troubleshoot B1008 first).
- Signal error DTCs

MICU

DTC	Description	DTC type	Page
B1000	Communication bus line error (BUS-OFF)	Loss of communication	(see page 22-102)
B1001	MICU internal error (CPU error) ('06-08 models)	Internal error	(see page 22-103)
B1002	MICU internal error (EEPROM error)	Internal error	(see page 22-103)
B1008	MICU lost communication with gauge control module (A/T message)	Loss of communication	(see page 22-104)
B1011	MICU lost communication with gauge control module (VSP/NE message)	Loss of communication	(see page 22-104)
B1026	Front passenger's door lock switch LOCK/UNLOCK signal error	Signal error	(see page 22-120)
B1032	MICU lost communication with the SRS unit (CDS message) CDS (Collision detection signal) input circuit malfunction ('06-07 models)	Signal error	(see page 22-105)
B1036	IG1 line input error	Signal error	(see page 22-105)
B1077	Windshield wiper (As) signal error	Signal error	(see page 22-224)
B1078	Daytime running lights signal error	Signal error	(see page 22-157)
B1127	Driver's door key cylinder switch signal error	Signal error	(see page 22-121)
B1128	Driver's door lock switch signal error	Signal error	(see page 22-123)
B1129	Driver's door lock knob switch signal error	Signal error	(see page 22-124)
B1275	Combination light switch OFF position circuit malfunction ('07-09 models)	Signal error	(see page 22-159)
B1276	Combination light switch parking (SMALL) position circuit malfunction ('07-09 models)	Signal error	(see page 22-159)
B1278	Headlight switch ON position circuit malfunction ('07-09 models)	Signal error	(see page 22-159)
B1279	Headlight switch DIMMER position circuit malfunction ('07-09 models)	Signal error	(see page 22-161)
B1280	Turn signal switch circuit malfunction ('07-09 models)	Signal error	(see page 22-186)
B1281	Windshield wiper switch MIST position circuit malfunction ('07-09 models)	Signal error	(see page 22-226)
B1282	Windshield wiper switch INT position circuit malfunction ('07-09 models)	Signal error	(see page 22-226)
B1283	Windshield wiper switch LOW position circuit malfunction ('07-09 models)	Signal error	(see page 22-226)
B1284	Windshield wiper switch HIGH position circuit malfunction ('07-09 models)	Signal error	(see page 22-226)

(cont'd)

DTC Troubleshooting Index (cont'd)

Gauge Control Module

DTC	Description	DTC type	Page
B1150	Communication bus line error (BUS-OFF)	Loss of communication	(see page 22-106)
B1152	Gauge control module internal error (EEPROM error)	Internal error	(see page 22-262)
B1155	Gauge control module lost communication with the MICU (Headlight switch message)	Loss of communication	(see page 22-263)
B1156	Gauge control module lost communication with the MICU (Wiper switch message)	Loss of communication	(see page 22-263)
B1157	Gauge control module lost communication with the MICU (MICU message)	Loss of communication	(see page 22-264)
B1159	Gauge control module lost communication with the MICU (DOORSW message)	Loss of communication	(see page 22-263)
B1160	Gauge control module lost communication with the MICU (DRLOCKSW message)	Loss of communication	(see page 22-264)
B1168	Gauge control module lost communication with the ECM/PCM (Engine messages)	Loss of communication	(see page 22-265)
B1169	Gauge control module lost communication with the PCM (A/T message)	Loss of communication	(see page 22-265)
B1170	Gauge control module lost communication with ABS/VSA modulator-control unit (ABS/VSA message)	Loss of communication	(see page 22-265)
B1173	Gauge control module lost communication with the TPMS control unit (TMPS message) ('08-09 models)	Loss of communication	(see page 22-266)
B1175	Fuel level sensor (Fuel gauge sending unit) circuit open	Signal error	(see page 22-267)
B1176	Fuel level sensor (Fuel gauge sending unit) circuit short	Signal error	(see page 22-268)
B1177	Battery voltage abnormal ('06 model)	Battery voltage	(see page 22-269)
B1178	F-CAN communication line error	Loss of communication	(see page 22-265)
B1183	Gauge control module lost communication with EPS control unit (EPS message)	Loss of communication	(see page 22-270)
B1187	Gauge control module lost communication with the SRS unit (SRS message)	Loss of communication	(see page 22-265)
B1188	Gauge control module lost communication with the MICU (RM message)	Loss of communication	(see page 22-263)

Climate Control Unit

DTC	Description	DTC type	Page
B1200	Communication bus line error (BUS-OFF)	Loss of communication	(see page 22-107)
B1202	Climate control unit internal error (EEPROM error)	Internal error	(see page 21-28)
B1205	Climate control unit lost communication with the gauge control module (VSP/NE message)	Loss of communication	(see page 21-28)
B1206	Climate control unit lost communication with the gauge control module (ECT message)	Loss of communication	(see page 21-28)
B1207	Climate control unit lost communication with the gauge control module (ILLUMI message)	Loss of communication	(see page 21-28)
B1220	Recirculation control motor circuit short	Signal error	(see page 21-29)
B1225	In-car temperature sensor circuit open	Signal error	(see page 21-31)
B1226	In-car temperature sensor circuit short	Signal error	(see page 21-32)
B1227	Outside air temperature sensor circuit open	Signal error	(see page 21-33)
B1228	Outside air temperature sensor circuit short	Signal error	(see page 21-34)
B1229	Sunlight sensor circuit open	Signal error	(see page 21-35)
B1230	Sunlight sensor circuit short	Signal error	(see page 21-36)
B1231	Evaporator temperature sensor circuit open	Signal error	(see page 21-37)
B1232	Evaporator temperature sensor circuit short	Signal error	(see page 21-39)
B1233	Air mix control motor circuit open	Signal error	(see page 21-40)
B1234	Air mix control motor circuit short	Signal error	(see page 21-41)
B1235	Air mix control motor stuck	Signal error	(see page 21-42)
B1239	Mode control motor circuit open or short	Signal error	(see page 21-44)
B1240	Mode control motor, linkage, door malfunction	Signal error	(see page 21-46)
B1241	Blower motor circuit malfunction	Signal error	(see page 21-47)
B2983	Recirculation control motor, linkage, door malfunction	Signal error	(see page 21-51)
B2986	Recirculation control motor circuit open	Signal error	(see page 21-52)

HandsFreeLink Control Unit

DTC	Description	DTC type	Page
B1750	Communication bus line error (BUS-OFF)	Loss of communication	(see page 22-107)
B1775	Microphone input/output short to power/open	Signal error	(see page 23-376)
B1776	Microphone input/output short to ground/open	Signal error	(see page 23-377)
B1779	HFL switch (HFL talk/HFL back buttons) circuit open/short	Signal error	(see page 23-379)
B1780	HFL switch (HFL talk/HFL back buttons) circuit short	Signal error	(see page 23-381)
B1792	HandsFreeLink control unit internal error	Internal error	(see page 23-382)

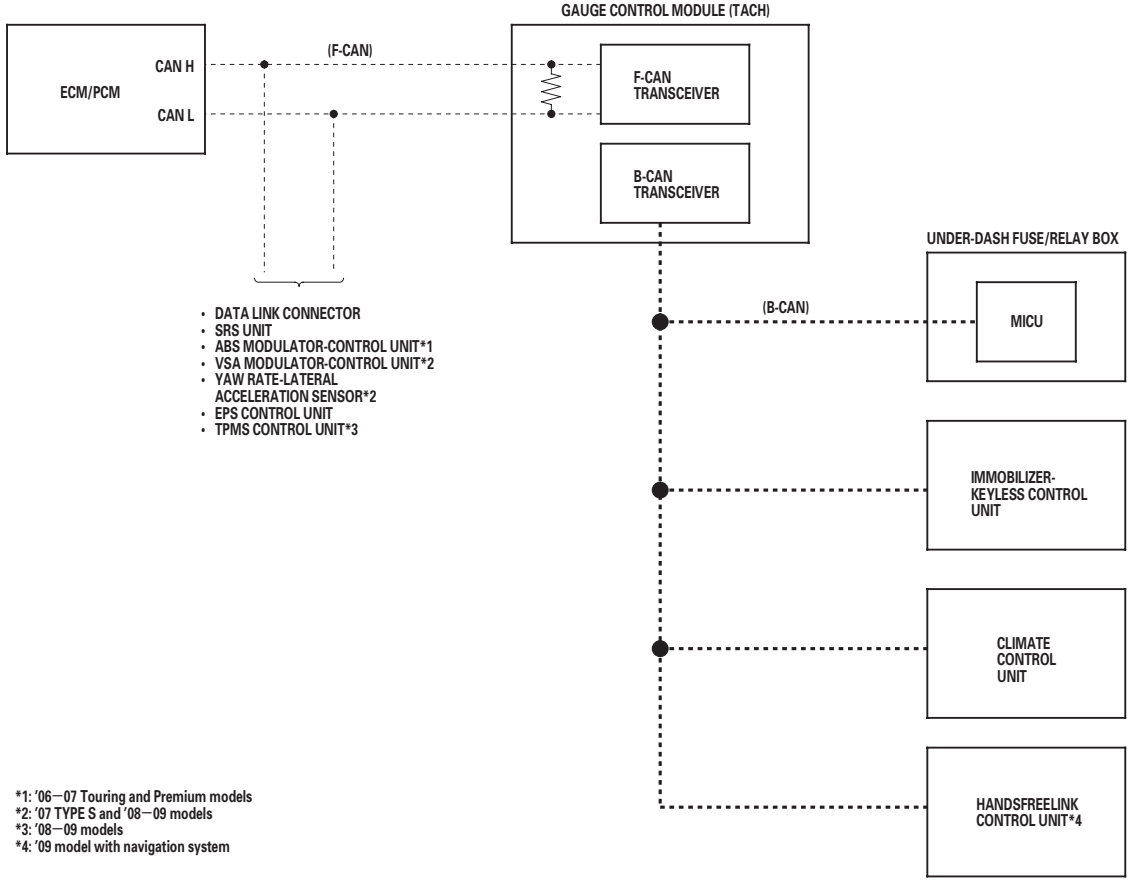
Immobilizer-Keyless Control Unit

DTC	Description	DTC type	Page
B1900	Communication bus line error (BUS-OFF)	Loss of communication	(see page 22-108)
B1905	Immobilizer-keyless control unit lost communication with the MICU (DRLOCKSW message)	Loss of communication	(see page 22-317)
B1906	Immobilizer-keyless control unit lost communication with the gauge control module (A/T message)	Loss of communication	(see page 22-318)
B1925	Ignition key switch signal error	Signal error	(see page 22-319)

System Description

Body Controller Area Network (B-CAN) and Fast Controller Area Network (F-CAN)

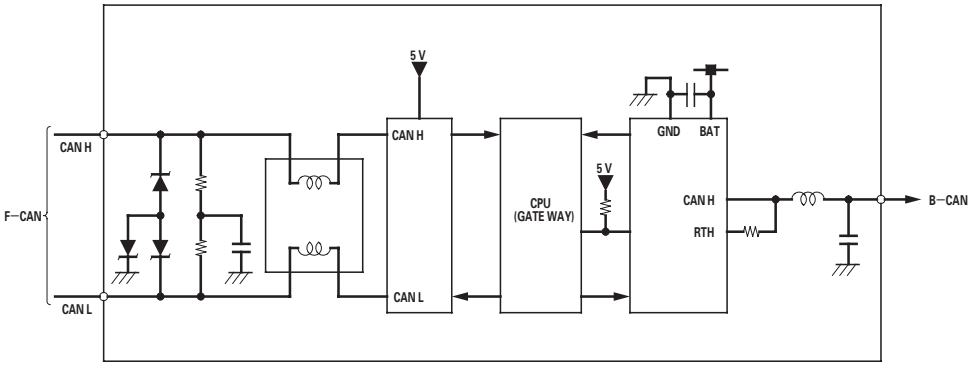
The body controller area network (B-CAN) and the fast controller area network (F-CAN) share information between multiple electronic control units (ECUs). B-CAN communication moves at a slower speed (33.33 kbps) for convenience related items and for other functions. F-CAN information moves at a faster speed (500 kbps) for ''real time'' functions such as fuel and emissions data. To allow both systems to share information, the gauge control module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.



- The single wire method is used between the units not requiring the communication to move at a fast speed.
- Using a single wire method reduces the number of the wires used on the body controller area network.

Gateway Function

The gauge control module acts as a gateway to allow both systems to share information, the gauge control module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.



Network "Loss of Communication" Error Checking Function

The ECUs on the CAN circuit send messages to each other. If there is any malfunction on the network, the odo/trip display on the gauge control module can indicate the error messages by entering the gauge self-diagnostic function (see page 22-241).

- Error 1: There is a malfunction in the communication line between the gauge control module (tach) and the F-CAN.
- Error 2: There is a malfunction in the communication line between the gauge control module (tach) and the B-CAN.
- Error 3: There is a malfunction in the communication line between the gauge control module (tach) and the gauge control module (speedo) (UART line).

Except TYPE S Error Code List

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 3	UART communication
Error 12	F-CAN and B-CAN communication
Error 13	F-CAN and UART communication
Error 23	B-CAN and UART communication
Error 123	F-CAN, B-CAN and UART communication

TYPE S Error Code List

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 12	F-CAN and B-CAN communication

Example: Error 1

(cont'd)

System Description (cont'd)

MICU Control Functions Index

The MICU (built into the under-dash fuse/relay box) is one of the B-CAN components. The MICU controls many systems related to the body controller area and security system, and also works as a gateway to the diagnose the other B-CAN connected ECUs with the HDS.
Refer to the each system circuit diagram in detail.

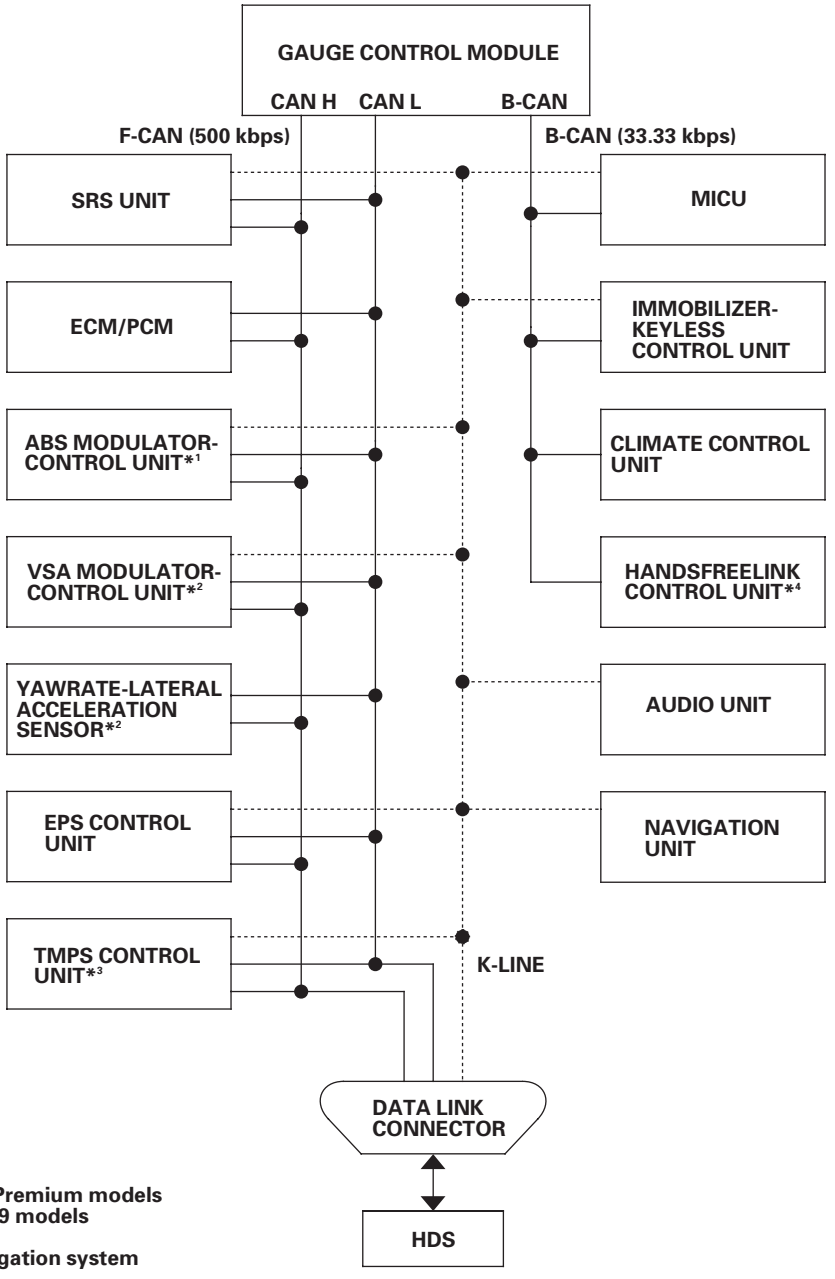
System	Function
Multiplex Control	Sends the switch input signal information to the MICU and outputs the information. The MICU controls the ECUs electric load and communication based upon the information received the B-CAN.
On-Board Diagnosis	The MICU has a gateway function which sends the results of the MICU internal diagnosis and the B-CAN connected ECUs diagnosis to the HDS.
Self-Diagnosis	Test mode 1 diagnoses the communication line between the MICU and B-CAN connected unit. Test mode 2 checks the switch inputs connected to the MICU.
Interior Light(s)	The MICU controls the interior lights ON, OFF and dimming based upon the information of the related switches and/or the B-CAN related information.
Sleep Function	The MICU has a sleep function, which it enters during the power down mode.

The MICU also controls the function of these circuits:

- Entry lights control (map lights and ceiling light)
- Exterior lights control (including the daytime running lights control)
- Horn
- Interlock system
- Key-in reminder
- Keyless entry
- Lights-on reminder
- Power door locks
- Power window key-off timer
- Seat belt reminder
- Security alarm
- Turn signal/hazard flasher
- Wiper/washer

Self-diagnostic Function

By connecting the HDS to the data link connector (DLC), the HDS can retrieve the diagnostic results from the MICU via a diagnostic line called K-LINE. The K-LINE is distinguished from the CAN line, and connected to the CAN related ECUs. The MICU is a gateway between the HDS and B-CAN related ECUs, and sends B-CAN diagnostic results to the HDS. When doing a function test with the HDS, the HDS sends an output signal through the K-LINE to the MICU. The MICU either relays the request to another ECU, or commands the function its self.



*1: '06-08 Touring and Premium models
*2: '07 TYPES and '08-09 models
*3: '08-09 models
*4: '09 model with navigation system

(cont'd)

System Description (cont'd)

Wake-up and Sleep Function

The multiplex integrated control system has wake-up and sleep functions to decrease parasitic draw on the battery when the ignition switch in LOCK (0).

- In the sleep mode, the MICU stops functioning (communication and CPU control) when it is not necessary for the system to operate.
- As soon as any operation is requested (for example, a door is unlocked), the related control unit in the sleep mode immediately wakes up and begins to function.
- When the ignition switch is turned to LOCK (0), and the driver's door is opened, then closed, there is a delay of about 40 seconds before the control unit goes from the wake-up mode to the sleep mode.
- The sleep mode will not function if any door is opened or if a key is in the ignition.
- The draw is reduced from 200 mA to less than 35 mA when in the sleep mode.

NOTE: Sleep and Wake-up Mode Test (see page 22-99).

Fail-safe Function

To prevent improper operation, the MICU has a fail-safe function. In the fail-safe mode, the output signal is fixed when any part of the system malfunctions (for example, a faulty control unit or communication line).
Each control unit has a hardware fail-safe function that fixes the output signal when there is a CPU malfunction, and a software fail-safe function that ignores the signal from a malfunctioning control unit , which allows the system to operate normally.

Hardware Fail-safe Control

Fail-safe function
When a CPU problem or a abnormal power supply voltage is detected, the MICU moves to the hardware fail-safe mode, and each system output load is set to the pre-programmed fail-safe value.

Software Fail-safe Control

When any of the data from the B-CAN circuit cannot be received within a specified time, or an unusual combination of the data is recognized, the MICU moves to the software fail-safe mode. The data that cannot be received is forced to a pre-programmed value.

Power Supply Voltage Monitoring Function

The MICU monitors the power supply voltage (back-up voltage). If the voltage goes below 10 V, the MICU sends a MICU message and will not store DTCs.

	Input	Output
MICU	Battery voltage	MICU* *: MICU internal circuit

Entry Lights Control System

The MICU controls the ceiling light ON/OFF and dimming based upon input signals from each switch.

	Input	Output
MICU	IG1 power supply Ignition key switch Driver's door switch Front passenger's door switch Left rear door switch Right rear door switch Driver's door lock knob switch (LOCK)	Interior light
B-CAN	Keyless LOCK signal	

Lighting System (Headlights, Parking Lights, Fog Lights, Side Marker Lights, License Plate Lights, and Taillights)

The MICU contains the relay circuits for the headlight high/low beams and taillights, and controls the lighting system ON/OFF based upon input signals from the combination light switch.

	Input	Output
MICU	Headlight OFF switch Headlight ON switch Fog light switch Dimmer switch Combination light switch (parking lights, side marker lights, license plate lights, and taillights) Passing switch	Headlights (low beam) Headlights (high beam) Parking lights Fog lights Side marker lights License plate lights Taillights

Daytime Running Lights

The MICU controls the exterior lights as a daytime running lights based upon input signals from each switch.

	Input	Output
MICU	Headlight OFF switch Headlight ON switch Dimmer switch Combination light switch (parking lights, side marker lights, license plate lights, and taillights) Passing switch	Headlights (low beam) Headlights (high beam) Parking lights Slide marker lights License plate lights Taillights
B-CAN	Transmission range switch (P position)	

Turn Signal/Hazard Warning Lights

The MICU controls the turn signal/hazard warning lights based upon input signals from the turn signal and hazard warning switches.

	Input	Output
MICU	IG1 power supply Turn signal switch (left/right) Hazard warning switch	Turn signal lights (left/right)

Door Lock Response Operation

The MICU controls the door lock actuators based upon B-CAN signals.

	Input	Output
B-CAN	Door lock signals	Door lock actuator (LOCK/UNLOCK) Driver's door lock actuator (UNLOCK) Trunk lid release actuator

Power Window Key-off Operation

The MICU controls the power windows key-off operation based upon input signals from each switch.

	Input	Output
MICU	IG1 power supply Ignition key switch Driver's door switch Front passenger's door switch	Power window key-off timer

(cont'd)

System Description (cont'd)

Power Door Locks (Vehicle Speed Sense)

The MICU controls the door lock actuators based upon B-CAN signals and input signals from each switch.

	Input	Output
MICU	IG1 power supply Driver's door switch Front passenger's door switch Left rear door switch Right rear door switch Trunk lid latch switch Driver's door lock knob switch (UNLOCK) Front passenger's door lock knob switch (UNLOCK) Left rear door lock knob switch (UNLOCK) Right rear door lock knob switch (UNLOCK) Transmission range switch (P position)	Door lock (LOCK)
B-CAN	Vehicle speed pulse Engine RPM	

Power Door Locks (Normally LOCK/UNLOCK Operation)

The MICU controls the door lock actuators based upon input signals from each switch.

	Input	Output
MICU	IG1 power supply Ignition key switch Driver's door switch Front passenger's door switch Left rear door switch Right rear door switch Trunk lid latch switch Driver's door lock knob switch (LOCK) Driver's door lock switch (LOCK/UNLOCK) Driver's door key cylinder switch (UNLOCK) Front passenger's door lock switch (LOCK/UNLOCK)	Door lock actuators (LOCK/UNLOCK)

Keyless Entry System

The MICU controls the door lock actuators based upon B-CAN signals and input signals from each switch.

	Input	Output
MICU	IG1 power supply Ignition key switch Driver's door switch Front passenger's door switch Left rear door switch Right rear door switch Trunk lid latch switch Driver's door lock knob switch (LOCK/UNLOCK) Driver's door lock switch (LOCK/UNLOCK) Driver's door key cylinder switch (UNLOCK) Front passenger's door lock switch (LOCK/UNLOCK) Transmission range switch (P position)	Door lock actuator (LOCK/UNLOCK) Driver's door lock actuator (UNLOCK) Trunk lid release actuator
B-CAN	Keyless LOCK signal	

Keyless PANIC

The MICU controls the keyless PANIC based upon B-CAN signals.

	Input	Output
B-CAN	Keyless PANIC signal (action, headlight low, parking light and horn)	Headlights (low beam) Parking lights Side marker lights License plate lights Taillights Horn

Security Alarm System

The MICU controls the lighting system and horn based upon B-CAN signals and input signals from the each switch.

	Input	Output
MICU	IG1 power supply Ignition key switch Audio switch Driver's door switch Front passenger's door switch Left rear door switch Right rear door switch Trunk lid latch switch Driver's door key cylinder switch (UNLOCK) Driver's door lock knob switch (UNLOCK) Front passenger's door lock knob switch (UNLOCK) Left rear door lock knob switch (UNLOCK) Right rear door lock knob switch (UNLOCK) Hood switch	Horn Headlights Parking lights Side marker lights License plate lights Taillights
B-CAN	Keyless LOCK signal Door lock signal	

Key-in Reminder

The MICU controls the door lock actuators based upon ignition key switch, the driver's door switch, and driver's door lock knob switch signals.

	Input	Output
MICU	Ignition key switch Driver's door switch Driver's door lock knob switch	Door lock actuator (LOCK/UNLOCK) Driver's door lock actuator (UNLOCK)

Key Interlock (A/T)

The MICU controls the key interlock solenoid based upon IG1, transmission range switch, and park-pin switch signals.

	Input	Output
MICU	Ignition switch ACC Transmission range switch (P position) Park-pin switch	Key interlock solenoid

Answer Back Response Operation

The MICU controls the lighting system and horn based upon B-CAN signals.

	Input	Output
B-CAN	Answer back signals (headlight low, horn, parking lights)	Horn Headlights Parking lights Side marker lights License plate lights Taillights

Wiper/Washer

The MICU controls the wiper motor and the washer motor based upon IG1 and wiper/washer switch signals.

	Input	Output
MICU	IG1 power supply Wiper switch (INT and LO) Wiper switch (LO and HI) Wiper switch (MIST) Washer switch Wiper intermittent speed	Wiper motor Washer motor

Collision Detection Signal (CDS)

The MICU controls the door lock actuators based upon IG1 and B-CAN signals.

	Input	Output
MICU	IG1 power supply	Door lock (LOCK/UNLOCK)
B-CAN	SRS signal (front, side and rear) Impact sensors	

(cont'd)

System Description (cont'd)

HDS Inputs and Commands

Certain inputs happen so quickly that the HDS cannot update fast enough. Hold the switch that is being tested while monitoring the Data List. This should give the HDS time to update the signal on the Data List.
Because the HDS software is updated to support the release for newer vehicles it is not uncommon to see system function tests that are not supported.
Make sure that the most current software is loaded.

Input:

System Menu	Data List	Data List Indication
Gauges	Cruise Control Main Switch	OFF/ON
	Cruise Control Set Switch	OFF/ON
	Cruise Control Resume Switch	OFF/ON
	Washer Fluid Level Switch	OFF/ON
	VSA/TCS Off Switch	OFF/ON
	Gauge Select/Reset Switch	OFF/ON
	Parking Brake Switch	OFF/ON
	Brake Fluid Level Switch	OFF/ON
	Illumination Volume Plus Switch	OFF/ON
	Illumination Volume Minus Switch	OFF/ON
	Km/h mph Select Switch	OFF/ON
	Fuel Sending Unit Input 1	deg
	Fuel Sending Unit Input 2	VOLTAGE
	VSA/TCS Active Indicator	OFF/ON
	VSA/TCS Indicator (Warning)	OFF/ON
	ABS Indicator	OFF/ON
	Cruise Control Main Switch Indicator	OFF/ON
	MIL Indicator	OFF/ON
	Washer Fluid Level Indicator	OFF/ON
	DRL Indicator	OFF/ON
	Low Oil Pressure Indicator	OFF/ON
	Charging System Indicator	OFF/ON
	Cruise Main Switch ON Indicator	OFF/ON
	Maintenance Minder Indicator	OFF/ON
	High Beam Indicator	OFF/ON
	Parking Light ON Indicator	OFF/ON
	Low Fuel Warning Indicator	OFF/ON
	Security Indicator	OFF/ON
	Fog Light Indicator	OFF/ON
	Seat Belt Indicator	OFF/ON
	Speed Indicator (km/h)	0—249 km/h, over 250 km/h, Fail
	Speed Indicator (mph)	0—154 mph, over 155 mph, Fail
	Low Tire Pressure Indicator	OFF/ON
	TPMS Indicator	OFF/ON
	A/T Gear Position Switch (R)	OFF/ON
	A/T Gear Position Switch (P)	OFF/ON

System Menu	Data List	Data List Indication
Lighting	Driver's Door Switch	OFF/ON
	Hazard Switch	OFF/ON
	Headlight Switch (OFF)	OFF/ON
	Headlight Switch (PARKING)	OFF/ON
	Headlight Switch (HEADLIGHT)	OFF/ON
	Headlight Switch (High Beam)	OFF/ON
	Headlight Switch (PASSING)	OFF/ON
	Turn Signal Switch (LEFT)	OFF/ON
	Turn Signal Switch (RIGHT)	OFF/ON
	Fog Light Switch	OFF/ON
	Ignition Key Cylinder Light Command	OFF/ON
	Interior Light Command	OFF/ON
	Left Turn Signal Command	OFF/ON
	Right Turn Signal Command	OFF/ON
	Headlight Command	OFF/ON
	Headlight High Beam Command	OFF/ON
	Parking Light Command	OFF/ON
	Fog Light Command	OFF/ON
	DRL Command	OFF/ON
Door Locks	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	Front Passenger's Door Lock Sw. (LOCK)	OFF/ON
	Front Passenger's Door Lock Sw. (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Switch (LOCK)	OFF/ON
	Driver's Door Lock Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Knob Switch (LOCK)	OFF/ON
	Driver's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON

(cont'd)

System Description (cont'd)

System Menu	Data List	Data List Indication
Keyless	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	Trunk Lid/Tailgate Switch	OFF/ON
	Front Passenger's Door Lock Sw. (LOCK)	OFF/ON
	Front Passenger's Door Lock Sw. (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Trunk Key Cylinder (UNLOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Switch (LOCK)	OFF/ON
	Driver's Door Lock Switch (UNLOCK)	OFF/ON
	Driver's Door Lock Knob Switch (LOCK)	OFF/ON
	Driver's Door Lock Knob Switch (UNLOCK)	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON
Wipers	Brake Pedal Position Switch	OFF/ON
	Windshield Wiper Switch (LOW)	OFF/ON
	Windshield Wiper Switch (HIGH)	OFF/ON
	Windshield Wiper Switch (MIST)	OFF/ON
	Windshield Wiper Switch (INT)	OFF/ON
	Windshield Washer Switch	OFF/ON
	Windshield Wiper Motor PARK Switch	OFF/ON
	Intermittent Wiper Dwell Timer	0.0—1.0 kΩ/OPEN
	Windshield Wiper Motor HI Command	OFF/ON
	Windshield Wiper Motor LO Command	OFF/ON
	Windshield Washer Motor Command	OFF/ON

System Menu	Data List	Data List Indication
Security	Ignition Key Cylinder Switch	OFF/ON
	Driver's Door Switch	OFF/ON
	Front Passenger's Door Switch	OFF/ON
	Driver's Rear Door Switch	OFF/ON
	Passenger's Rear Door Switch	OFF/ON
	Trunk Lid/Tailgate Switch	OFF/ON
	Front Passenger's Door Lock Sw. (LOCK)	OFF/ON
	Front Passenger's Door Lock Sw. (UNLOCK)	OFF/ON
	Front Passenger's Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Driver's Rear Door Lock Knob Switch (UNLOCK)	OFF/ON
	Passenger's Rear Door Lock Knob Sw. (UNLOCK)	OFF/ON
	Trunk Key Cylinder (UNLOCK)	OFF/ON
	Radio Switch	OFF/ON
	Hazard Switch	OFF/ON
	Hood Switch	OFF/ON
	Driver's Door Key Cylinder Switch (LOCK)	OFF/ON
	Driver's Door Key Cylinder Switch (UNLOCK)	OFF/ON
	Driver's Door Look Switch (LOCK)	OFF/ON
	Driver's Door Look Switch (UNLOCK)	OFF/ON
	Driver's Door Look Knob Switch (LOCK)	OFF/ON
	Driver's Door Look Knob Switch (UNLOCK)	OFF/ON
	Door LOCK Command	OFF/ON
	Door UNLOCK Command	OFF/ON
	Driver's Door UNLOCK Command	OFF/ON
	Security Hazard Signal Command	OFF/ON
	Headlight Command	OFF/ON
	Headlight High Beam Command	OFF/ON
	Parking Light Command	OFF/ON

(cont'd)

System Description (cont'd)

Function Test:

System Menu	Data List Indication	Data List and Operation Time
Door Locks	LOCK all doors	Outputs LOCK signal 1 time (0.6 sec) to all doors
	UNLOCK driver's side door	Outputs UNLOCK signal 1 time (0.6 sec) to driver's door
	UNLOCK all doors	Outputs UNLOCK signal 1 time (0.6 sec) to all doors
Lighting	Interior Light Command	Illuminates for 30 seconds.
	LEFT Turn Signal Command	Blinks for 5 seconds.
	RIGHT Turn Signal Command	Blinks for 5 seconds.
	Hazard flasher	Blinks turn signal (left and right) for 15 seconds.
	Headlight Command	Operates headlight (low) for 15 seconds.
	Headlight HIGH Beam Command	Operates headlight (high) for 15 seconds.
	Fog Light	Operates fog light relay for 15 seconds.
	Parking Light Command	Operates small lights for 15 seconds.
Keyless	Trunk Lid/Tailgate Release Command	Unlock trunk
Security	Horn Command	Operates horn for 1 second.
Wipers	Windshield Wiper Motor LOW Command	Operates windshield wiper motor for 5 seconds (low speed).
	Windshield Wiper Motor HIGH Command	Operates windshield wiper motor for 5 seconds (high speed).
	Windshield Washer Command	Operates windshield washer motor for 5 seconds.
Gauges	Self Diagnostic Test	———

Troubleshooting - B-CAN System Diagnosis Test Mode A

Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see page 11-3) or F-CAN loss of communication errors first, then do this diagnosis if the symptom is related to the B-CAN system.

NOTE:
- If the HDS is not available, do the Test Mode 1 and Test Mode 2 (see page 22-97).
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Compare the symptom with this list of B-CAN related systems:

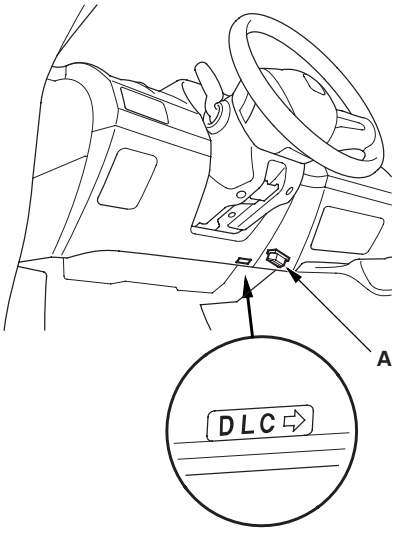
   - Gauge control module
   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Door-open and trunk-open indicators
   - Horns (security and panic)
   - Chimes (key-in, seat belt, lights-on, and parking brake)
   - Power window/moonroof timer
   - Wiper/washer
   - Security
   - Keyless entry
   - Power door locks
   - Key interlock
   - Dash light brightness control

   Is the symptom related to the B-CAN system?

   YES—Go to step 2.

   NO—Go to the system troubleshooting for the system with the symptom. ■

2. Connect the HDS to the data link connector (A), then turn the ignition switch to ON (II).



3. From the BODY ELECTRICAL menu, select UNIT INFORMATION, and then select CONNECTED UNIT listed to see if the following control units are communicating with the HDS.

   - MICU
   - Gauge control module
   - Immobilizer-keyless control unit
   - Climate control unit
   - HandsFreeLink control unit

   NOTE:
   - If one or more of the units are not communicating with the HDS, DETECT will be displayed.
   - If the unit is not communicating or the vehicle is not equipped, ''Not Available'' will be displayed.

   Are all control units communicating with the HDS?

   YES—Go to step 4.

   NO—If any of the control units are not communicating, go to B-CAN System Diagnosis Test Mode B (see page 22-94). If all units are not communicating or only the MICU is communicating, go to DTC B1000 troubleshooting (see page 22-102). ■

(cont'd)

Troubleshooting - B-CAN System Diagnosis Test Mode A (cont'd)

4. Select the system that has the problem from the BODY ELECTRICAL menu, then select DTCs.

   Are any DTCs indicated?

   YES—Go to step 5.

   NO—If the problem is related to one of the following items, go to B-CAN System Diagnosis Test Mode C (see page 22-95) if the system does not stop or turn off. Go to Test Mode D (see page 22-96) if the system does not run or turn on.

   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Horn (security and panic)
   - Wiper/washer

   If the problem is related to one of the following items, go to the troubleshooting for that individual system. ■

   - Gauge control module
   - Door-open and trunk-open indicators
   - Chimes (key-in, seat belt, lights-on, and parking brake)
   - Security
   - Keyless entry
   - Key interlock
   - Dash light brightness control
   - Audio system
   - Navigation (if equipped)
   - HandsFreeLink (if equipped)

5. Record all DTCs, and sort them by DTC type.

6. Troubleshoot the DTC(s) in this order:

   - Battery voltage DTCs.
   - Internal error DTCs.
   - Loss of communication DTCs. Begin troubleshooting with the lowest number first (Example: if DTC B1008 and B1011 are retrieved, begin by troubleshooting B1008).
   - Signal error DTCs.

Troubleshooting - B-CAN System Diagnosis Test Mode B

Do this diagnosis if any of the control units are not communicating (Not Available is displayed in the HDS) as found by the B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Using the HDS, select the system that has the symptom from the BODY ELECTRICAL menu.

2. Select DTCs, and then check for loss of communication DTCs.

   Are any loss of communication DTCs indicated?

   YES—Go to step 3.

   NO—Replace the MICU. ■

3. Do the input test for the unit not communicating with the HDS.

Unit not communicating
MICU (see page 22-109)
Gauge control module (see page 22-271)
Immobilizer-keyless control unit (see page 22-330)
Climate control unit (see page 21-24)
HandsFreeLink control unit (see page 23-388)

Troubleshooting - B-CAN System Diagnosis Test Mode A (cont'd)

4. Select the system that has the problem from the BODY ELECTRICAL menu, then select DTCs.

   Are any DTCs indicated?

   YES—Go to step 5.

   NO—If the problem is related to one of the following items, go to B-CAN System Diagnosis Test Mode C (see page 22-95) if the system does not stop or turn off. Go to Test Mode D (see page 22-96) if the system does not run or turn on.

   - Exterior lights
   - Turn signals
   - Entry light control
   - Interior lights
   - Horn (security and panic)
   - Wiper/washer

   If the problem is related to one of the following items, go to the troubleshooting for that individual system. ■

   - Gauge control module
   - Door-open and trunk-open indicators
   - Chimes (key-in, seat belt, lights-on, and parking brake)
   - Security
   - Keyless entry
   - Key interlock
   - Dash light brightness control
   - Audio system
   - Navigation (if equipped)
   - HandsFreeLink (if equipped)

5. Record all DTCs, and sort them by DTC type.

6. Troubleshoot the DTC(s) in this order:

   - Battery voltage DTCs.
   - Internal error DTCs.
   - Loss of communication DTCs. Begin troubleshooting with the lowest number first (Example: if DTC B1008 and B1011 are retrieved, begin by troubleshooting B1008).
   - Signal error DTCs.

Troubleshooting - B-CAN System Diagnosis Test Mode B

Do this diagnosis if any of the control units are not communicating (Not Available is displayed in the HDS) as found by the B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Using the HDS, select the system that has the symptom from the BODY ELECTRICAL menu.

2. Select DTCs, and then check for loss of communication DTCs.

   Are any loss of communication DTCs indicated?

   YES—Go to step 3.

   NO—Replace the MICU. ■

3. Do the input test for the unit not communicating with the HDS.

Unit not communicating
MICU (see page 22-109)
Gauge control module (see page 22-271)
Immobilizer-keyless control unit (see page 22-330)
Climate control unit (see page 21-24)
HandsFreeLink control unit (see page 23-388)

Troubleshooting - B-CAN System Diagnosis Test Mode C

Do this diagnosis if a component that is controlled by the B-CAN system does not stop or turn off.

NOTE:
- If the component does not turn on, go to B-CAN System Diagnosis Test Mode D (see page 22-96).
- See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see page 22-88).
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Check for DTCs by selecting the TEST MODE menu from the HDS.

   Are any DTCs indicated?

   YES—Go to B-CAN System Diagnosis Test Mode A (see page 22-93). ■

   NO—Go to step 2.

2. Turn off the switch that controls the malfunctioning component.

3. Select DATA LIST from the TEST MODE menu, and check the input of the switch that controls the component.

   Does the HDS indicate the switch is OFF?

   YES—Go to step 4.

   NO—Go to step 6.

4. In the DATA LIST, check the output signal of the malfunctioning component.

   Is the output signal OFF?

   YES—Go to step 5.

   NO—Replace the control unit that controls the device that will not turn OFF. ■

5. Check the relay, if applicable, then check for a short in the wire between the relay and the component, the relay and control unit, or the component and control unit.

   Are the relay and the wire harness OK?

   YES—Replace the control unit that controls the component that will not turn OFF. ■

   NO—Replace the relay or repair the wire harness. ■

6. Check the switch, then check for a short in the wire between the switch and the control unit that monitors the switch.

   Are the switch and wire harness OK?

   YES—Replace the control unit that monitors the switch. ■

   NO—Replace the switch or repair the wire harness. ■

Troubleshooting - B-CAN System Diagnosis Test Mode D

Do this diagnosis if a component that is controlled by the B-CAN system does not run or come on.

NOTE:
- If the component does not turn off or stop, go to B-CAN System Diagnosis Test Mode C (see page 22-95).
- See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the inputs and control the output devices (see page 22-88).
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Check the fuse of the malfunctioning output device.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse and recheck. ■

2. Check for DTCs by selecting the TEST MODE menu from the HDS.

   Are any DTCs indicated ?

   YES—Go to B-CAN System Diagnosis Test Mode A (see page 22-93). ■

   NO—Go to step 3.

3. Turn ON the switch that controls the malfunctioning component.

4. Select DATA LIST from the TEST MODE menu, and check output signal for the malfunctioning component.

   Is there an output signal?

   YES—Go to step 5.

   NO—Go to step 9.

5. Check the relay and ground, then check for an open or a short in the circuit for the malfunctioning component.

   Are the relay and circuit OK?

   YES—Go to step 6.

   NO—Replace the relay or repair the wire circuit. ■

6. Do the function test for the malfunctioning component.

   Does the output device pass the function test?

   YES—Go to step 7.

   NO—Replace the component. ■

7. With the malfunctioning output device connected, connect a voltmeter between the malfunctioning output device and body ground on the wire that the control unit uses to control the output device circuit.

8. Select MISC. TEST from the TEST MODE menu, and do the forced operation test of the malfunctioning component.

   Is there a change in voltage (12 V to 0 V or 0 V to 12 V)?

   YES—Inspect the ground for the component. If OK, replace the component. ■

   NO—Replace the control unit that controls the malfunctioning component. ■

9. Select DATA LIST from the TEST MODE menu, and make sure the switch signal input for the malfunctioning system indicates a change when operated.

   Does the switch input indicate ON when the switch is ON?

   YES—Replace the control unit that controls the malfunctioning component. ■

   NO—Go to step 10.

10. Check the switch and its ground (if applicable), then check for an open or a short in the wire between the switch and the control unit that monitors it.

    Is the switch and the wire harness OK?

    YES—Replace the control unit that monitors the switch. ■

    NO—Replace the switch or repair the wire harness. ■

Troubleshooting - B-CAN System Diagnosis Test Mode 1 and Test Mode 2 (without the HDS)

Special Tools Required
MPCS (MCIC) service connector 07WAZ-001010A

Test Mode 1

Check the ECM/PCM for DTCs and troubleshoot ECM/PCM (see page 11-3) or F-CAN loss of communication errors first, then do this diagnosis if the HDS is not available.

1. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

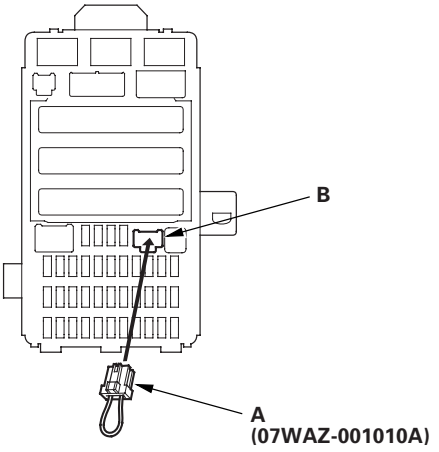
   YES—Go to step 2.

   NO—Find and repair the cause of the blown fuse. ■

2. Remove the left kick panel (see page 20-66).

3. Turn the ignition switch to ON (II), and move the ceiling light switch to the middle (door) position.

4. Connect the MPCS service connector (A) to the MCIC socket (B) in the under-dash fuse/relay box.



5. Wait 5 seconds, and watch the ceiling light. When the ceiling light flashes quickly once, and then goes off the system is in Test Mode 1.

6. Check for B-CAN DTCs indicated by the gauge control module (tach) odometer/trip meter display while still in Test Mode 1. Push the SEL/RESET switch button to display the next code. After you get to the last code, the display shows END. If no DTCs are stored, the display will read NO.

   Are any DTCs indicated?

   YES—Go to step 7.

   NO—Go to step 10.

7. Record all DTCs and sort them.

8. Troubleshoot the DTCs in this order:

   - Battery voltage DTCs
   - Internal error DTCs
   - Loss of communication DTCs (begin with the lowest number first; for example, if B1008 and B1011 are retrieved, troubleshoot B1008 first)
   - Signal error DTCs

9. Clear the DTCs by pressing and holding the SEL/RESET switch button for about 10 seconds. You will hear a beep to confirm the codes have been cleared. Operate the devices that failed, and recheck for codes.

Test Mode 2

10. Remove the MPCS service connector from the under-dash fuse/relay box socket for 5—10 seconds, then re-insert it to enter Mode 2. When the system enters Mode 2, the ceiling light will flash two times quickly and then go off.

    NOTE: If the MPCS service connector is disconnected for too short or too long of a time, or the ignition switch is turned to LOCK (0), the system will return to Test Mode 1.

11. The following tables list the circuits that can be checked in Test Mode 2. Operate the switch that is most closely related to the problem. If the circuit is OK, the ceiling light will blink once. If the circuit is faulty, there will be no indication.

(cont'd)

Troubleshooting - B-CAN System Diagnosis Test Mode 1 and Test Mode 2 (without the HDS) (cont'd)

MICU

Item
Driver's door lock switch (UNLOCK)
Driver's door lock switch (LOCK)
Driver's door lock knob switch (UNLOCK)
Driver's door lock knob switch (LOCK)
Driver's door key cylinder switch (UNLOCK) *
Driver's door key cylinder switch (LOCK) *
Front passenger's door lock switch (UNLOCK)
Front passenger's door lock switch (LOCK)
Front passenger's door lock knob switch (UNLOCK)
Left rear door lock knob switch (UNLOCK)
Right rear door lock knob switch (UNLOCK)
Driver's door switch (OPEN)
Front passenger's door switch (OPEN)
Left rear door switch (OPEN)
Right rear door switch (OPEN)
Trunk lid latch switch (OPEN)
Audio switch
Windshield wiper HI/LO switch
Windshield wiper INT/LO switch
Windshield wiper MIST switch
Windshield washer switch (ON)
Windshield wiper intermittent dwell time controller
Windshield wiper motor park switch
Turn signal switch (LEFT)
Turn signal switch (RIGHT)
Hazard warning switch (ON)
Headlight switch (ON)
Headlight switch (OFF)
Lighting switch (ON)
Dimmer switch (ON)
Passing switch (ON)
Fog light switch (ON)
Hood switch (OPEN)
A/C pressure switch/thermal protector
Transmission range switch (P)
Ignition key cylinder switch
Brake switch (ON)

* : A second key is necessary to check the key cylinder inputs.
Be sure to rotate the key cylinder switch two times to each position (lock and lock, unlock and unlock) to ensure the door lock knob switch is in the appropriate position.

Does the ceiling light work properly in all switch positions?

YES—Go to function and input test for the system related to the failure. ■

NO—Repair the open, short, or replace the faulty switch. ■

Sleep and Wake-up Mode Test

1. Shift to the sleep mode:
   Turn the ignition switch to LOCK (0), and remove the key. If the MICU receives no signals from the inputs listed below, it will go into sleep mode in less than 40 seconds.

Driver's door lock switch (LOCK or UNLOCK)
Driver's door key cylinder switch (LOCK or UNLOCK)
Front passenger's door lock switch (LOCK or UNLOCK)
Trunk lid latch switch (Trunk lid closed)
Hazard warning switch (OFF)

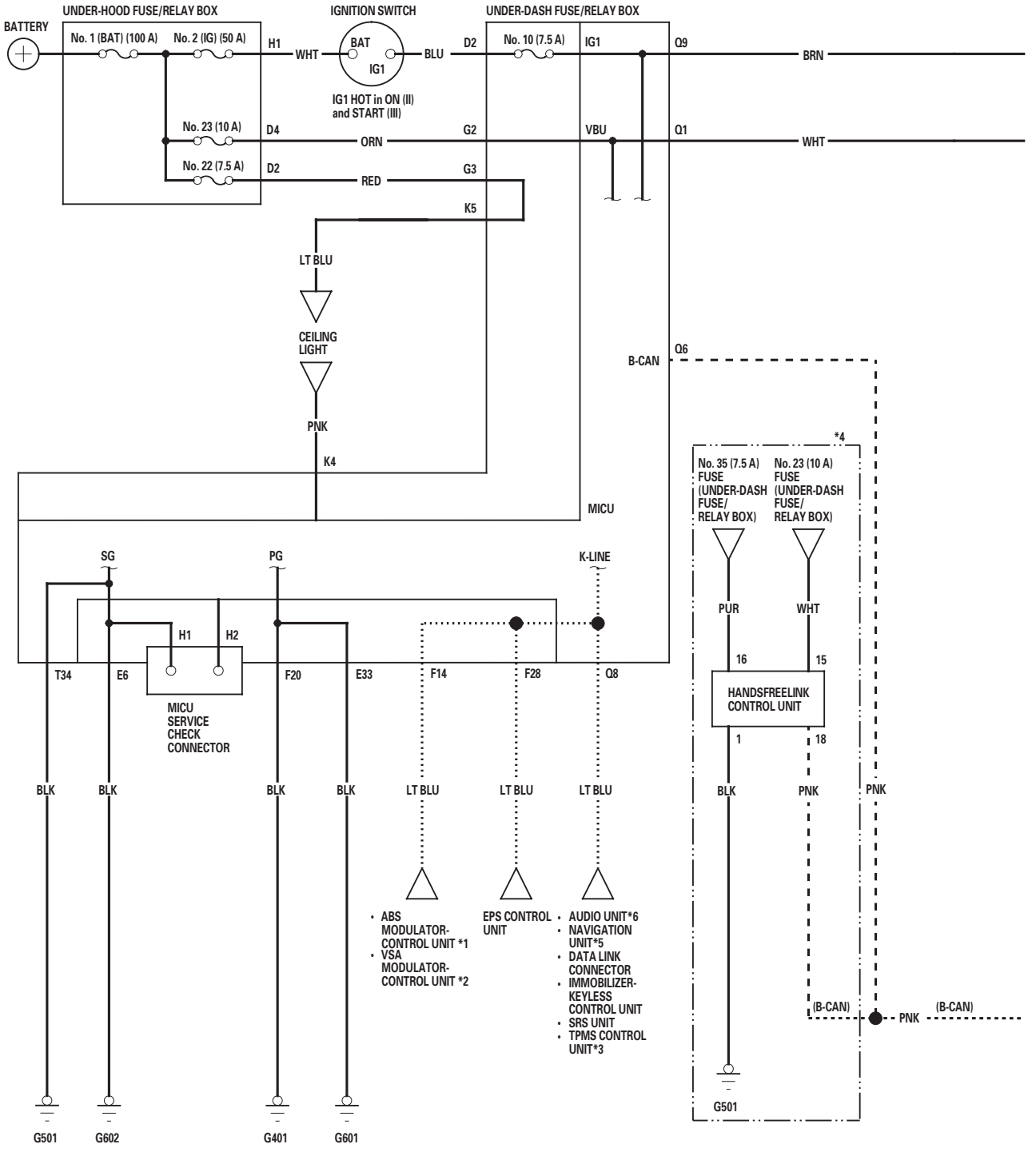
2. Confirm the sleep mode:
   Measure the frequency on the B-CAN communication line (PNK wire); there should be 0 Hz when the system is in the sleep mode. Check the parasitic draw at the battery while shifting into the sleep mode; the amperage should change from about 200 mA to less than 35 mA.

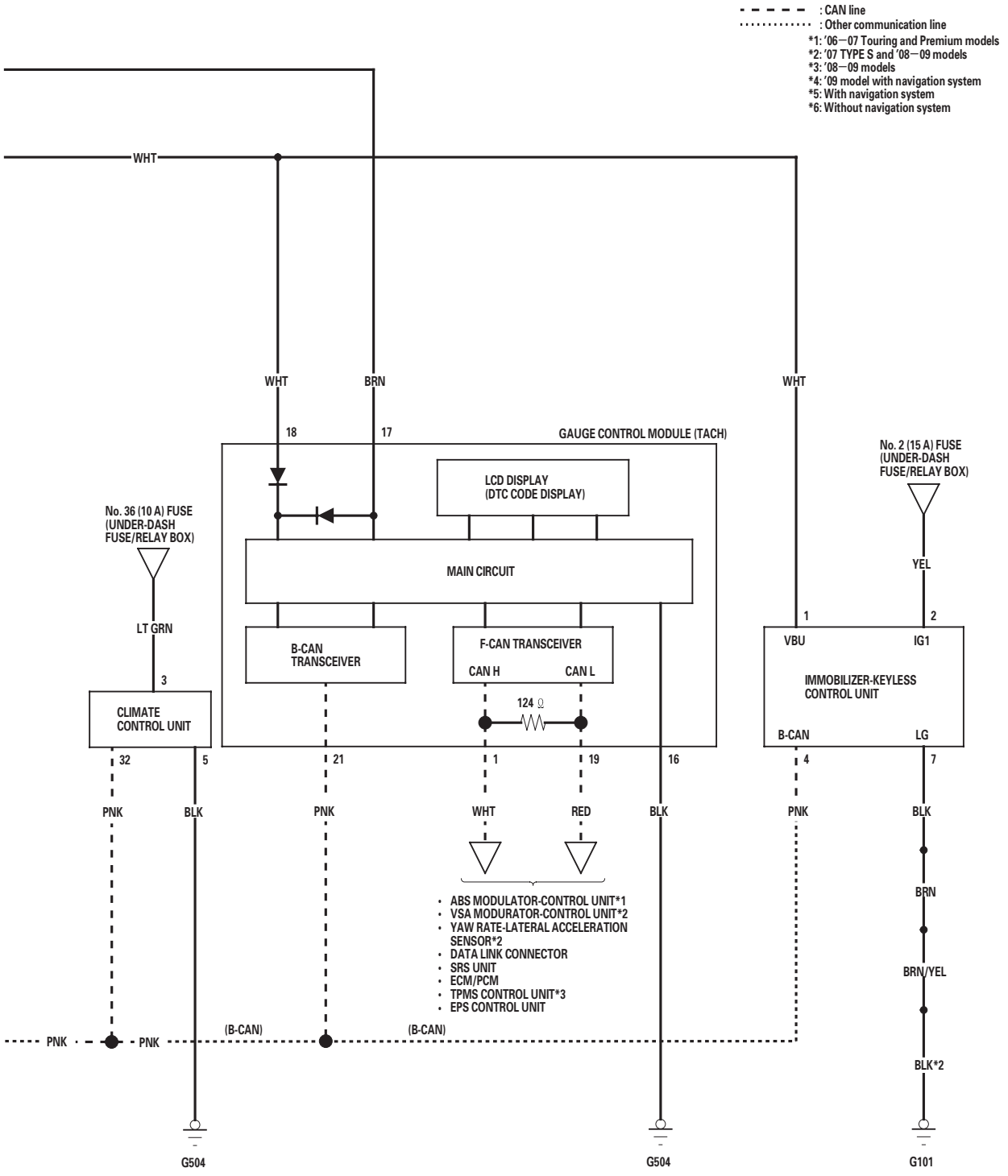
3. Shift to the wake up mode:
   When the ignition switch is turned to ON (II), the MICU, gauge control module, immobilizer-keyless control unit, and ECM/PCM wake up at the same time without ''talking'' to each other through the communication lines. When any switch in the multiplex integrated control system is turned on, it wakes up its related control unit which, in turn, wakes up the other units. After confirming the sleep mode, look in the following table for the switch most related to the problem. Operate that switch and see if its control unit wakes up.

   NOTE: If any control unit is faulty and will not wake up, several circuits in the system will malfunction at the same time. In the table below, the control unit is followed by a list of the switches and input signals that can wake it up.

Door switches (door open)
Driver's door lock switch (LOCK or UNLOCK)
Driver's door lock knob switch (LOCK or UNLOCK)
Driver's door key cylinder switch (LOCK or UNLOCK)
Front passenger's door lock switch (LOCK or UNLOCK)
Front passenger's door lock knob switch (LOCK or UNLOCK)
Left rear door lock knob switch
Right rear door lock knob switch
Trunk lid latch switch (Trunk lid open)
Hood switch (with security) (hood open)
Hazard warning switch (ON)
Combination light switch (Parking, Headlight, Dimmer, Passing ON)
Ignition key switch (key inserted)

Circuit Diagram





DTC Troubleshooting

DTC B1000: Communication Bus Line Error (BUS-OFF)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1000 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the communication bus line is OK at this time. Check for loose or poor connections, or worn/shorted wires. If the connections are good, check the battery condition (see page 22-67) and the charging system. ■
5. Check for DTCs with the HDS.

   Are DTCs B1008, B1011, and B1032 also indicated?

   YES—Go to step 6.

   NO—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the appropriate connector at each control unit in the table one at a time. Clear the DTCs, then recheck for DTCs after each unit is disconnected.

Control Unit	Connector
Gauge control module (tach)	36P connector
Immobilizer-keyless control unit	7P connector
Climate control unit	32P connector
HandsFreeLink control unit	28P connector

   Is DTC B1000 indicated with each individual unit disconnected?

   YES—Go to step 8.

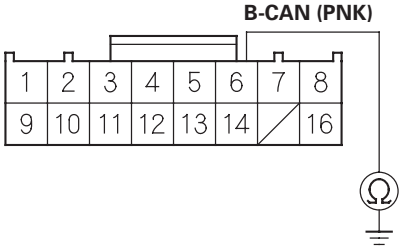
   NO—Check the power and grounds to the control unit that was disconnected when B1000 did not reset. If OK, replace the control unit. ■
8. Disconnect all of the appropriate connectors for each of the units in the table.

Control Unit	Appropriate Connector
Gauge control module (tach)	36P connector
Immobilizer-keyless control unit	7P connector
Climate control unit	32P connector
HandsFreeLink control unit	28P connector

9. Disconnect under-dash fuse/relay box connector Q (16P).

10. Check for continuity between under-dash fuse/relay box connector Q (16P) No. 6 terminal and body ground.

UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (16P)



Wire side of female terminals

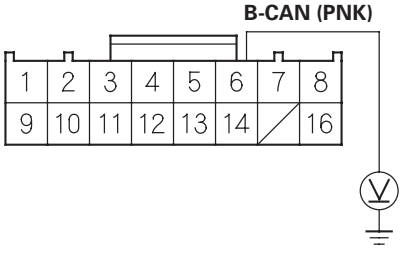
Is there continuity?

YES—Repair a short to ground in the wire between the under-dash fuse/relay box and the affected control unit. ■

NO—Go to step 11.

11. Measure the voltage between under-dash fuse/relay box connector Q (16P) terminal No. 6 and body ground.

UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (16P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the under-dash fuse/relay box (see page 22-66). ■

NO—Repair a short to power in the wire between the under-dash fuse/relay box and the affected control unit. ■

DTC B1001: MICU (CPU) Error

DTC B1002: MICU (EEPROM) Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.

2. Turn the ignition switch to LOCK (0), and then back to ON (II).

3. Wait for at least 6 seconds.

4. Check for DTCs with the HDS.

Is DTC B1001 and/or B1002 indicated?

YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

NO—Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-67) and the charging system. ■

DTC Troubleshooting (cont'd)

DTC B1008: MICU Lost Communication with Gauge Control Module (A/T Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1008 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector and at under-dash fuse/relay box connector Q (16P). If the connections are good, check the battery condition (see page 22-67) and the charging system. ■
5. Check for DTCs with the HDS.

   Are DTCs B1011 and B1032 also indicated with DTC B1008?

   YES—Check for an open in the communication circuit between the MICU and the gauge control module (tach). If the circuit is bad, repair the open. ■

   NO—Go to the gauge control module (tach) input test (see page 22-271). ■

DTC B1011: MICU Lost Communication with Gauge Control Module (VSP/NE Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1011 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector and at under-dash fuse/relay box connector Q (16P). If the connections are good, check the battery condition (see page 22-67) and the charging system. ■
5. Check for DTCs with the HDS.

   Are DTCs B1008 and B1032 also indicated with DTC B1011?

   YES—Check for an open in the communication circuit between the MICU and the gauge control module (tach). If the circuit is bad, repair the open. ■

   NO—Go to the gauge control module (tach) input test (see page 22-271). ■

DTC B1032: MICU Lost Communication with the SRS Unit (CDS Message) CDS (Collision detection signal) input circuit malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1032 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector, and at under-dash fuse/relay box connector Q (16P). If the connections are good, check the battery condition (see page 22-67) and the charging system. ■
5. Check for DTCs with the HDS.

   Are DTCs B1008 and B1011 also indicated with DTC B1032?

   YES—Check for an open in the communication circuit between the MICU and the gauge control module (tach). If the circuit is bad, repair the open. ■

   NO—Go to the gauge control module (tach) input test (see page 22-271). ■

DTC B1036: IG1 Line Input Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1036 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connection at the gauge control module (tach) 36P connector, and at under-dash fuse/relay box connector Q (16P). If the connections are good, check the battery condition (see page 22-67) and the charging system. ■
5. Check for DTCs with the HDS.

   Is DTC B1008 indicated with DTC B1036?

   YES—Troubleshoot the indicated DTC. ■

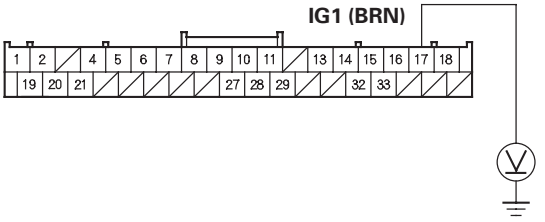
   NO—Go to step 6.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the voltage between gauge control module (tach) 36P connector terminal No. 17 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Faulty MICU; substitute a known-good under-dash fuse/relay box and recheck (see page 22-66). ■

NO—Check No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the gauge control module (tach), or repair a short in the wire between the under-dash fuse/relay box and the gauge control module (tach). ■

DTC B1150: Communication Bus Line Error (Bus OFF)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Are DTCs B1001, B1008, B1011, B1032, and or B1900 also indicated with DTC B1150?

   YES—Troubleshooting DTC B1000. ■

   NO—If only DTC B1150 is present, replace the gauge control module (tach) assembly. If no DTCs are present, it's an intermittent failure, the system is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector, and at under-dash fuse/relay box connector Q (16P). ■

DTC B1200: Communication Bus Line Error (Bus OFF)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Are DTCs B1000, B1008, B1011, B1032, and or B1900 also indicated with DTC B1200?

   YES—Troubleshoot DTC B1000. ■

   NO—If only DTC B1200 is present, replace the climate control unit. If no DTCs are present, it's an intermittent failure, the system is OK at this time. Check for loose or poor connections at the climate control unit 32P connector, and at under-dash fuse/relay box connector Q (16P). ■

DTC B1750: Communication Bus Line Error (Bus OFF)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Are DTCs B1000, B1008, B1011, and B1032 and or B1900 also indicated with DTC B1750?

   YES—Troubleshoot DTC B1000. ■

   NO—If only DTC B1750 is present, replace the HandsFreeLink control unit. If no DTCs are present, it's an intermittent failure, the system is OK at this time. Check for loose or poor connections at the HandsFreeLink control unit 28P connector, and at under-dash fuse/relay box connector Q (16P). ■

DTC Troubleshooting (cont'd)

DTC B1900: Communication Bus Line Error (Bus OFF)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Are DTCs B1000, B1008, B1011, and B1032 also indicated with DTC B1900?

   YES—Troubleshoot DTC B1000. ■

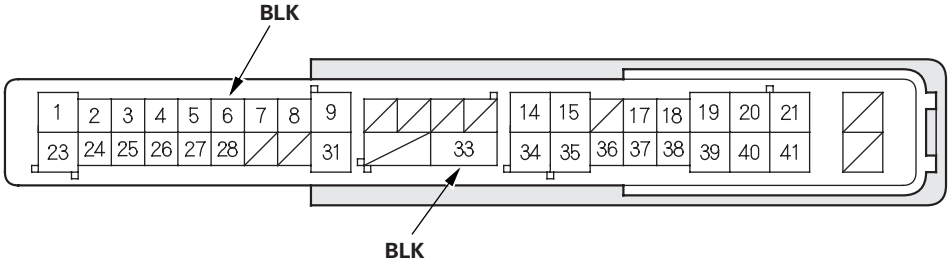
   NO—If only DTC B1900 is present, replace the immobilizer-keyless control unit. If no DTCs are present, it's an intermittent failure, the system is OK at this time. Check for loose or poor connections at the immobilizer control unit 7P connector, and at under-dash fuse/relay box connector Q (16P). ■

MICU Input Test

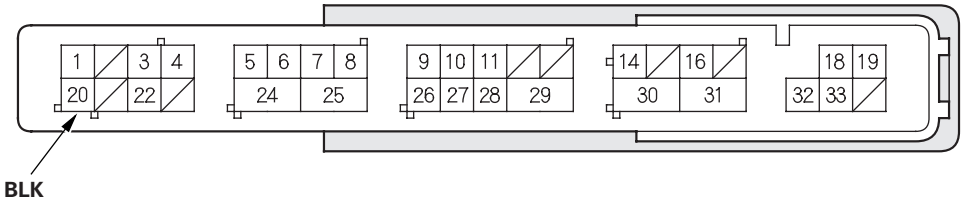
1. Before troubleshooting the multiplex integrated control system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93).
2. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is blown, replace it and go to step 3.
3. Disconnect under-dash fuse/relay box connectors E, F, G, K, and T.

   NOTE: All connector views are wire side of female terminals.

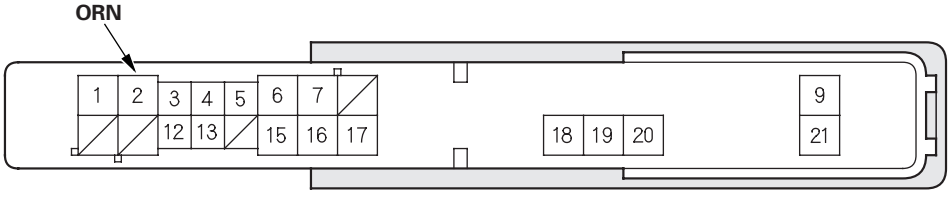
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



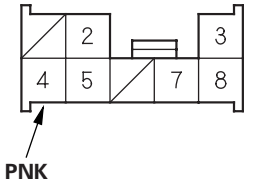
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)



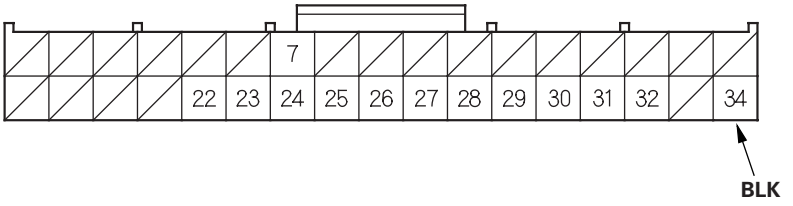
(cont'd)

MICU Input Test (cont'd)

UNDER-DASH FUSE/RELAY BOX CONNECTOR K (8P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

5. With the connector still disconnected, do these input tests at the following connectors.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 6.

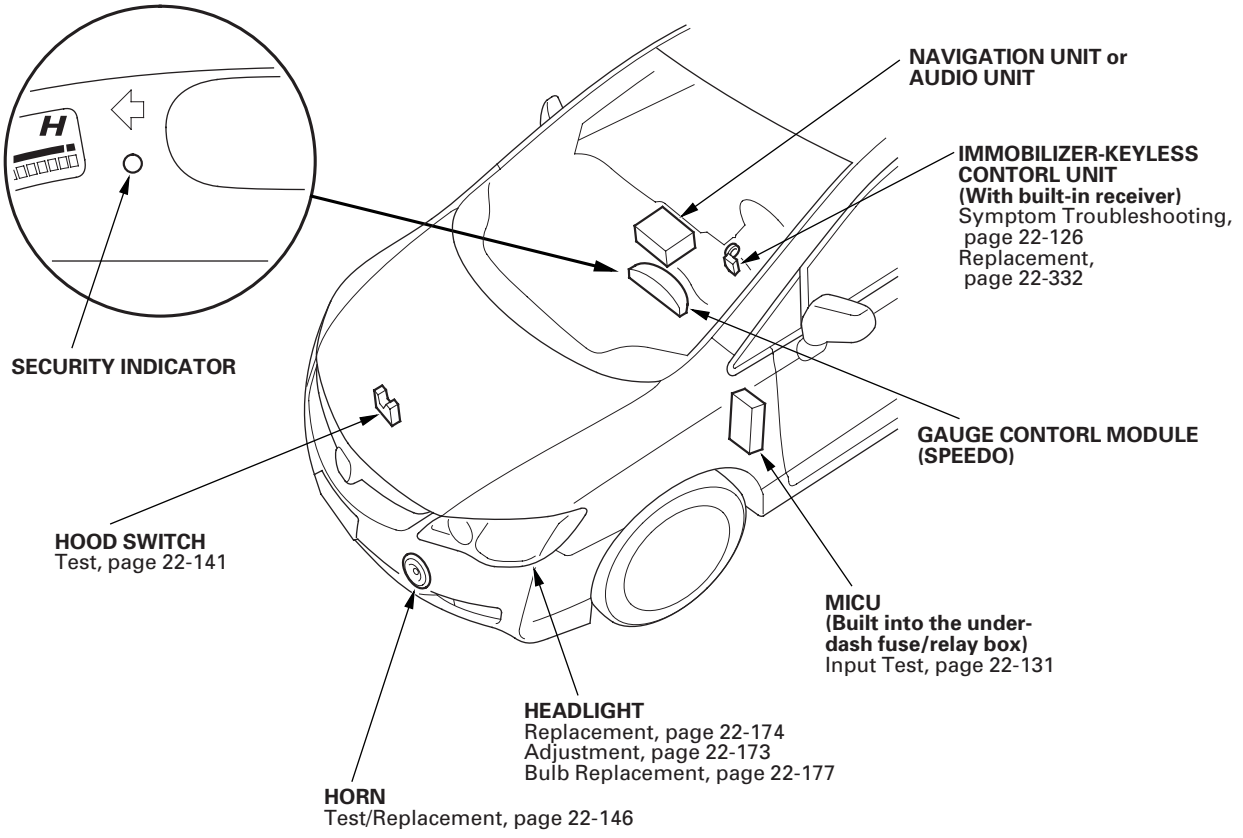
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
G2	ORN	Under all conditions	Measure the voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
K4	PNK	Under all conditions	Attach to ground: The ceiling light should come on.	• Blown No. 22 (7.5 A) fuse in the under-hood fuse/relay box • Blown bulb(s) • Faulty ceiling light • An open in the wire

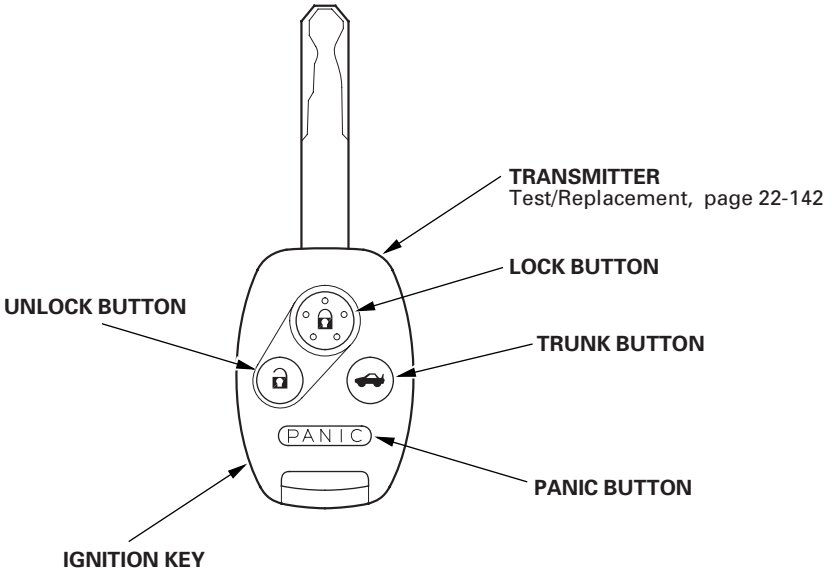
6. Reconnect the connectors to the under-dash fuse/relay box, and do these input tests at the following connectors.

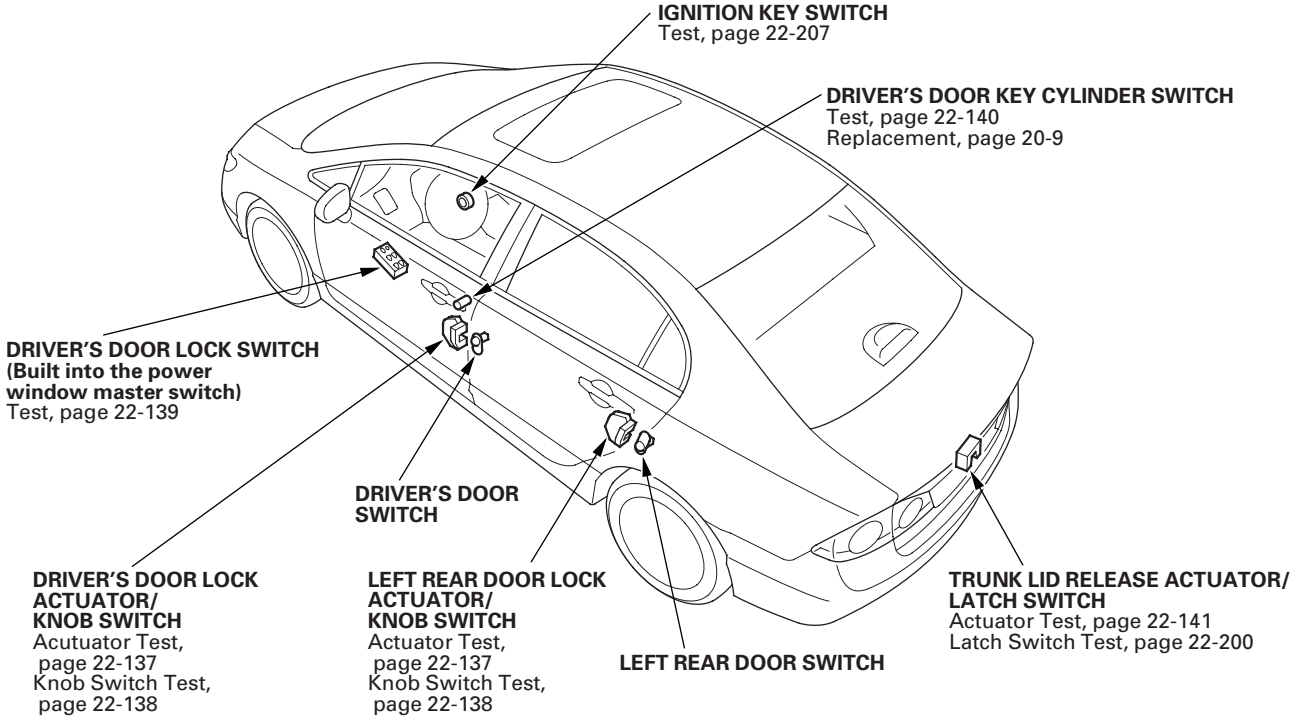
   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

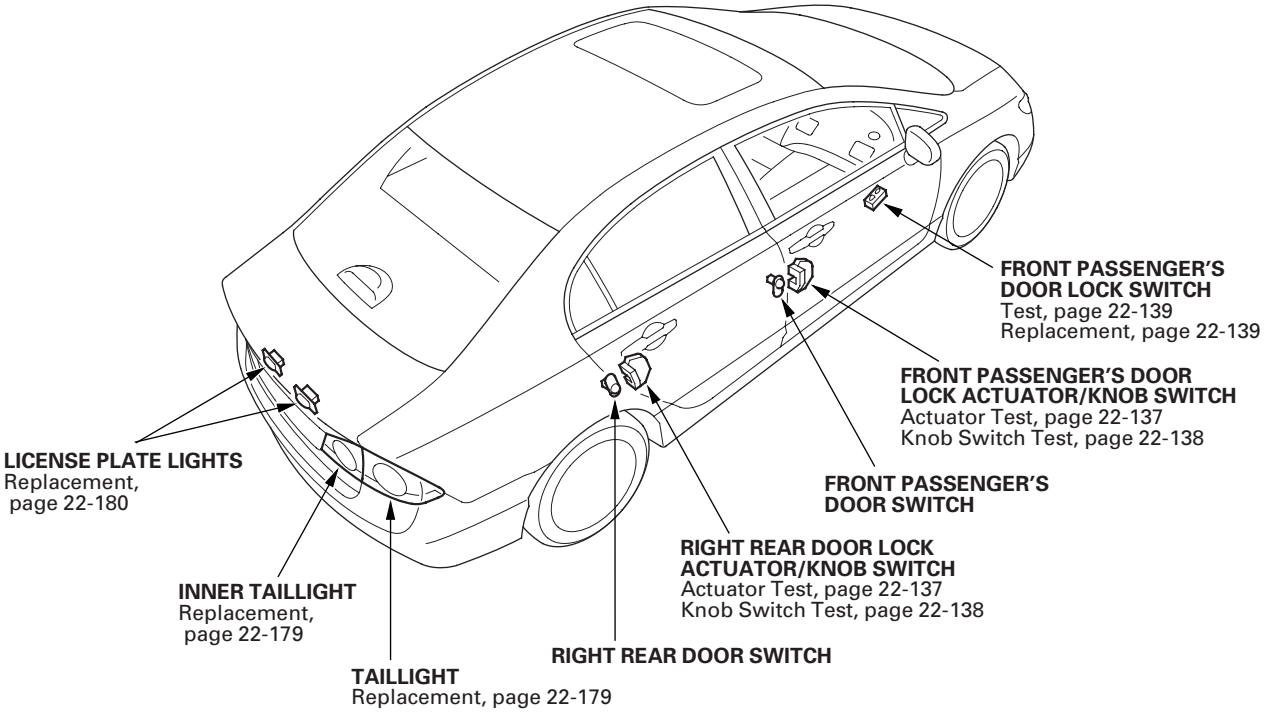
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E6	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire

Component Location Index






IGNITION KEY SWITCH
Test, page 22-207
DRIVER'S DOOR KEY CYLINDER SWITCH
Test, page 22-140
Replacement, page 20-9
DRIVER'S DOOR LOCK SWITCH
(Built into the power window master switch)
Test, page 22-139
DRIVER'S DOOR SWITCH
DRIVER'S DOOR LOCK ACTUATOR/ KNOB SWITCH
Acutuator Test, page 22-137
Knob Switch Test, page 22-138
LEFT REAR DOOR LOCK ACTUATOR/ KNOB SWITCH
Actuator Test, page 22-137
Knob Switch Test, page 22-138
LEFT REAR DOOR SWITCH
TRUNK LID RELEASE ACTUATOR/ LATCH SWITCH
Actuator Test, page 22-141
Latch Switch Test, page 22-200


FRONT PASSENGER'S DOOR LOCK SWITCH
Test, page 22-139
Replacement, page 22-139
FRONT PASSENGER'S DOOR LOCK ACTUATOR/KNOB SWITCH
Actuator Test, page 22-137
Knob Switch Test, page 22-138
FRONT PASSENGER'S DOOR SWITCH
LICENSE PLATE LIGHTS
Replacement, page 22-180
INNER TAILLIGHT
Replacement, page 22-179
TAILLIGHT
Replacement, page 22-179
RIGHT REAR DOOR LOCK ACTUATOR/KNOB SWITCH
Actuator Test, page 22-137
Knob Switch Test, page 22-138
RIGHT REAR DOOR SWITCH

System Description

Security Alarm System

The security alarm system is armed automatically after the doors, hood, and trunk are closed and locked. For the system to arm, the ignition switch must be to LOCK (0), the key must be removed from the ignition switch, and the MICU must receive signals that the doors, hood, and trunk are closed and locked. The alarm can be disarmed at any time by unlocking the driver's door with the key or pressing the UNLOCK button on the transmitter.

When everything is closed and locked, the only inputs that are grounded, and have 0 V, are the driver's door lock knob switch (LOCK position), and the audio unit or navigation unit (if equipped). In other words, all of the other switches are open, and have about 10 to 12 V, including the key cylinder switches. The security indicator in the gauge control module (speedo) begins to flash immediately after the vehicle is completely closed and locked, and 15 seconds later, the security system arms. If the security indicator does not flash, the system is not arming. A beep sounds and parking lights flash to confirm the security alarm system is armed if the LOCK button is pressed a second time within 5 seconds.

If one of the switches is misadjusted or shorted internally, or there is a short in the circuit, the security system will not arm. As long as the control unit continues to receive a ground signal (0 V), it senses that the vehicle is not closed and locked, and the system will not arm. A switch that is slightly misadjusted can cause the alarm to sound for no apparent reason. In this case, a significant change in outside air temperature, the vibration of a passing truck, or someone bumping into the vehicle could cause the alarm to sound. There is no glass breakage or motion detector feature.

If anything is opened or improperly unlocked after the system is armed, the control unit receives a ground signal from that switch, and the 10 to 12 V reference drops to 0 V. If the audio unit or navigation unit (if equipped) is disconnected, the input loses its ground, and the input voltage goes to 10 to 12 V. The system sounds the alarm when any of these occur:

- A door or the trunk is forced open.
- A door is unlocked without using the key or the transmitter.
- The hood is opened.
- The audio unit or navigation unit (if equipped) is disconnected.
- The transmitter PANIC button is pressed.

When the system sounds the alarm, the horn sounds and the exterior lights flash for 2 minutes. The alarm can be stopped at any time by unlocking the driver's door with the key or by pressing any button on the transmitter.

Panic Mode

The panic mode sounds the alarm in order to attract attention. When the PANIC button on the transmitter is pressed and held for 2 seconds, the horn sounds and the exterior lights flash for about 20 seconds.

The panic mode can be cancelled at anytime by pressing any button on the transmitter or by turning the ignition switch to ON (II). The panic mode will not function if the ignition switch is to ON (II).

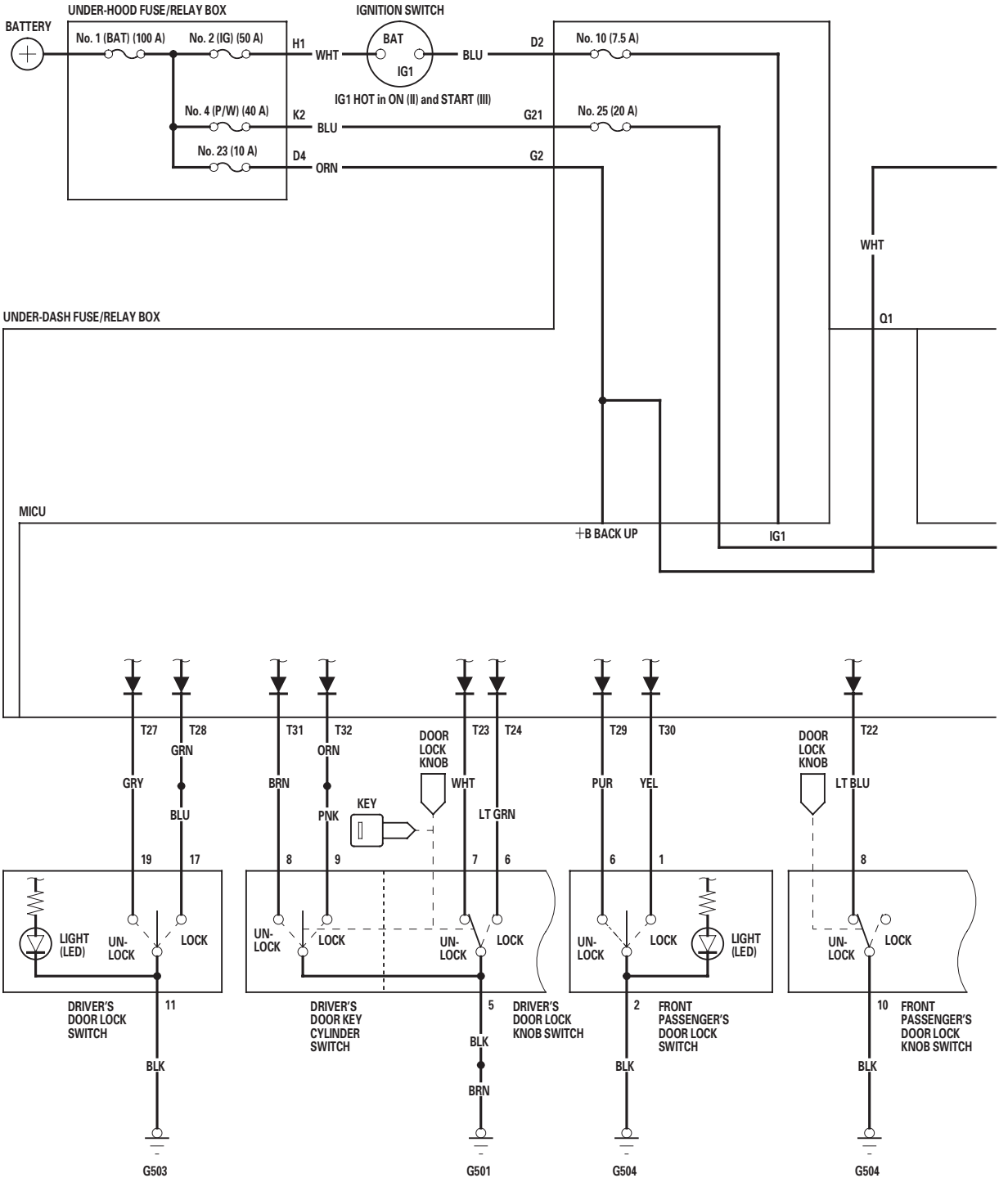
Keyless Entry System

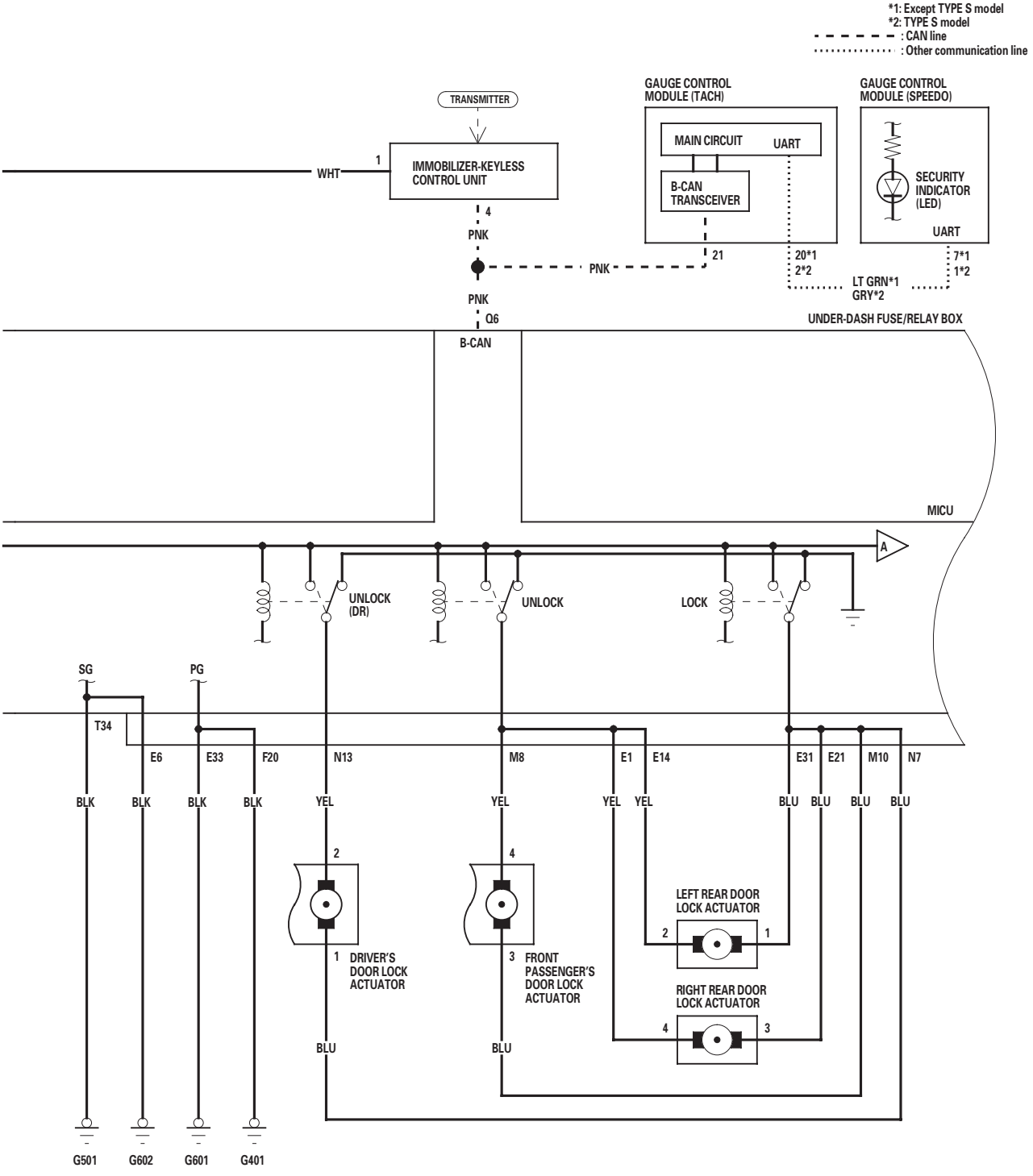
The keyless entry system is integrated with the multiplex integrated control system. The multiplex integrated control unit (MICU) receives LOCK, UNLOCK and PANIC signals from the immobilizer-keyless control unit (keyless receiver).

The keyless entry system allows you to lock and unlock the vehicle with the transmitter.

When the switch for the ceiling light is in the center (DOOR) position, it will come on when the UNLOCK button is pressed. If a door is not opened, the light will go off in about 30 seconds, and the doors will relock. If the doors are locked with the transmitter within 30 seconds, the light will go off immediately.

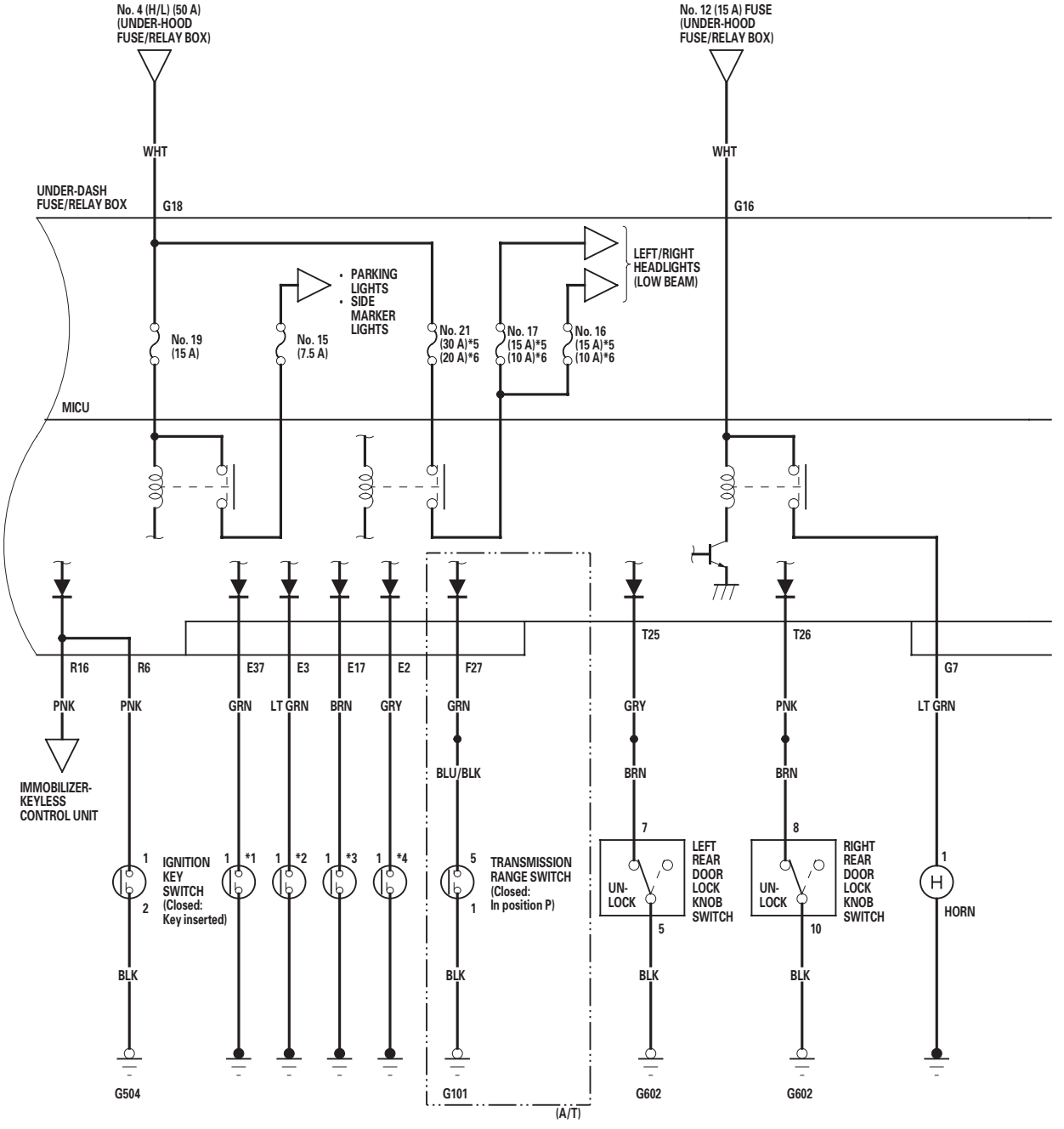
Circuit Diagram



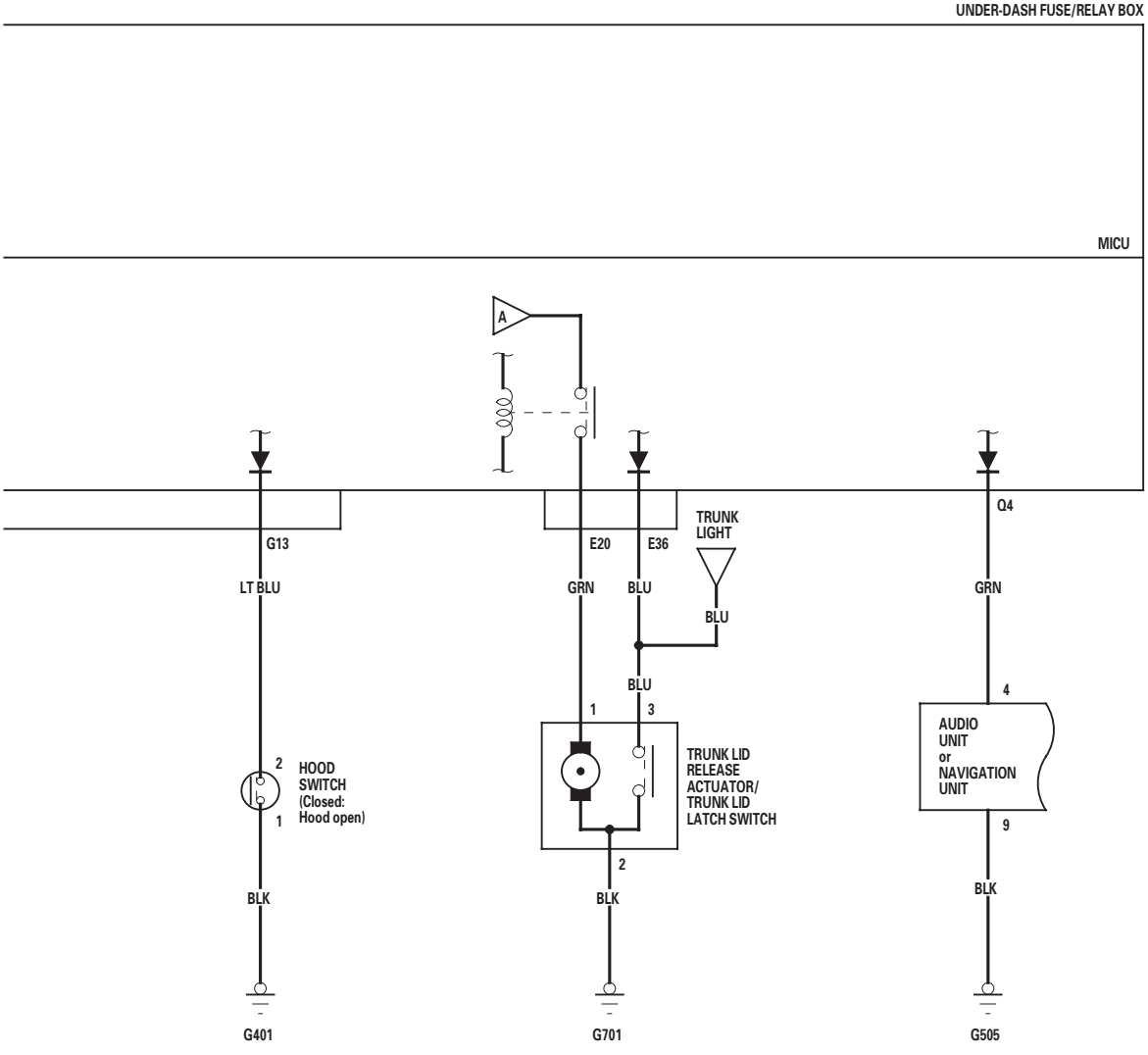

*1: Except TYPE S model
*2: TYPE S model
: CAN line
: Other communication line
TRANSMITTER
GAUGE CONTROL MODULE (TACH)
GAUGE CONTROL MODULE (SPEEDO)
MAIN CIRCUIT
UART
B-CAN TRANSCEIVER
SECURITY INDICATOR (LED)
UART
IMMOBILIZER-KEYLESS CONTROL UNIT
WHT
1
4
PNK
PNK
21
20*1
2*2
LT GRN*1
GRY*2
7*1
1*2
PNK
Q6
B-CAN
UNDER-DASH FUSE/RELAY BOX
MICU
A
UNLOCK (DR)
UNLOCK
LOCK
SG
PG
T34
E6
E33
F20
N13
M8
E1
E14
E31
E21
M10
N7
BLK
BLK
BLK
BLK
YEL
YEL
YEL
YEL
BLU
BLU
BLU
BLU
2
4
1
DRIVER'S DOOR LOCK ACTUATOR
3
FRONT PASSENGER'S DOOR LOCK ACTUATOR
LEFT REAR DOOR LOCK ACTUATOR
2
1
RIGHT REAR DOOR LOCK ACTUATOR
4
3
BLU
BLU
G501
G602
G601
G401

(cont'd)

Circuit Diagram (cont'd)



*1: DRIVER'S DOOR SWITCH (Closed: Door open)
*2: FRONT PASSENGER'S DOOR SWITCH (Closed: Door open)
*3: LEFT REAR DOOR SWITCH (Closed: Door open)
*4: RIGHT REAR DOOR SWITCH (Closed: Door open)
*5: With HID
*6: Without HID



DTC Troubleshooting

DTC B1026: Front Passenger's Door Lock Switch Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Operate the front passenger's door lock switch several times.
4. Check for DTCs with the HDS.

   Is DTC B1026 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The front passenger's door lock system is OK at this time. ■
5. With the front passenger's door lock switch in the neutral position, select KEYLESS from the HDS and enter the DATA LIST.
6. Check the ON/OFF information of the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) and FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Go to step 12.

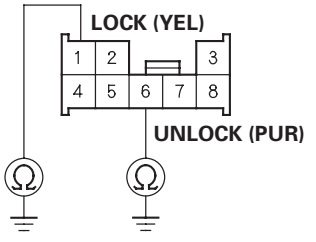
   NO—Go to step 7.
7. Disconnect the front passenger's power window switch 8P connector.
8. Check the ON/OFF information of the FRONT PASSENGER'S DOOR LOCK SWITCH (LOCK) and FRONT PASSENGER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Faulty door lock switch; replace the front passenger's power window switch (see page 22-220). ■

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Disconnect under-dash fuse/relay box connector T (34P).
11. Check for continuity between front passenger's power window switch 8P connector terminals No. 1 (LOCK) and No. 6 (UNLOCK) and body ground.

FRONT PASSENGER'S POWER WINDOW SWITCH 8P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the LOCK or UNLOCK wire. ■

NO—Faulty MICU, replace the under-dash fuse/relay box (see page 22-66). ■

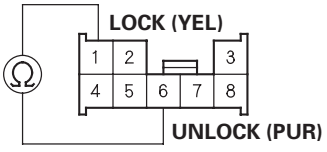
12. Turn the ignition switch to LOCK (0).

13. Disconnect the front passenger's window switch 8P connector.

14. Disconnect under-dash fuse/relay box connector T (34P).

15. Check for continuity between front passenger's power window switch 8P connector terminals No. 1 (LOCK) and No. 6 (UNLOCK).

FRONT PASSENGER'S POWER WINDOW SWITCH 8P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the LOCK and UNLOCK wires. ■

NO—Substitute a known-good front passenger's power window switch, and recheck. If the symptom/indication goes away, replace the original front passenger's power window switch. If not, the MICU is faulty, replace the under-dash fuse/relay box (see page 22-66). ■

DTC B1127: Driver's Door Key Cylinder Switch Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.

2. Turn the ignition switch to LOCK (0), and then back to ON (II).

3. Insert the ignition key into the driver's door key cylinder switch, and turn the key in LOCK and UNLOCK positions ten times.

4. Check for DTCs with the HDS.

   Is DTC B1127 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The driver's door key cylinder switch system is OK at this time. ■

5. With the driver's door key cylinder in the neutral position, select KEYLESS with the HDS, and enter the DATA LIST.

6. Check the ON/OFF information of the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) and DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Go to step 12.

   NO—Go to step 7.

7. Disconnect the driver's door lock actuator 10P connector.

8. Check the ON/OFF information of the DRIVER'S DOOR KEY CYLINDER SWITCH (LOCK) and DRIVER'S DOOR KEY CYLINDER SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Faulty driver's door key cylinder switch; replace the driver's door lock actuator. ■

   NO—Go to step 9.

(cont'd)

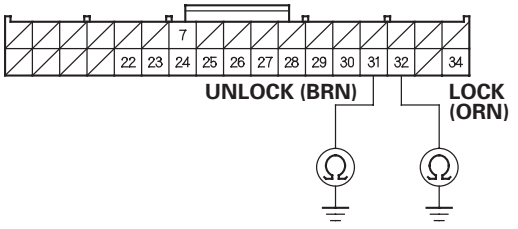
DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0).

10. Disconnect under-dash fuse/relay box connector T (34P).

11. Check for continuity between under-dash fuse/relay box connector T (34P) terminals No. 31 (UNLOCK) and No. 32 (LOCK) and body ground.

UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



Wire side of female terminals

Is there continuity?

YES—Faulty MICU, replace the under-dash fuse/relay box (see page 22-66). ■

NO—Go to step 12.

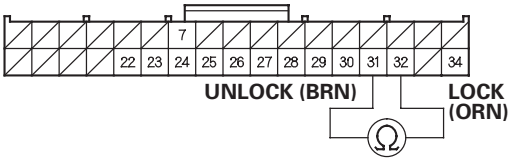
12. Turn the ignition switch to LOCK (0).

13. Disconnect the driver's door lock actuator 10P connector.

14. Disconnect under-dash fuse/relay box connector T (34P).

15. Check for continuity between under-dash fuse/relay box connector T (34P) terminals No. 31 (UNLOCK) and No. 32 (LOCK).

UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the LOCK and UNLOCK wires. ■

NO—Substitute a known-good MICU, and recheck. If the symptom/indication goes away, replace the original MICU, if not, replace the driver's door lock actuator. ■

DTC B1128: Driver's Door Lock Switch Signal Error (LOCK/UNLOCK)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Operate the driver's door lock switch LOCK/UNLOCK several times.
4. Check for DTCs with the HDS.

   Is DTC B1128 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The driver's door lock system is OK at this time. ■
5. With the driver's door lock switch in the neutral position, select KEYLESS from the HDS and enter the DATA LIST.
6. Check the ON/OFF information of the DRIVER'S DOOR LOCK SWITCH (LOCK) and DRIVER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Go to step 12.

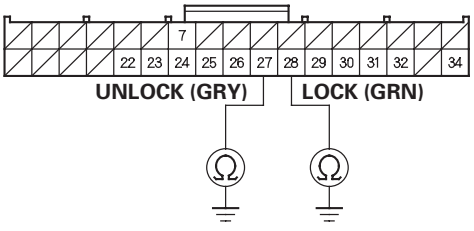
   NO—Go to step 7.
7. Disconnect the driver's power window master switch 22P connector.
8. Check the ON/OFF information of the DRIVER'S DOOR LOCK SWITCH (LOCK) and DRIVER'S DOOR LOCK SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Faulty door lock switch; replace the driver's power window master switch (see page 22-219). ■

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Disconnect under-dash fuse/relay box connector T (34P).
11. Check for continuity between under-dash fuse/relay box connector T (34P) terminals No. 28 (LOCK) and No. 27 (UNLOCK) and body ground.

UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the LOCK or UNLOCK wire. ■

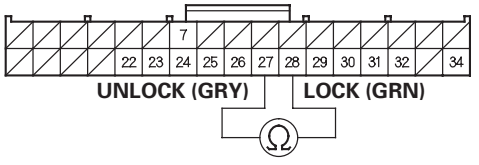
NO—Faulty MICU, replace the under-dash fuse/relay box (see page 22-66). ■

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Disconnect the power window master switch 22P connector.
14. Disconnect under-dash fuse/relay box connector T (34P).
15. Check for continuity between under-dash fuse/relay box connector T (34P) terminals No. 28 (LOCK) and No. 27 (UNLOCK).

UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the LOCK and UNLOCK wires. ■

NO—Substitute a known-good power window master switch, and recheck. If the symptom/indication goes away, replace the original power window master switch. If not, the MICU is faulty, replace the under-dash fuse/relay box (see page 22-66). ■

DTC B1129: Driver's Door Lock Knob Switch Signal Error (LOCK/UNLOCK)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Operate the driver's door lock knob switch several times.
4. Check for DTCs with the HDS.

   Is DTC B1129 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The system is OK at this time. ■
5. Select KEYLESS from the BODY ELECTRICAL menu, and enter the DATA LIST.
6. Check the ON/OFF information of the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) and the DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK).

   Is the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) information indicator ON and the DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) information indicator OFF with the driver's door lock knob switch in the LOCK position, and is the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) information indicator OFF and the DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) information indicator ON with the driver's door lock knob switch in the UNLOCK position?

   YES—Faulty MICU, replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Go to step 7.

7. Disconnect the driver's door lock actuator 10P connector.

8. Check the ON/OFF information of the DRIVER'S DOOR LOCK KNOB SWITCH (LOCK) and DRIVER'S DOOR LOCK KNOB SWITCH (UNLOCK) in the DATA LIST.

   Are both information indicators OFF?

   YES—Check for an open in the driver's door lock knob switch (LOCK) wire or the driver's door lock knob switch (UNLOCK) wire between the MICU and the driver's door lock knob switch. If OK, replace the driver's door lock actuator. ■

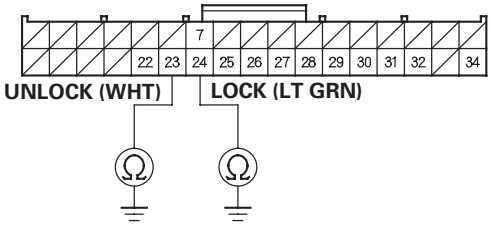
   NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Disconnect under-dash fuse/relay box connector T (34P).

11. Check for continuity between under-dash fuse/relay box connector T (34P) terminals No. 23 (UNLOCK) and No. 24 (LOCK) and body ground.

UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



Wire side of female terminals

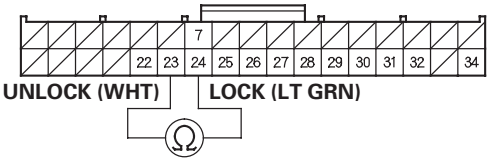
Is there continuity?

YES—Repair a short to ground in the LOCK or UNLOCK wire. ■

NO—Go to step 12.

12. Check for continuity between under-dash fuse/relay box connector T (34P) terminals No. 23 (UNLOCK) and No. 24 (LOCK).

UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the LOCK wire and UNLOCK wire. ■

NO—Faulty MICU, replace the under-dash fuse/relay box (see page 22-66). ■

Symptom Troubleshooting

Power Door Locks/Keyless

1. If the door lock system works properly, but the keyless operation does not, refer to the immobilizer-keyless control unit symptom troubleshooting information (see page 22-321).

   NOTE: The door lock system does not function when:
   - Any of the doors is open.
   - Ignition key is in the ignition key switch.
   - Ignition switch is ON (II).

No.	Symptom	Check Items
1	The doors will not lock or unlock. *	• MICU input test (see page 22-131). • Driver's door key cylinder switch test (see page 22-140). • Door lock switch test (see page 22-139). • Door lock knob switch test (see page 22-138).
2	The doors will not lock. *	• MICU input test (see page 22-131). • Door lock knob switch test (see page 22-138). • Driver's door switch test (check the door switch ON/OFF information with the HDS).
3	The doors will not unlock. *	• MICU input test (see page 22-131). • Door lock knob switch test (see page 22-138). • Door switch test (check the door switch ON/OFF information with the HDS).
4	Keyless operation does not work (LOCK, UNLOCK, PANIC).	Symptom troubleshooting (see page 22-127).
5	Doors will not unlock with the transmitter, but will unlock with the door switch.	Symptom troubleshooting (see page 22-129).
6	Doors will not lock with the transmitter, but will lock with the door switch.	Symptom troubleshooting (see page 22-129).
7	Doors automatically relock after being unlocked with the transmitter even though a door has been opened.	Symptom troubleshooting (see page 22-130).
8	The horn does not sound when PANIC button on the transmitter pressed.	Symptom troubleshooting (see page 22-129).
9	Keyless operation will work even though the ignition key is in the ignition switch.	Ignition key switch test (see page 22-207).

* : If only one door is not working properly, check that door's lock actuator first, then check the other items listed in this table.

Keyless operation does not work (LOCK, UNLOCK, PANIC)

NOTE:
- Before troubleshooting, check the B-CAN DTCs. If any DTC is indicated, troubleshoot the indicated DTC first.
- Before troubleshooting, do the keyless transmitter test (see page 22-142).

1. Turn the ignition switch to ON (II).
2. Try to start the engine.

   Does the engine start?

   YES—The system is OK, go to step 3.

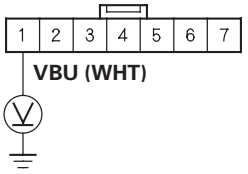
   NO—Go to the immobilizer symptom troubleshooting (see page 22-323). ■
3. Turn the ignition switch to LOCK (0).
4. Connect the HDS to the data link connector.
5. Close all doors, then turn the ignition switch to ON (II).
6. Enter the BODY ELECTRICAL menu, and check the door switch parameters.

   Do all door switches indicate OFF?

   YES—Go to step 7.

   NO—Faulty door switch, or shorted door switch wire. Repair as necessary. ■
7. Remove the ignition key from the ignition switch.
8. Disconnect the immobilizer-keyless control unit 7P connector.
9. Measure the voltage between immobilizer-keyless control unit 7P connector terminal No. 1 and body ground.

IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR



Wire side of female terminals

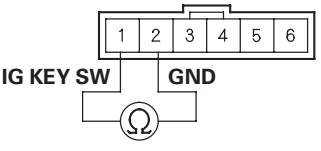
Is there battery voltage?

YES—Go to step 10.

NO—Check the fuse No. 23 (10 A) in the under-hood fuse/relay box. If the fuse is blown, replace the fuse and repair a short to ground in the wire. If the fuse is OK, repair an open in the wire. ■

10. Disconnect the ignition key switch 6P connector.
11. At the ignition key switch side, check for continuity between ignition key switch 6P connector terminals No. 1 and No. 2.

IGNITION KEY SWITCH 6P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Faulty ignition key switch or short to ground, replace the steering lock assembly (see page 17-14). ■

NO—Go to step 12.

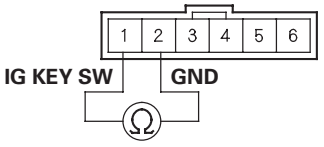
(cont'd)

Symptom Troubleshooting (cont'd)

12. Insert the ignition key into the ignition switch.

13. At the ignition key switch side, check for continuity between ignition key switch 6P connector terminals No. 1 and No. 2.

IGNITION KEY SWITCH 6P CONNECTOR



Terminal side of male terminals

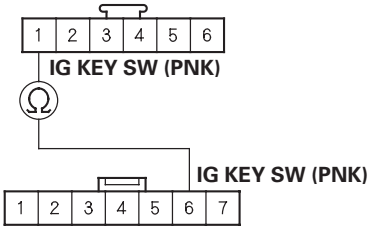
Is there continuity?

YES—Go to step 14.

NO—Faulty ignition key switch, replace the steering lock assembly (see page 17-14). ■

14. Check for continuity between immobilizer-keyless control unit 7P connector terminal No. 6 and ignition key switch 6P connector terminal No. 1.

IGNITION KEY SWITCH 6P CONNECTOR
Wire side of female terminals



IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR
Wire side of female terminals

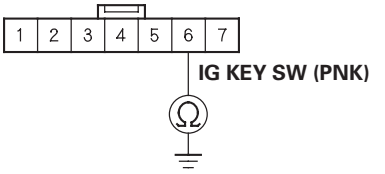
Is there continuity?

YES—Go to step 15.

NO—Repair an open in the wire. ■

15. Check for continuity between immobilizer-keyless control unit 7P connector terminal No. 6 and body ground.

IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Replace the immobilizer-keyless control unit (see page 22-332). ■

Doors will not unlock (or lock) with the transmitter, but will unlock (lock) with the door switch

NOTE: Before troubleshooting, check the B-CAN DTCs. If any DTC is indicated, troubleshoot the indicated DTC first.

1. Turn the ignition switch to LOCK (0).
2. Remove the ignition key from the ignition switch.
3. Close and lock the doors.
4. Try to lock/unlock the doors with the keyless transmitter.

   Do the door lock actuators work normally?

   YES—Intermittent failure. The system is OK at this time. ■

   NO—Go to step 5.
5. Open the driver's door.

   Does the key-in reminder chime sound?

   YES—Faulty ignition key switch, or short to ground on the ignition switch PNK wire. Repair as necessary. ■

   NO—Go to step 6.
6. Do the transmitter test (see page 22-142).

   Is the transmitter OK?

   YES—Substitute a known-good MICU and recheck. ■

   NO—Replace the transmitter (see page 22-142). ■

The horn does not sound and/or the headlights do not flash when the PANIC button on the transmitter is pressed

NOTE: Before troubleshooting, check the B-CAN DTCs. If any DTC is indicated, troubleshoot the indicated DTC first.

1. Press the PANIC button.

   Does the horn sound?

   YES—Go to step 3.

   NO—Go to step 2.
2. Press the horn button.

   Does the horn sound?

   YES—Go to step 3.

   NO—Check the horn circuit. ■
3. Turn the headlight switch ON.

   Do the headlights come on?

   YES—Go to step 4.

   NO—Check the lighting circuit. ■
4. Do the transmitter test (see page 22-142).

   Is the transmitter OK?

   YES—Substitute a known-good MICU and recheck. ■

   NO—Replace the transmitter (see page 22-142). ■

Symptom Troubleshooting (cont'd)

Doors automatically relock 30, 60, or 90 seconds after being unlocked with the transmitter even though a door has been opened

1. Turn the ceiling light switch in DOOR position.
2. Turn the ignition switch to ON (II).
3. Close all doors.
4. Watch the ceiling light and the door indicator on the gauge control module.

   Do the ceiling light and door indicator go off?

   YES—Go to step 5.

   NO—Repair a short to ground in the wire between the MICU and door switch. ■
5. Open and close each door one at a time.
6. Watch the ceiling light and the door indicator on the gauge control module.

   Do the ceiling light and door indicator come on when the door is open, and go off when the door is closed?

   YES—Substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU (see page 22-66). ■

   NO—Repair an open in the wire between the MICU and the door switch. If the wire is OK, faulty the door switch, replace the door lock actuator assembly. ■

Tripped Sensor History

The security system stores information on the last tripped sensor if the security system has been violated. The information can be retrieved using the HDS.

To retrieve the last tripped sensor data:

1. Select HISTORY DATA from the security system test mode menu.
2. Select CURRENT DATA.
3. Confirm that the VIN matches the Vehicle then press the enter button.
4. Scroll through the data list.

   - Sensors that were violated will indicate DETECT.
   - Sensors that were not violated will indicate NONE.
5. Inspect the DETECT circuit for:

   - Misadjusted or damaged switch.
   - Loose or corroded connections.
   - Intermittent short to ground.

Symptom Troubleshooting (cont'd)

Doors automatically relock 30, 60, or 90 seconds after being unlocked with the transmitter even though a door has been opened

1. Turn the ceiling light switch in DOOR position.
2. Turn the ignition switch to ON (II).
3. Close all doors.
4. Watch the ceiling light and the door indicator on the gauge control module.

   Do the ceiling light and door indicator go off?

   YES—Go to step 5.

   NO—Repair a short to ground in the wire between the MICU and door switch. ■
5. Open and close each door one at a time.
6. Watch the ceiling light and the door indicator on the gauge control module.

   Do the ceiling light and door indicator come on when the door is open, and go off when the door is closed?

   YES—Substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU (see page 22-66). ■

   NO—Repair an open in the wire between the MICU and the door switch. If the wire is OK, faulty the door switch, replace the door lock actuator assembly. ■

Tripped Sensor History

The security system stores information on the last tripped sensor if the security system has been violated. The information can be retrieved using the HDS.

To retrieve the last tripped sensor data:

1. Select HISTORY DATA from the security system test mode menu.
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3. Confirm that the VIN matches the Vehicle then press the enter button.
4. Scroll through the data list.

   - Sensors that were violated will indicate DETECT.
   - Sensors that were not violated will indicate NONE.
5. Inspect the DETECT circuit for:

   - Misadjusted or damaged switch.
   - Loose or corroded connections.
   - Intermittent short to ground.

MICU Input Test

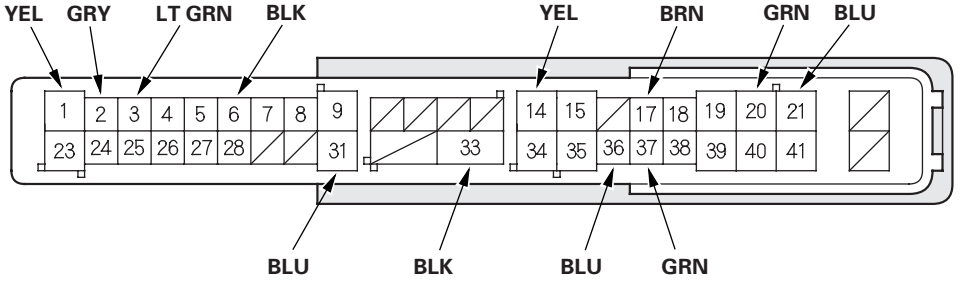
1. Before troubleshooting the keyless/power door locks/security system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93).

2. Check the No. 10 (7.5 A) and No. 25 (20 A) fuses in the under-dash fuse/relay box. If any fuse is blown, replace it and go to step 3.

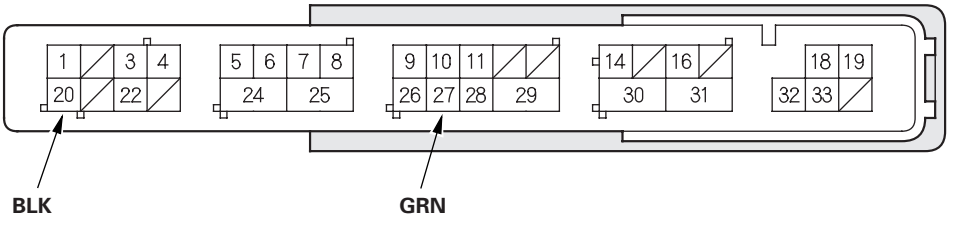
3. Disconnect under-dash fuse/relay box connectors E, F, G, M, N, Q, R, and T.

   NOTE: All connector views are shown from wire side of female terminals.

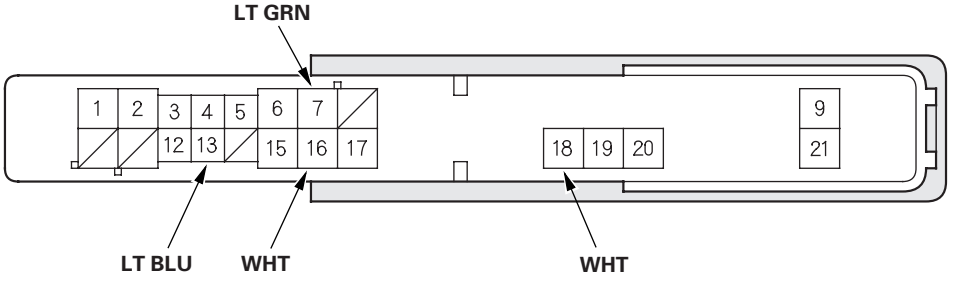
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)



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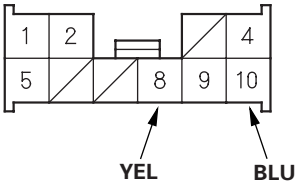
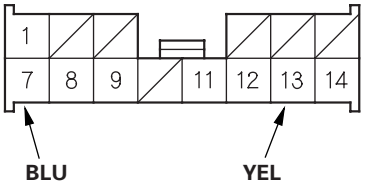
MICU Input Test (cont'd)

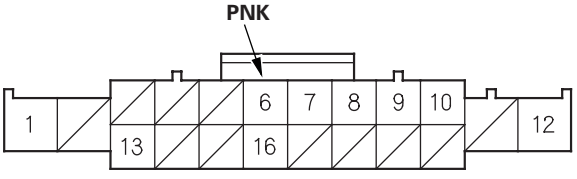
UNDER-DASH FUSE/RELAY BOX
CONNECTOR M (10P)



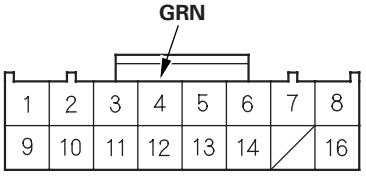
UNDER-DASH FUSE/RELAY BOX
CONNECTOR N (14P)



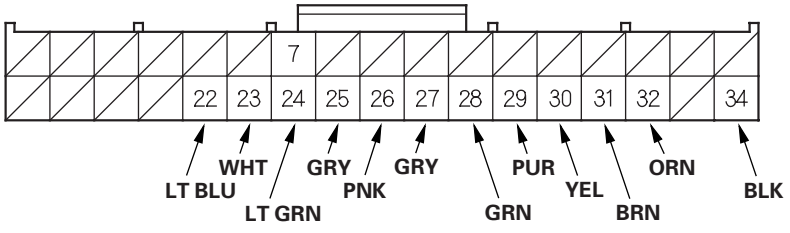
UNDER-DASH FUSE/RELAY BOX
CONNECTOR R (20P)



UNDER-DASH FUSE/RELAY BOX
CONNECTOR Q (16P)



UNDER-DASH FUSE/RELAY BOX
CONNECTOR T (34P)



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

5. With the connector still disconnected, do these input tests at the following connectors.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
G16	WHT	Under all conditions	Measure the voltage to ground: There should be battery voltage.	• Blown No. 12 (15 A) fuse in the under-hood fuse/relay box • An open in the wire
G18	WHT	Under all conditions	Measure the voltage to ground: There should be battery voltage.	• Blown No. 4 (50 A) fuse in the under-hood fuse/relay box • An open in the wire
G7	LT GRN	Under all conditions	Connect terminals G16 and G7 with a jumper wire momentarily: The horn should sound.	• Poor ground (body ground) • Blown No. 12 (15 A) fuse in the under-hood fuse/relay box • Faulty horn • An open in the wire
E20	GRN	Under all conditions	Connect terminals G2 and E20 with a jumper wire: The trunk release actuator should work (Trunk lid should open).	• Poor ground (G701) • Faulty trunk release actuator • An open in the wire
N7 N13	BLU YEL	Under all conditions	Connect battery power to terminal N13 and ground terminal N7 momentarily: The driver's door lock actuator should unlock.	• Faulty driver's door lock actuator • An open in the wire
M8 M10	YEL BLU	Under all conditions	Connect battery power to terminal M8 and ground terminal M10 momentarily: The front passenger's door lock actuator should unlock.	• Faulty front passenger's door lock actuator • An open in the wire
E1 E21	YEL BLU	Under all conditions	Connect battery power to terminal E1 and ground terminal E21 momentarily: The right rear door lock actuator should unlock.	• Faulty right rear door lock actuator • An open in the wire
E14 E31	YEL BLU	Under all conditions	Connect battery power to terminal E14 and ground terminal E31 momentarily: The left rear door lock actuator should unlock.	• Faulty left rear door lock actuator • An open in the wire

(cont'd)

MICU Input Test (cont'd)

6. Reconnect the connectors to the under-dash fuse/relay box, and do these input tests at the following connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E6	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
E2	GRY	Right rear door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty right rear door switch • A short to ground in the wire
E3	LT GRN	Front passenger's door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty front passenger's door switch • A short to ground in the wire
E17	BRN	Left rear door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • A short to ground in the wire
		Left rear door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty left rear door switch • A short to ground in the wire
E36	BLU	Trunk lid open	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G701) • Faulty trunk lid latch switch • An open in the wire
		Trunk lid closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty trunk lid latch switch • A short to ground in the wire
E37	GRN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver's door switch • A short to ground in the wire
F27	GRN	Transmission range switch in P	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G101) • Faulty transmission range switch • An open in the wire
		Transmission range switch in any other position than P	Measure the voltage to ground: There should be more than 5 V.	• Faulty transmission range switch • A short to ground in the wire
G13	LT BLU	Hood open	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty hood switch • An open in the wire
		Hood closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty hood switch • A short to ground in the wire

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
Q4	GRN	Under all conditions	Measure the voltage to ground: There should be less than 1 V.	• An open in the wire • Faulty audio unit or navigation unit.
R6	PNK	Ignition key inserted into the ignition switch	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty ignition key switch • An open in the wire
		Ignition switch to LOCK (0) and ignition key removed from the ignition switch	Measure the voltage to ground: There should be more than 5 V.	• Faulty ignition key switch • A short to ground in the wire
T22	LT BLU	Front passenger's door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty front passenger's door lock knob switch • An open in the wire
		Front passenger's door lock knob switch locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty front passenger's door lock knob switch • A short to ground in the wire
T23	WHT	Driver's door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver's door lock knob switch • A short to ground in the wire
T24	LT GRN	Driver's door lock knob switch unlocked	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver's door lock knob switch • A short to ground in the wire
		Driver's door lock knob switch locked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
T25	GRY	Left rear door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty left rear door lock knob switch • An open in the wire
		Left rear door lock knob switch locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty left rear door lock knob switch • A short to ground in the wire
T26	PNK	Right rear door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G602) • Faulty right rear door lock knob switch • An open in the wire
		Right rear door lock knob switch locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty right rear door lock knob switch • A short to ground in the wire

(cont'd)

MICU Input Test (cont'd)

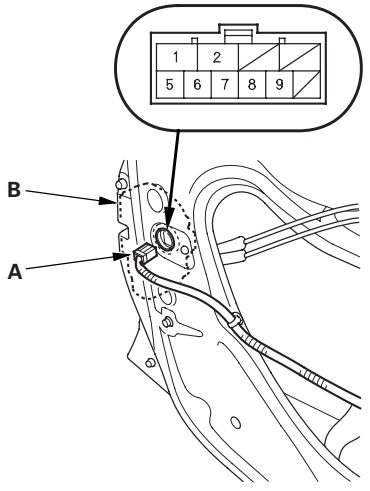
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
T27	GRY	Driver door lock switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G503) • Faulty driver door lock switch • An open in the wire
		Driver door lock switch in neutral or locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver door lock switch • A short to ground in the wire
T28	GRN	Driver door lock switch locked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G503) • Faulty driver door lock switch • An open in the wire
		Driver door lock switch in neutral or unlocked	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver door lock switch • A short to ground in the wire
T29	PUR	Front passenger's door lock switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral or locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty front passenger's door lock switch • A short to ground in the wire
T30	YEL	Front passenger's door lock switch locked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral or unlocked	Measure the voltage to ground: There should be more than 5 V.	• Faulty front passenger's door lock switch • A short to ground in the wire
T31	BRN	Driver door key cylinder switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver door key cylinder switch • An open in the wire
		Driver door key cylinder switch in neutral or locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver door key cylinder switch • A short to ground in the wire
T32	ORN	Driver door key cylinder switch locked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver door key cylinder switch • An open in the wire
		Driver door key cylinder switch in neutral or unlocked	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver door key cylinder switch • A short to ground in the wire

Door Lock Actuator Test

Driver's Door and Left Rear Door

1. Remove the door panel (see page 20-7).
2. Disconnect the 10P connector (A) from the actuator (B).

   NOTE: The illustration shows the driver's door.



3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal / Position	1	2
LOCK	⊕	⊖
UNLOCK	⊖	⊕

4. If the actuator does not operate as specified, replace it.

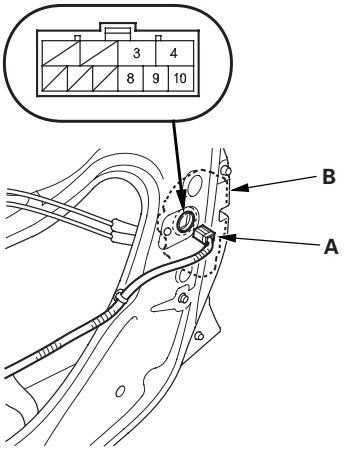
Front Passenger's Door and Right Rear Door

1. Remove the door panel.

   - Front door panel (see page 20-7)
   - Rear door panel (see page 20-17)

2. Disconnect the 10P connector (A) from the actuator (B).

   NOTE: The illustration shows the front passenger's door.



3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

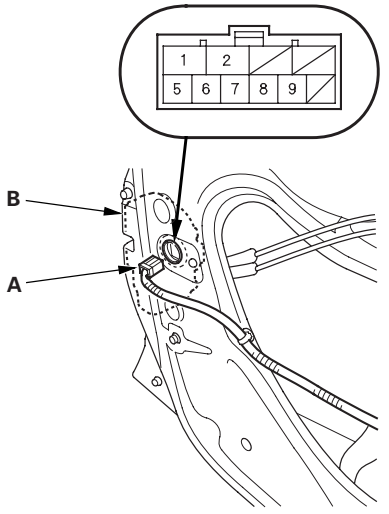
Terminal / Position	3	4
LOCK	⊕	⊖
UNLOCK	⊖	⊕

4. If the actuator does not operate as specified, replace it.

Door Lock Knob Switch Test

Driver's Door

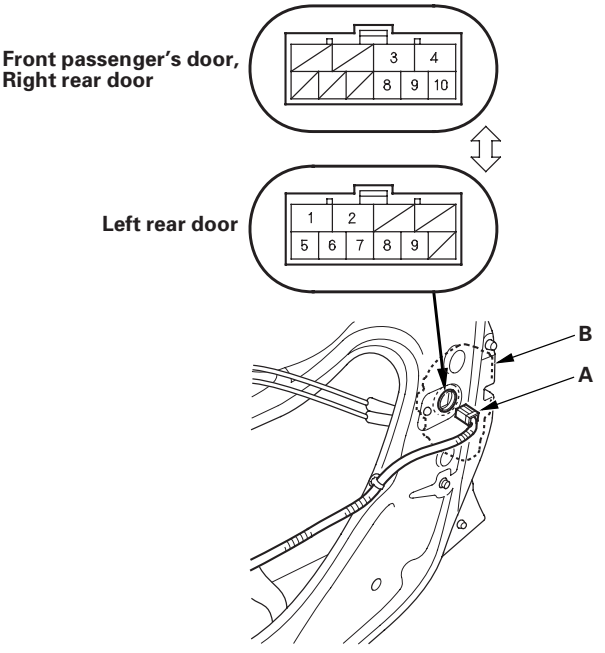
1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 10P connector (A) from the actuator (B).



3. Check for continuity between the terminals.
   - There should be continuity between terminals No. 6 and No. 5 when the door lock knob switch is in the LOCK position and no continuity when the switch is in the UNLOCK position.
   - There should be continuity between terminals No. 7 and No. 5 when the door lock knob switch is in the UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

Passenger's Door

1. Remove the passenger's door panel (see page 20-7).
2. Disconnect the 10P connector (A) from the actuator (B).

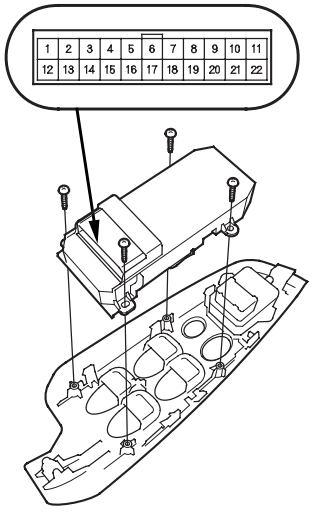


3. Check for continuity between the terminals. There should be continuity between terminals No. 8 [No. 7] and No. 10 [No. 5] when the door lock knob switch in the UNLOCK position and no continuity when the switch is in the LOCK position.
   [ ] : Left rear door
4. If the continuity is not specified, replace the door lock actuator.

Door Lock Switch Test

Driver's door

1. Remove the power window master switch and disconnect its connector (see page 22-219).



2. Check for continuity between the power window master switch 22P connector terminals.

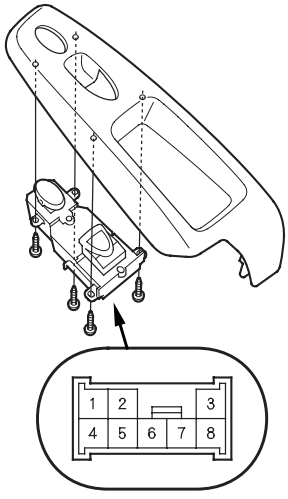
   - There should be continuity between terminals No. 11 and No. 17 when the door lock switch is in the LOCK position. (With security)
   - There should be no continuity between terminals No. 11 and No. 17 when the door lock switch is in the UNLOCK position. (With security)
   - There should be continuity between terminals No. 11 and No. 19 when the door lock switch is in the UNLOCK position.
   - There should be no continuity between terminals No. 11 and No. 19 when the door lock switch is in the LOCK position.

3. If the continuity is not as specified, replace the power window master switch.

Front passenger's door

1. Remove the front passenger's power window switch (see page 22-220).

   NOTE: The illustration shows the front passenger's door.



2. Check for continuity between the front passenger's power window switch 8P connector terminals.

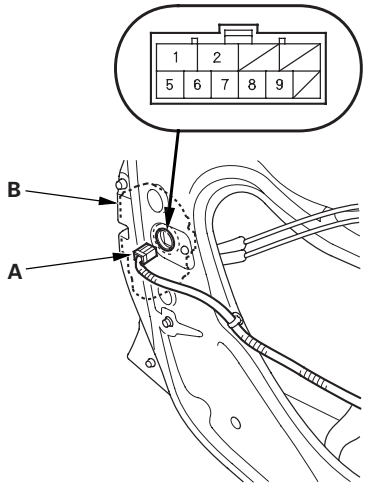
   - There should be continuity between terminals No. 1 and No. 2 when the door lock switch is in the LOCK position.
   - There should be no continuity between terminals No. 1 and No. 2 when the door lock switch is in the UNLOCK position.
   - There should be continuity between terminals No. 2 and No. 6 when the door lock switch is in the UNLOCK position.
   - There should be no continuity between terminals No. 2 and No. 6 when the door lock switch is in the LOCK position.

3. If the continuity is not as specified, replace the front passenger's window switch.

Door Key Cylinder Switch Test

1. Remove the driver's door panel (see page 20-7).

2. Disconnect the 10P connector (A) from the key cylinder switch (B).



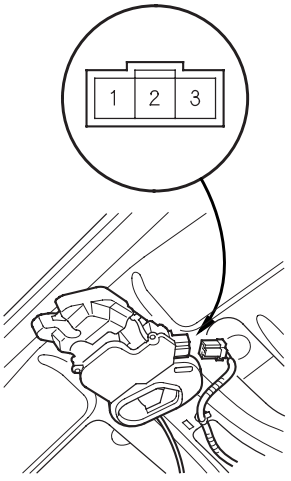
3. Check for continuity between the terminals.

   - There should be continuity between terminals No. 9 and No. 5 when the door key cylinder switch is in LOCK position. (With security)
   - There should be no continuity between terminals No. 9 and No. 5 when the door key cylinder switch is in the neutral or UNLOCK position. (With security)
   - There should be continuity between terminals No. 8 and No. 5 when the door key cylinder switch is in UNLOCK position.
   - There should be no continuity between terminals No. 8 and No. 5 when the door key cylinder switch is in the neutral or LOCK position.

4. If the continuity is not as specified, replace the door key cylinder assembly (see page 20-9).

Trunk Lid Release Actuator Test

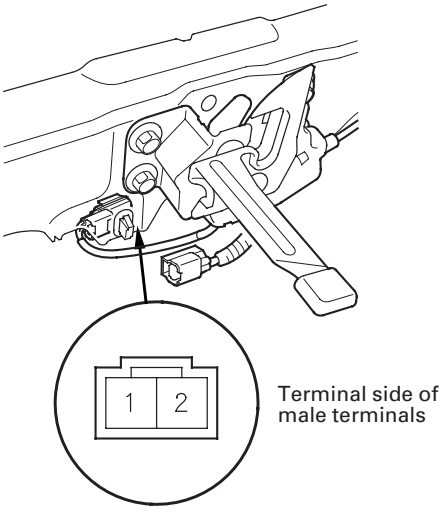
1. Open the trunk lid.
2. Disconnect the 3P connector from the trunk lid latch switch/trunk lid release actuator.



3. Check actuator operation by connecting power to terminal No. 1 and ground to terminal No. 2 momentarily. The actuator should work.
4. If the actuator does not work, replace the trunk lid latch switch/trunk lid release actuator assembly (see page 20-185).

Hood Switch Test

1. Open the hood.
2. Disconnect the 2P connector from the hood switch.



3. Check for continuity between the terminals.
   - There should be continuity between terminals No. 1 and No. 2 when the hood is opened (latch released).
   - There should be no continuity between terminals No. 1 and No. 2 when the hood is closed (latch pushed down).
4. If the continuity is not as specified, replace the hood latch assembly (see page 20-181).

Transmitter Test/Replacement

NOTE:
- If the doors unlock or lock with the transmitter, but the LED on the transmitter does not come on, the LED is faulty; replace the transmitter.
- If any door is open, you cannot lock the doors with the transmitter.
- If you unlocked the doors with the transmitter, but do not open any of the doors within 30 seconds, the doors relock automatically.
- The doors do not lock or unlock with the transmitter if the ignition key is inserted in the ignition switch.

With HDS

1. Press the lock or unlock button five or six times to reset the transmitter.

   - If the locks work, the transmitter is OK.
   - If any of the transmitter buttons do not work, replace the transmitter, then do the transmitter programming registration (see page 22-329).
   - If the locks don't work, go to step 2.

2. Connect the HDS to the data link connector.

3. Select the KEYLESS from the BODY ELECTRICAL menu, then enter the KEYLESS CHECK.

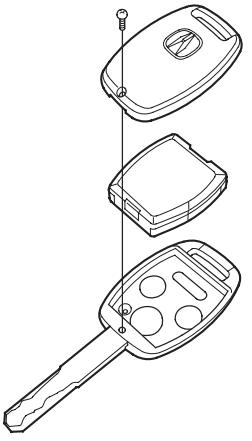
4. Press lock, unlock, trunk, or panic button and check the response on the screen of the HDS.

   NOTE: The door lock actuators may or may not cycle when receiving input from the transmitter.

   - If KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is OK. Go to keyless operation troubleshooting (see page 22-127).
   - If DIFFERENT KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is not registered to the vehicle, if necessary, reprogram and register the transmitter (see page 22-329).
   - If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, go to step 5.

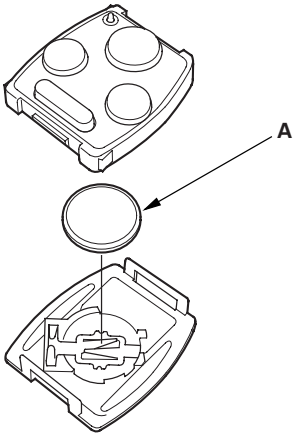
5. Open the transmitter and check for water damage.

   - If you find any water damage, replace the transmitter, then reprogram and register the transmitter (see page 22-329).
   - If there is no water damage, go to step 6.



6. Replace the transmitter battery (A) with a new one, and press lock or unlock button and check the receive condition on the screen of the HDS.

   - If KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, the transmitter is OK.
   - If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, go to step 7.



7. Use a different known-good keyless transmitter and repeat steps 3 and 4.

   NOTE: The keyless transmitter does not need to be programmed to the vehicle for this test.

   - If (DIFFERENT) KEYLESS ENTRY TRANSMITTER CODE IS RECEIVED is indicated, replace the keyless transmitter and do the immobilizer system registration (see page 22-329).
   - If KEYLESS ENTRY TRANSMITTER CODE IS NOT RECEIVED is indicated, the immobilizer-keyless control unit is faulty, replace it and do the immobilizer system registration (see page 22-329).

   NOTE: As the keyless transmitter is combined with the immobilizer transponder, when the transponder is registered by the HDS, the keyless transmitter programming is completed automatically.

Without HDS

1. Start the engine.

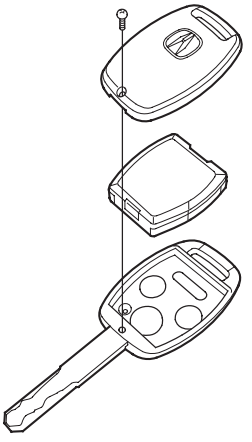
   - If the engine does not start, go to the immobilizer symptom troubleshooting (see page 22-323).
   - If the engine starts, go to step 2.

2. Press the lock or unlock button five or six times to reset the transmitter.

   - If the locks work, the transmitter is OK.
   - If the locks don't work, go to step 3.

3. Open the transmitter and check for water damage.

   - If you find any water damage, replace the transmitter.
   - If there is no water damage, go to step 4.

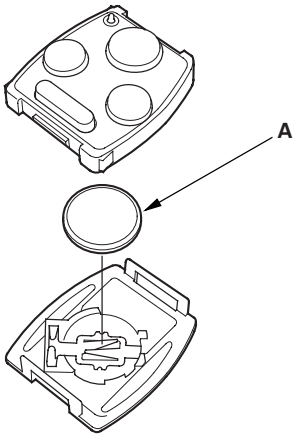


(cont'd)

Transmitter Test/Replacement (cont'd)

4. Replace the transmitter battery (A) with a new one, and try to lock and unlock the doors with the transmitter by pressing the lock or unlock button five or six times.

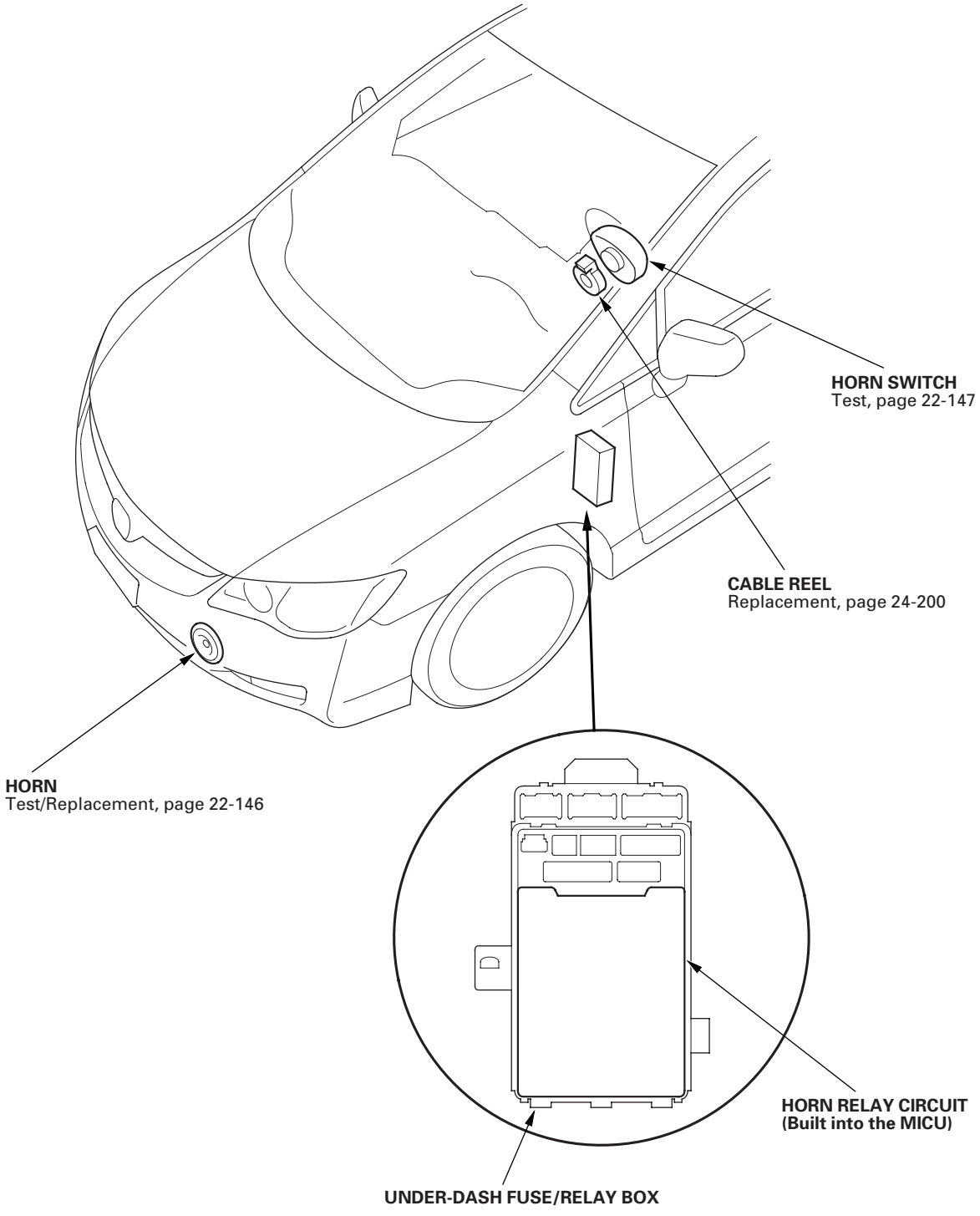
   - If the doors lock and unlock, the transmitter is OK.
   - If the doors don't lock and unlock, go to step 5.



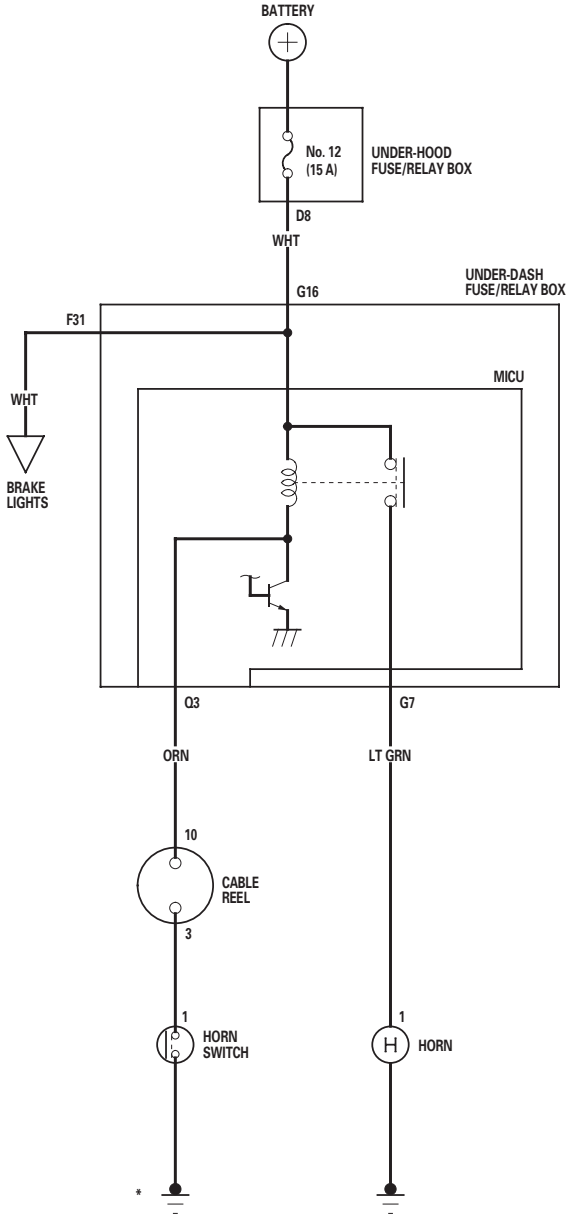
5. Reprogram and register the transmitter (see page 22-329), then try to lock and unlock the doors.

   - If the doors lock and unlock, the transmitter is OK.
   - If the doors don't lock and unlock, substitute a known-good transmitter and recheck (see page 22-329). If still not operating, replace the immobilizer-keyless control unit.

Component Location Index



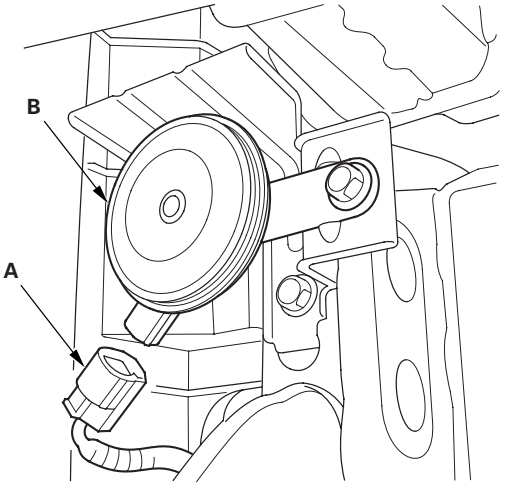
Circuit Diagram



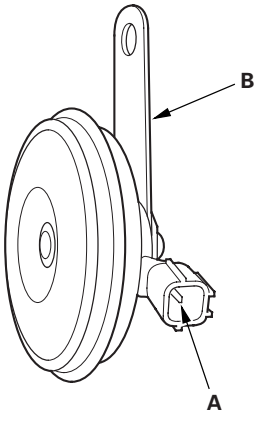
* : Ground through steering column.

Horn Test/Replacement

1. Remove the front bumper (see page 20-146).
2. Disconnect the 1P connector (A) from the horn (B).



3. Test the horn by connecting battery power to the terminal (A) and grounding the bracket (B). The horn should sound.

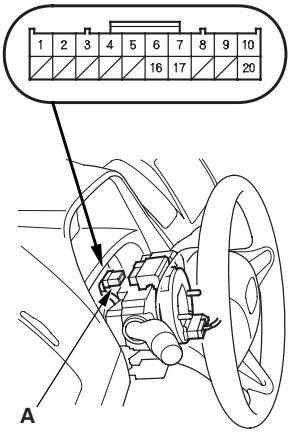


4. If it fails to sound, replace it.

Horn Switch Test

1. Remove the steering column covers (see page 17-9).

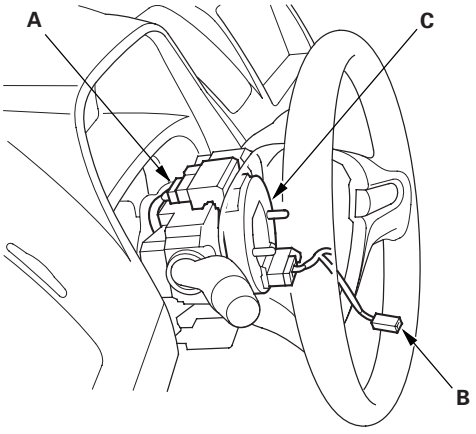
2. Disconnect the cable reel 20P connector (A) from the dashboard wire harness.



3. Using a jumper wire, connect dashboard wire harness 20P connector terminal No. 10 to body ground. The horn should sound.

   - If the horn sounds, go to step 4.
   - If the horn does not sound, check these items:
     – No. 12 (15 A) fuse in the under-hood fuse/relay box.
     – MICU.
     – Horn.
     – An open in the wire.

4. Reconnect the cable reel 20P connector (A) to the dashboard wire harness.

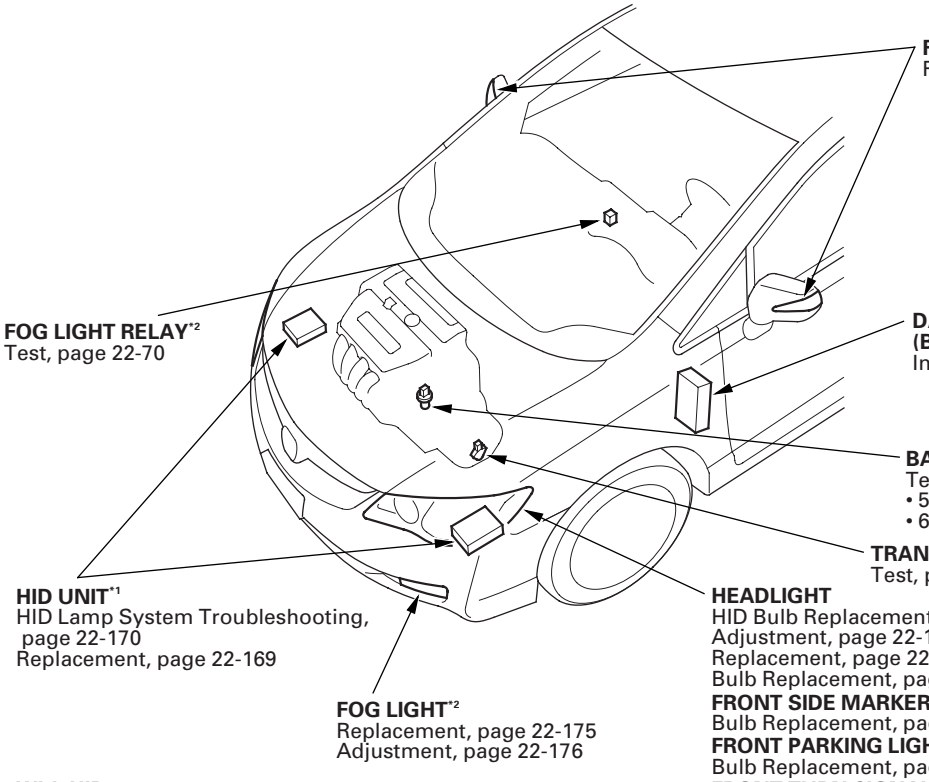


5. Remove the driver's airbag assembly (see page 24-188), and disconnect the horn switch 1P positive terminal (B) from the cable reel (C).

6. Using a jumper wire, connect the 1P connector to body ground.

   - If the horn sounds, replace the driver's airbag assembly.
   - If the horn does not sound, check these items:
     – Cable reel.
     – An open in the wire.

Component Location Index



FRONT SIDE TURN SIGNAL LIGHTS
Replacement, page 22-192

FOG LIGHT RELAY*2
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DAYTIME RUNNING LIGHTS CIRCUIT (Built into the MICU)
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BACK-UP LIGHT SWITCH (M/T)
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• 5-speed, page 13-5
• 6-speed, page 13-83

TRANSMISSION RANGE SWITCH (A/T)
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HID UNIT*1
HID Lamp System Troubleshooting, page 22-170
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HEADLIGHT
HID Bulb Replacement*1, page 22-168
Adjustment, page 22-173
Replacement, page 22-174
Bulb Replacement, page 22-177

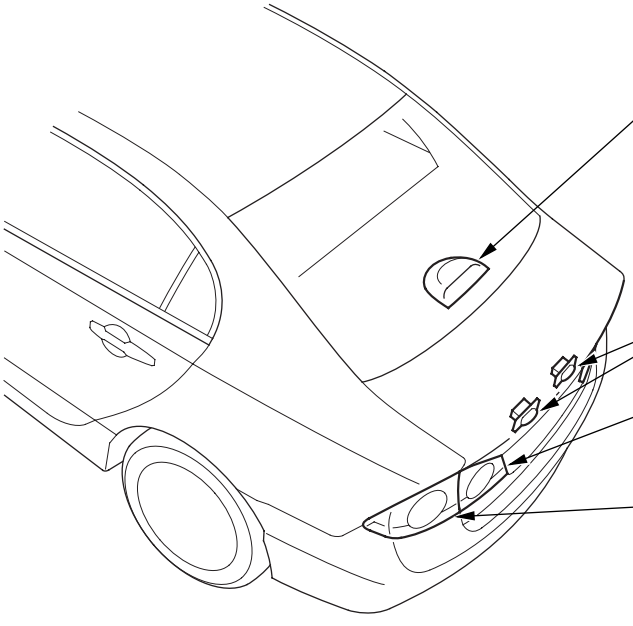
FRONT SIDE MARKER LIGHT
Bulb Replacement, page 22-177

FRONT PARKING LIGHT
Bulb Replacement, page 22-178

FRONT TURN SIGNAL LIGHT
Bulb Replacement, page 22-178

FOG LIGHT*2
Replacement, page 22-175
Adjustment, page 22-176

***1: With HID**
***2: TYPE S and '08 PREMIUM and '09 models**



HIGH MOUNT BRAKE LIGHT (Except TYPE S models)
Replacement, page 22-180

LICENSE PLATE LIGHTS
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INNER TAILLIGHT
Replacement, page 22-179

BACK-UP LIGHT
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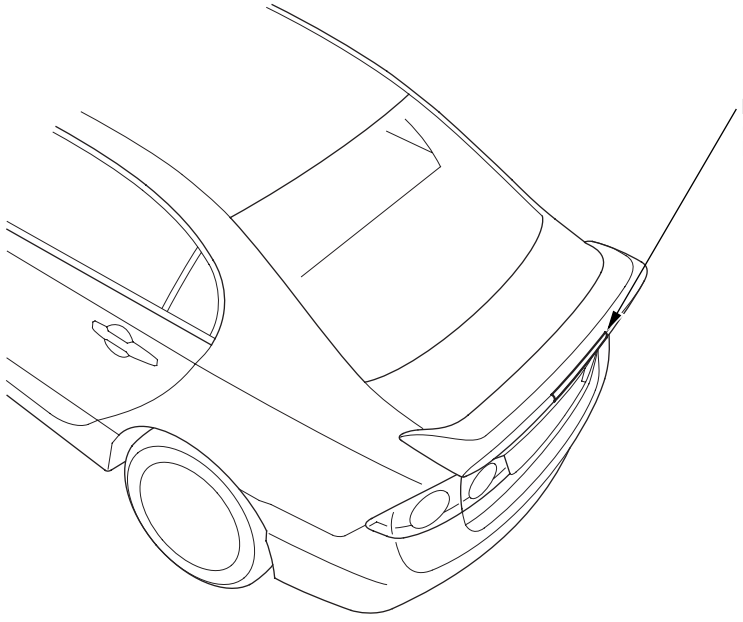
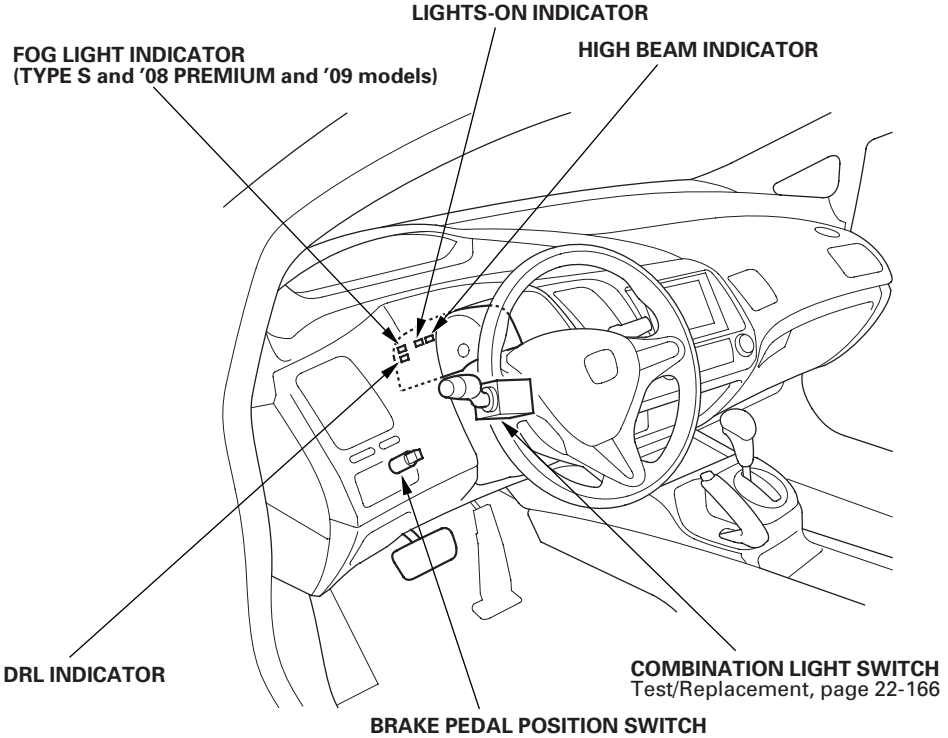
TAILLIGHT and BRAKE LIGHT
Replacement, page 22-179

REAR TURN SIGNAL LIGHT
Replacement, page 22-179

REAR SIDE MARKER LIGHT
Replacement, page 22-179



HIGH MOUNT BRAKE LIGHT
(TYPE S model)
Replacement, page 22-181



LIGHTS-ON INDICATOR

FOG LIGHT INDICATOR
(TYPE S and '08 PREMIUM and '09 models)

HIGH BEAM INDICATOR

DRL INDICATOR

COMBINATION LIGHT SWITCH
Test/Replacement, page 22-166

BRAKE PEDAL POSITION SWITCH
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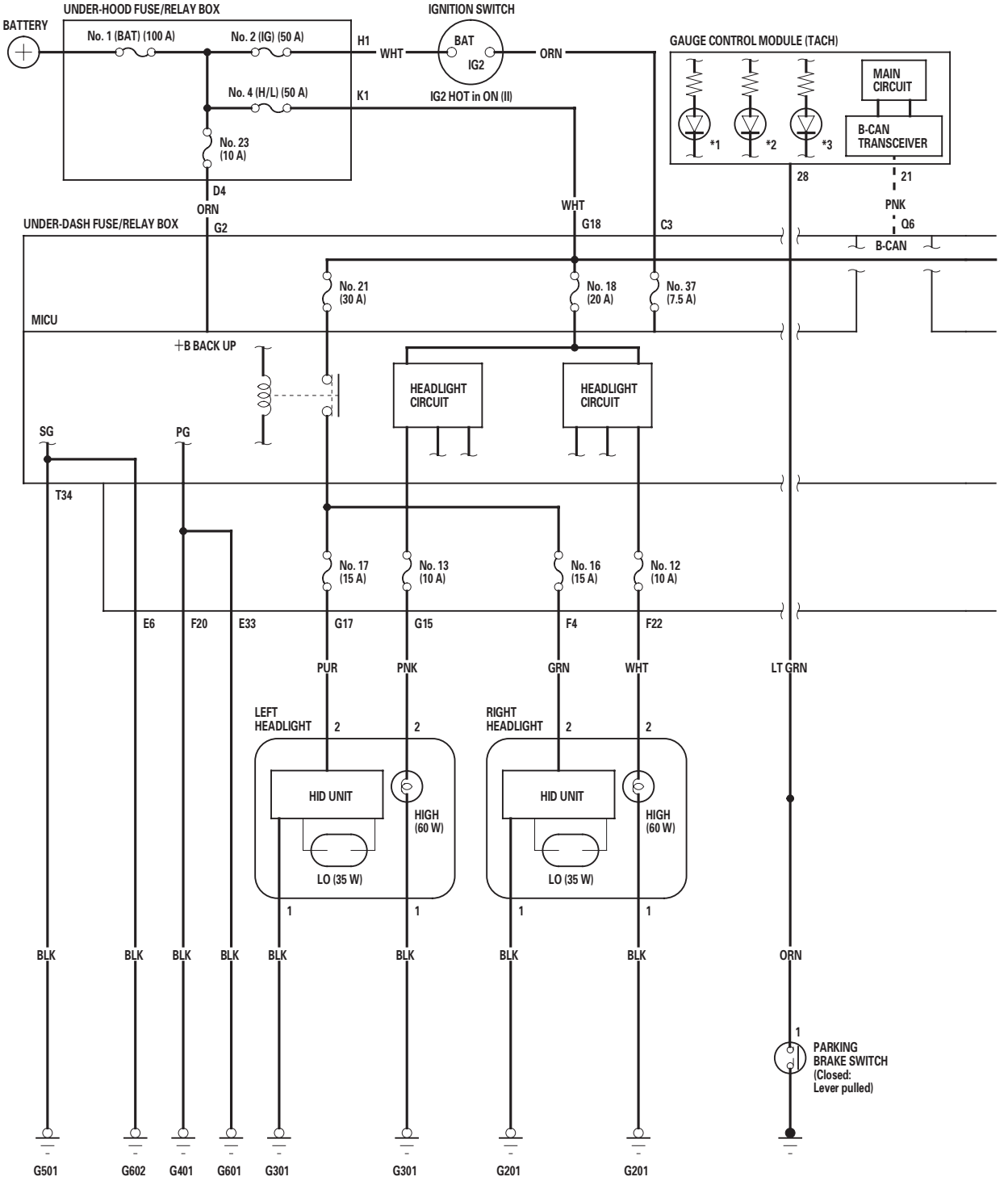
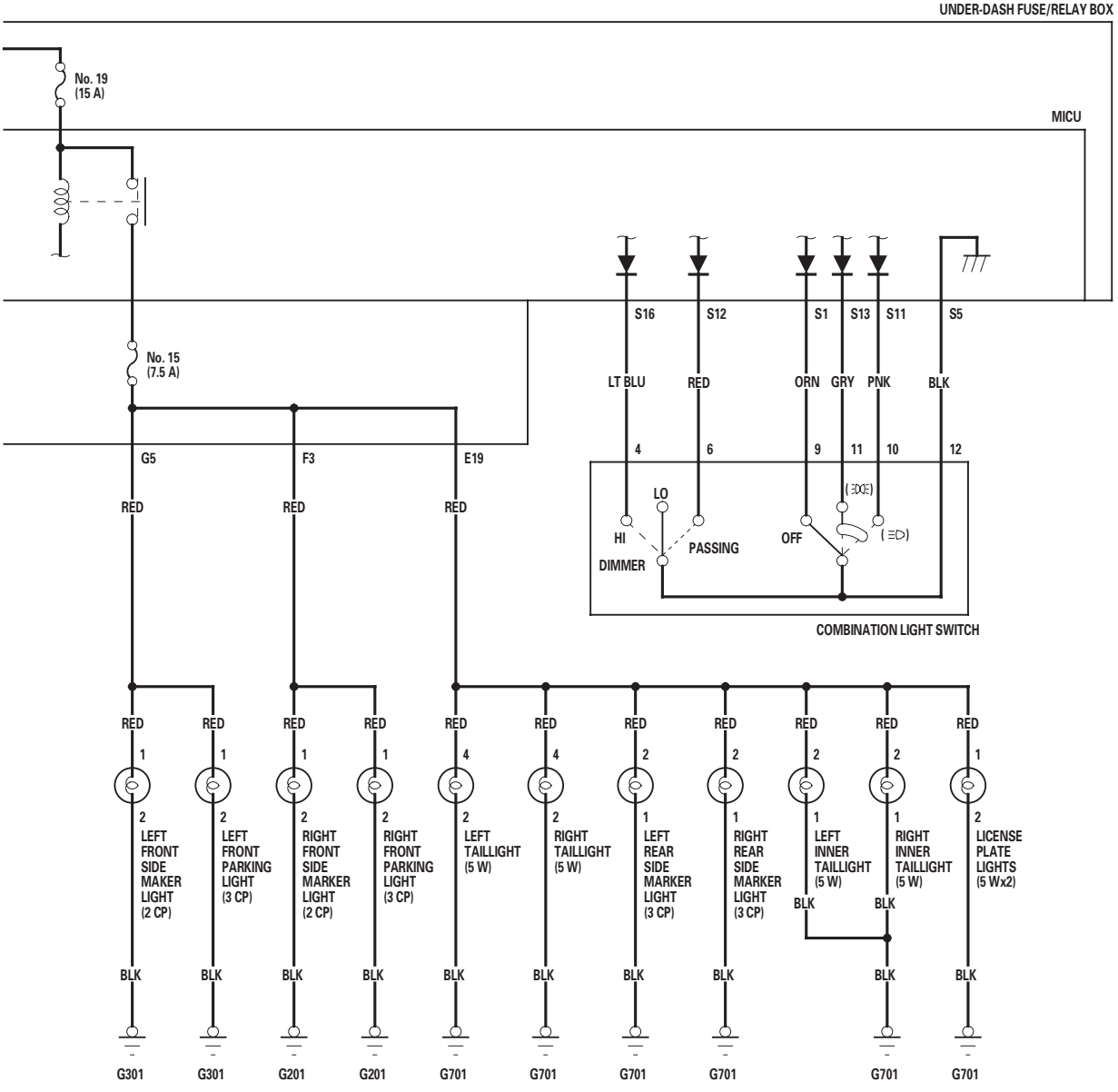
Circuit Diagram

With HID

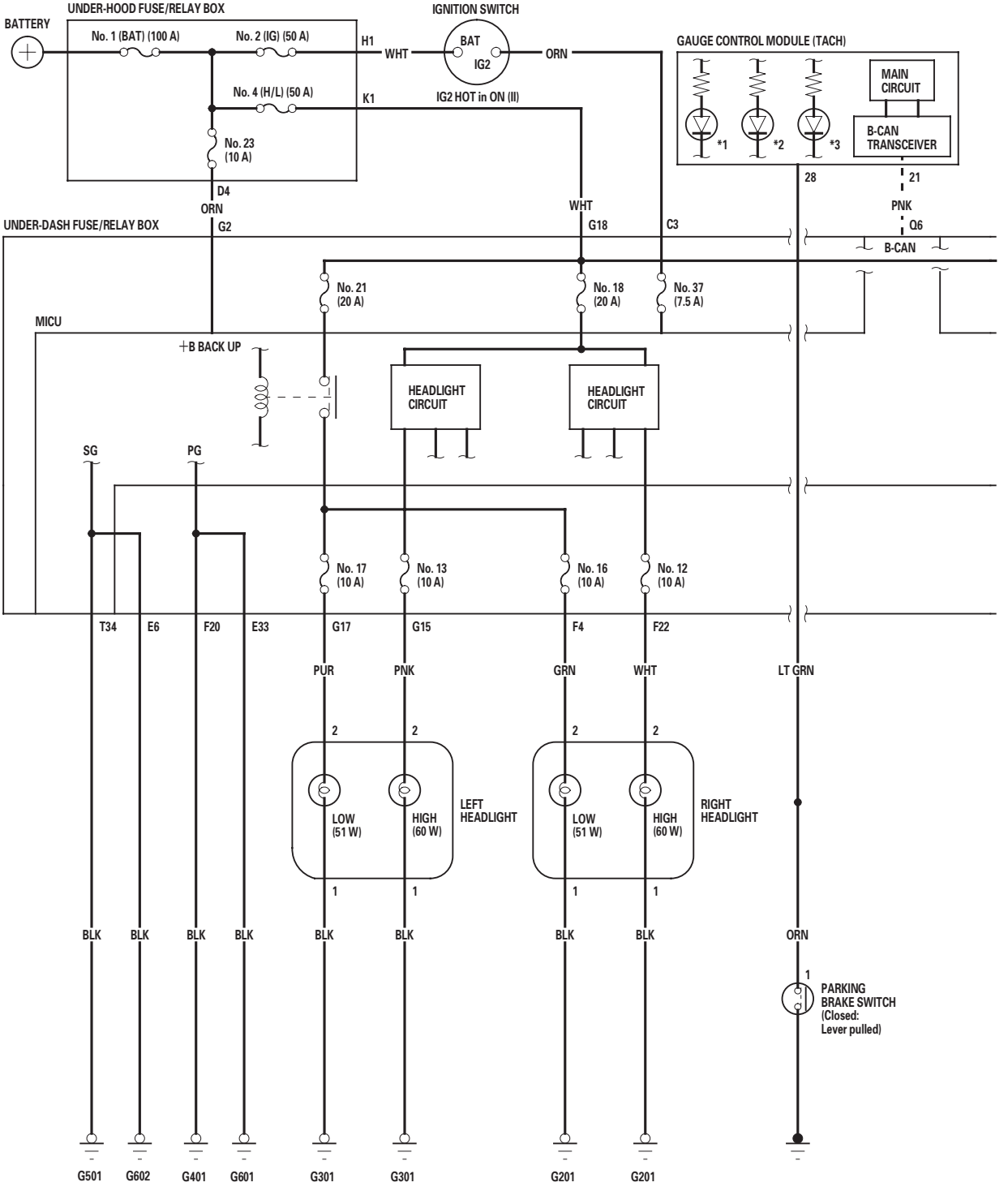


*1: HIGH BEAM INDICATOR (LED)
*2: LIGHTS-ON INDICATOR (LED)
*3: DRL INDICATOR (LED)
- - - - - - : CAN line

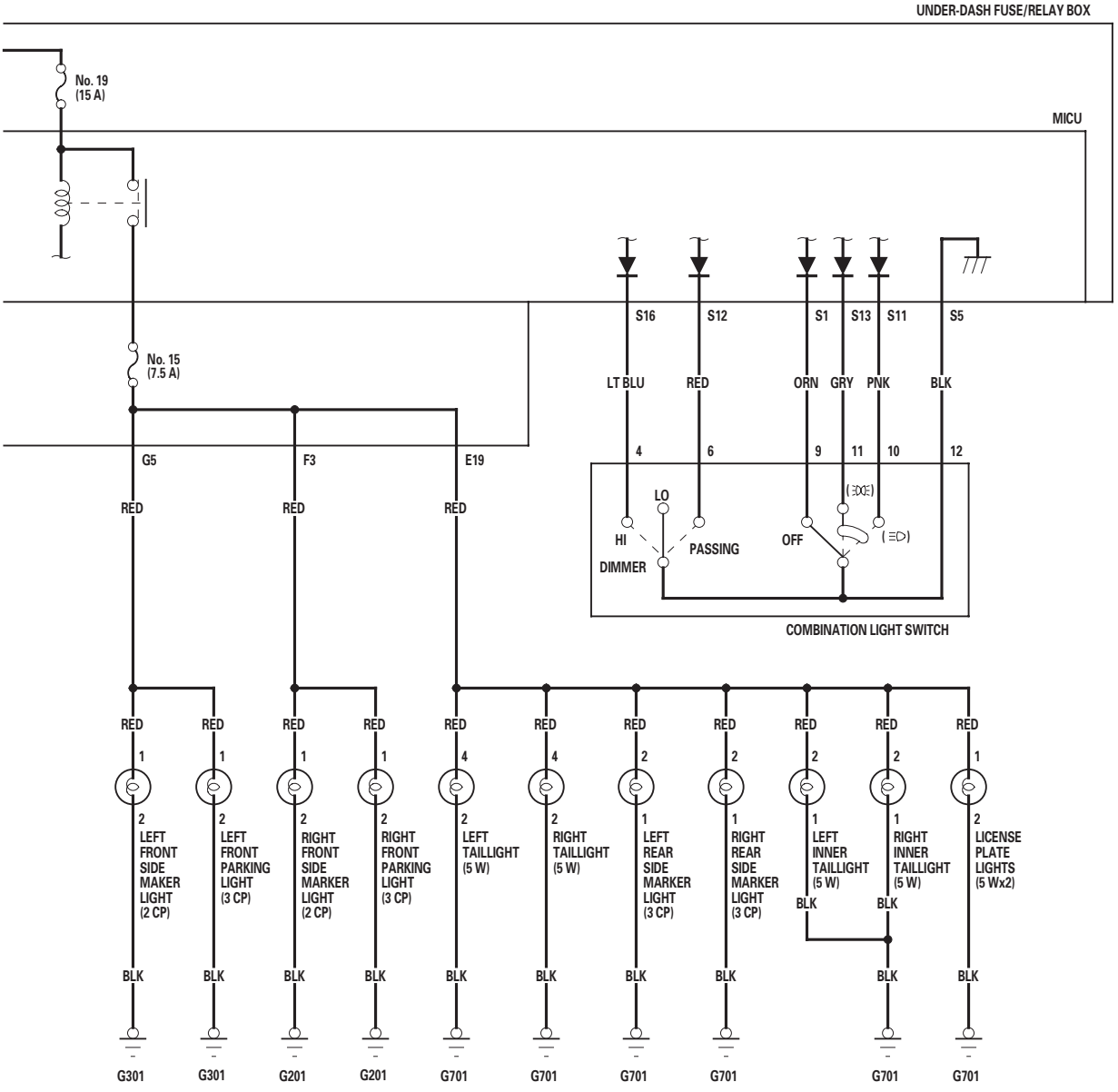


Circuit Diagram (cont'd)

Without HID

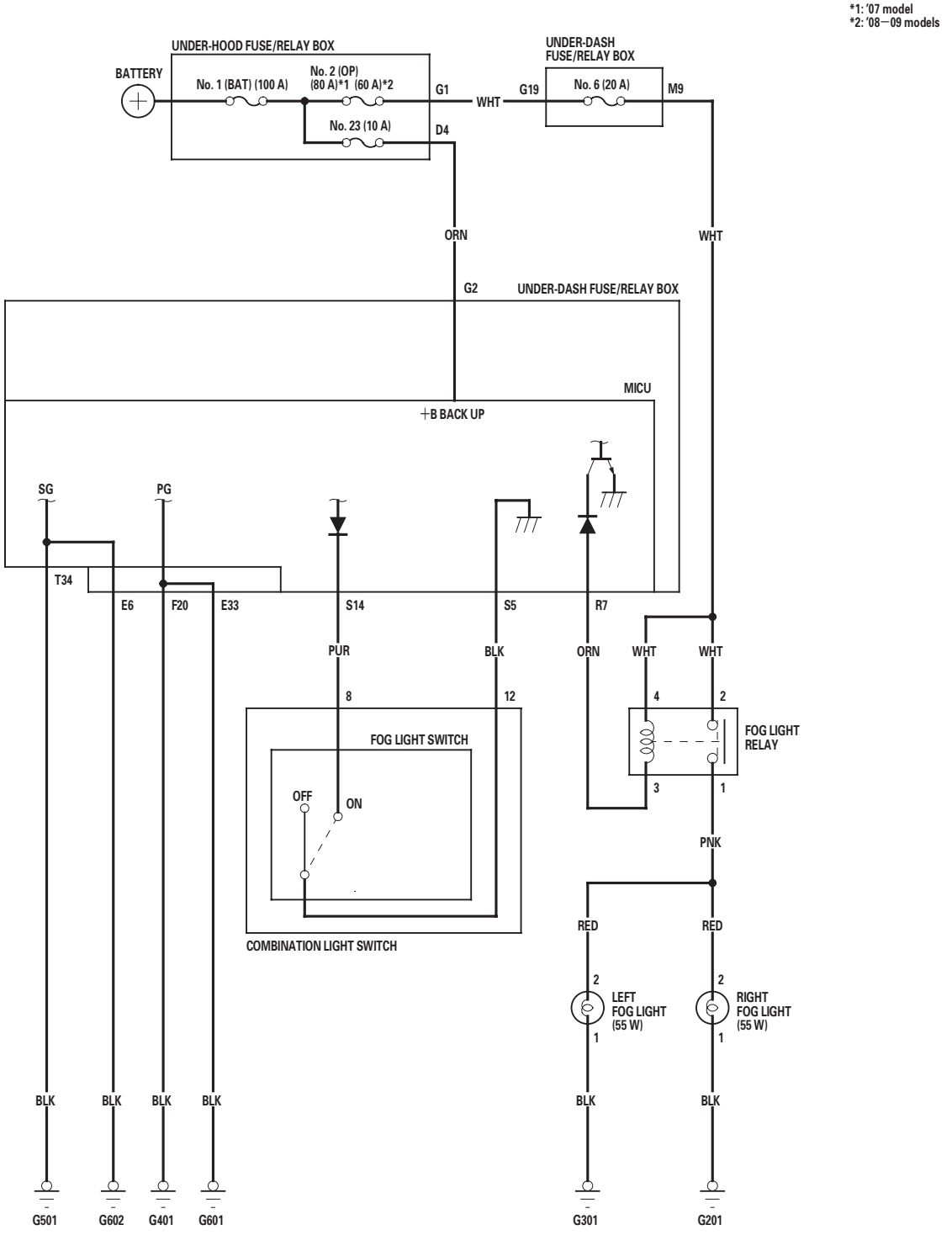


*1: HIGH BEAM INDICATOR (LED)
*2: LIGHTS-ON INDICATOR (LED)
*3: DRL INDICATOR (LED)
- - - - - - : CAN line

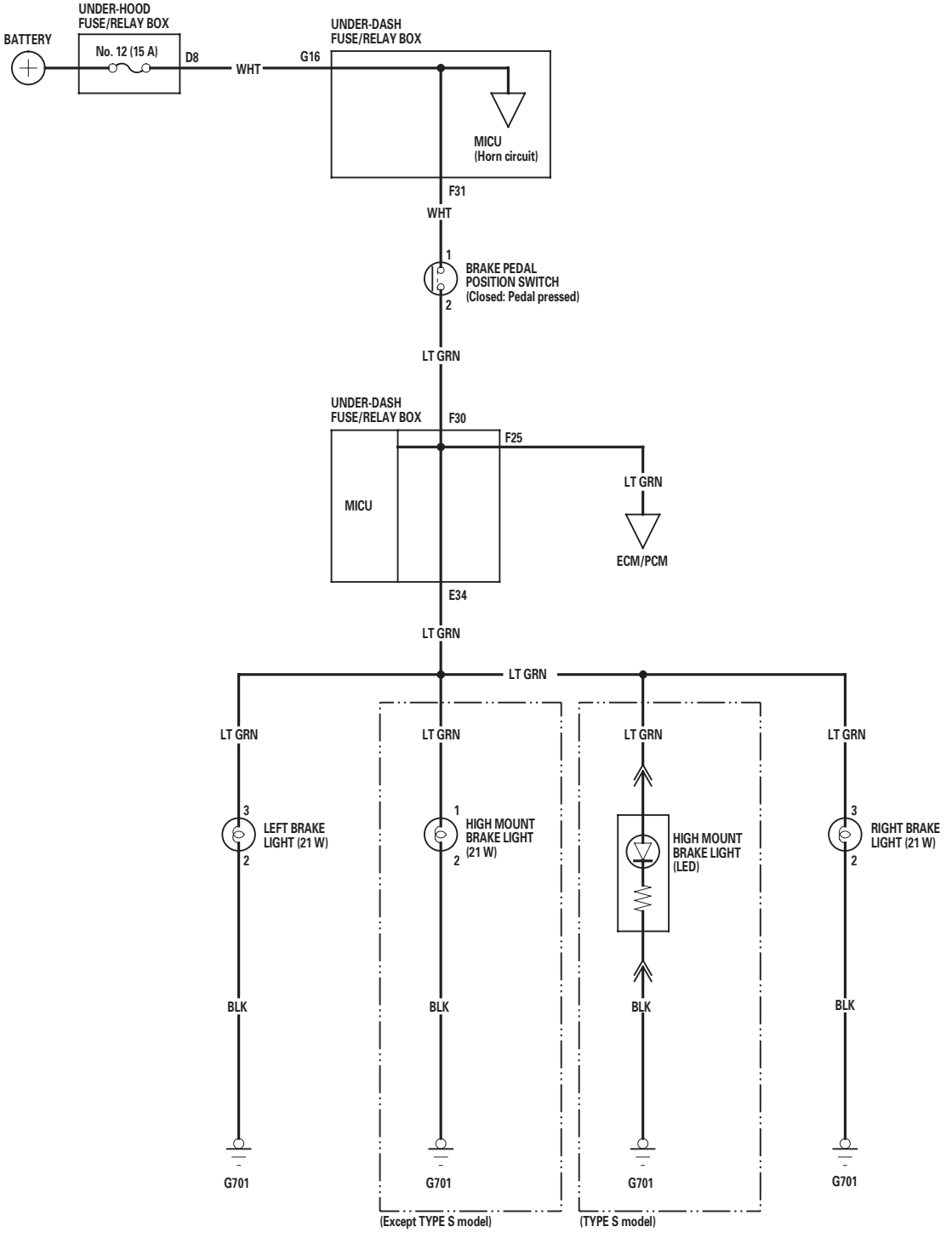


Circuit Diagram - Fog Lights

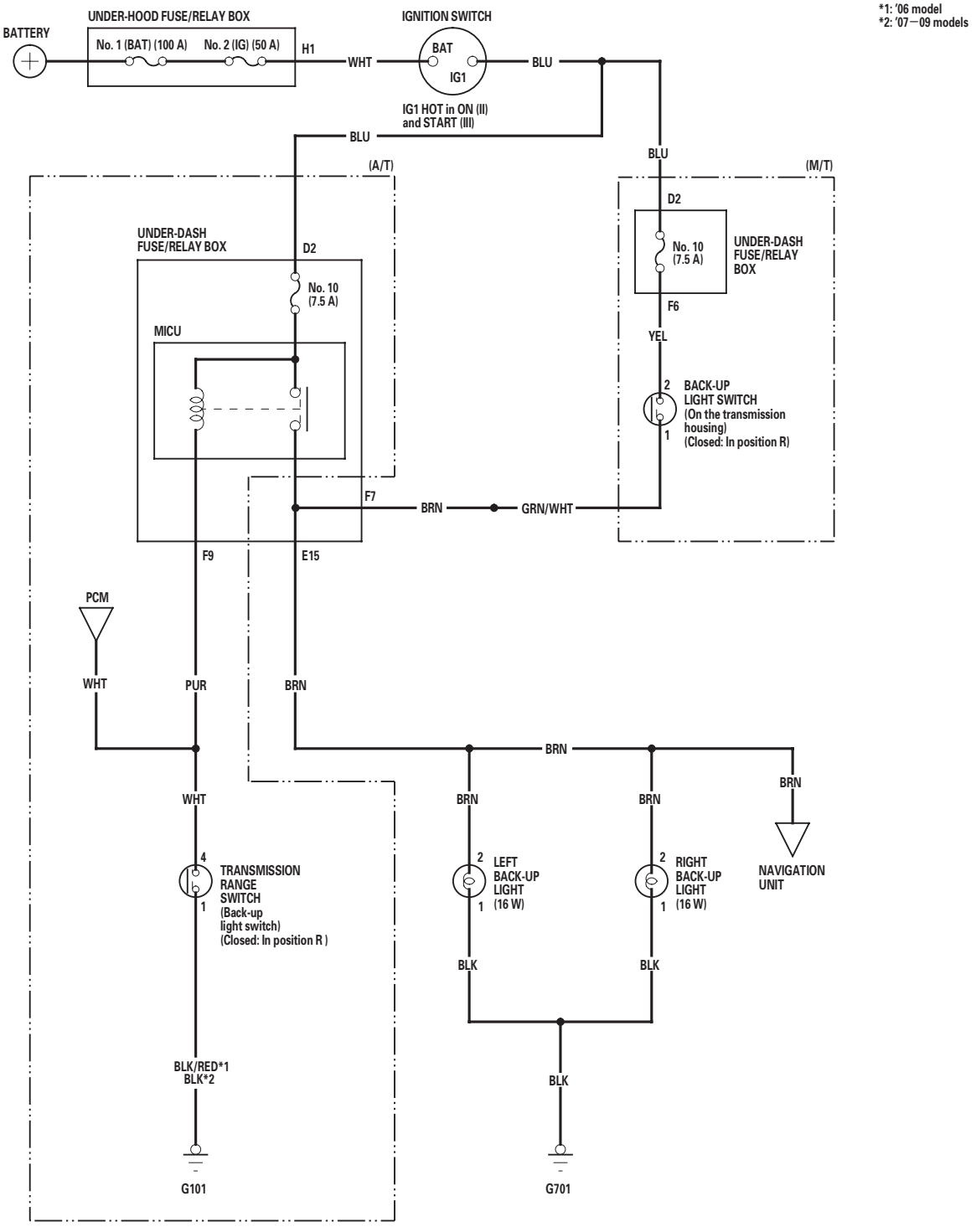
TYPE S and '08 PREMIUM and '09 models



Circuit Diagram - Brake Lights



Circuit Diagram - Back-up Lights



DTC Troubleshooting

DTC B1078: Daytime Running Lights System Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Turn the ignition switch to ON (II).
2. Pull the parking brake lever.
3. Clear the DTCs with the HDS.
4. Release the parking brake lever.
5. Turn the ignition switch to LOCK (0), and then back to ON (II).
6. Check for DTCs with the HDS.

   Is DTC B1078 indicated?

   YES—Go to step 7.

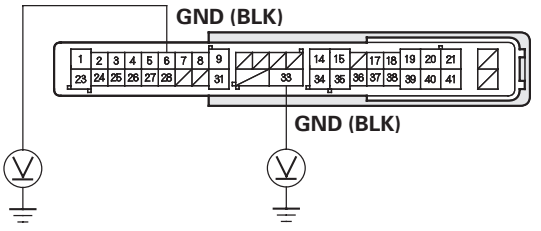
   NO—Intermittent failure. The daytime running lights system is OK at this time. Check for loose or poor connections. ■
7. Turn the headlight switch ON (high beam).

   Do both headlights (high beam) come on?

   YES—Go to step 8.

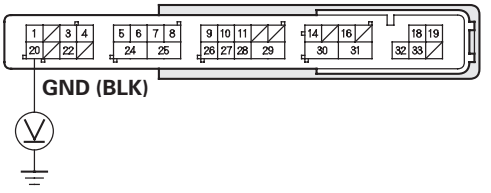
   NO—Go to step 10.
8. Turn the ignition switch to LOCK (0).
9. Measure the voltage between under-dash fuse/relay box connector E (42P) terminals No. 6 and No. 33 and body ground, and between under-dash fuse/relay box connector F (34P) terminal No. 20 and body ground individually.

   UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



Wire side of female terminals

   UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



Wire side of female terminals

   Is there less than 0.5 V?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Repair an open in the BLK wire or poor ground (G401, G501, G601, G602). ■
10. Turn the ignition switch to LOCK (0) and turn the headlight switch OFF.

(cont'd)

DTC Troubleshooting (cont'd)

11. Check the No. 12, No. 13, and No. 18 fuses in the under-dash fuse/relay box.

    Are all fuses OK?

    YES—Go to step 12.

    NO—Replace the blown fuse and recheck. If the No. 18 (20 A) fuse is blown again, replace the under-dash fuse/relay box. If the No. 12 (10 A) or No. 13 (10 A) fuse is blown again, repair a short in the wire between the under-dash fuse/relay box and appropriate headlight (high beam). ■

12. Check the headlight bulbs.

    Are the headlight bulbs OK?

    YES—Go to step 13.

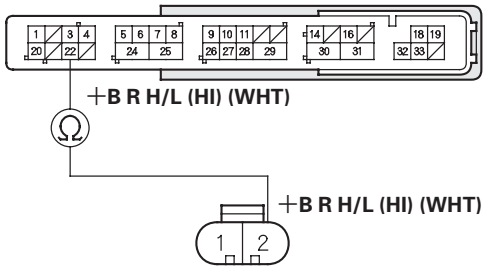
    NO—Replace the faulty bulb. ■

13. Disconnect under-dash fuse/relay box connectors F (34P) and G (21P).

14. Disconnect the both headlight (high beam) 2P connectors.

15. Check for continuity between right headlight (high beam) 2P connector terminal No. 2 and under-dash fuse/relay box connector F (34P) terminal No. 22.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)
Wire side of female terminals



RIGHT HEADLIGHT (HIGH BEAM) 2P CONNECTOR
Wire side of female terminals

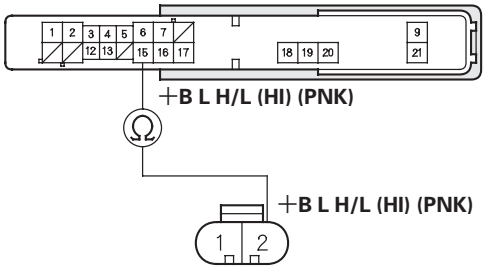
Is there continuity?

YES—Go to step 16.

NO—Repair an open in the wire between the right headlight (high beam) and the under-dash fuse/relay box. ■

16. Check for continuity between left headlight (high beam) 2P connector terminal No. 2 and under-dash fuse/relay box connector G (21P) terminal No. 15.

UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)
Wire side of female terminals



LEFT HEADLIGHT (HIGH BEAM) 2P CONNECTOR
Wire side of female terminals

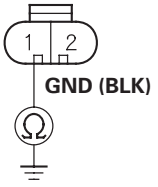
Is there continuity?

YES—Go to step 17.

NO—Repair an open in the wire between the left headlight (high beam) and the under-dash fuse/relay box. ■

17. Check for continuity between headlight (high beam) 2P connector terminal No. 1 and body ground.

HEADLIGHT (HIGH BEAM) 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

NO—Repair an open in the BLK wire or poor ground (G201-right side, G301-left side). ■

DTC B1275: Combination Light Switch OFF Position Circuit Malfunction

DTC B1276: Combination Light Switch Parking (SMALL) Position Circuit Malfunction

DTC B1278: Combination Light Switch ON Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0) and then back to ON (II).
3. Turn the combination light switch to the PARKING (SMALL), and ON (low beam) positions for 6 seconds in each position, and then to the OFF position.
4. Check for DTCs with the HDS.

   Is DTC B1275, B1276, or B1278 indicated?
   YES—Go to step 5.
   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■
5. Select LIGHTING from the BODY ELECTRICAL system select menu, and enter DATA LIST.
6. Check each combination light switch position value with the DATA LIST menu.

   When the combination light switch is turned OFF

Data List	Value
Headlight Switch (OFF)	ON
Headlight Switch (PARKING)	OFF
Headlight Switch (HEADLIGHT)	OFF

   When the combination light switch is turned to PARKING (SMALL)

Data List	Value
Headlight Switch (OFF)	OFF
Headlight Switch (PARKING)	ON
Headlight Switch (HEADLIGHT)	OFF

   When the combination light switch is turned ON (HEADLIGHT)

Data List	Value
Headlight Switch (OFF)	OFF
Headlight Switch (PARKING)	ON
Headlight Switch (HEADLIGHT)	ON

   Are all data list values correct?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Go to step 7.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the combination light switch 12P connector.
9. Turn the ignition switch to ON (II).
10. Select LIGHTING from the BODY ELECTRICAL system select menu, and enter DATA LIST.
11. Check each combination light switch position value with the DATA LIST menu.

    When the combination light switch is turned OFF

Data List	Value
Headlight Switch (OFF)	OFF
Headlight Switch (PARKING)	OFF
Headlight Switch (HEADLIGHT)	OFF

    Are all data list values indicated OFF?

    YES—Go to step 15.

    NO—Go to step 12.

(cont'd)

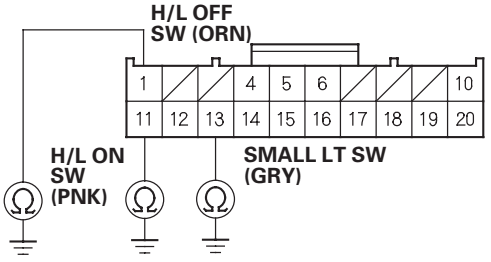
DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).

13. Disconnect under-dash fuse/relay box connector S (20P).

14. Check for continuity between body ground and under-dash fuse/relay box connector S (20P) terminals No. 1, No. 11, and No. 13 individually.

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

15. Turn the ignition switch to LOCK (0).

16. Do the combination light switch test (see page 22-166).

Is the combination light switch OK?

YES—Go to step 17.

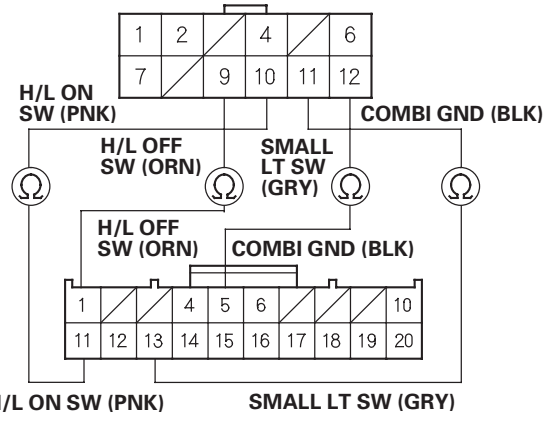
NO—Replace the combination light switch. ■

17. Disconnect under-dash fuse/relay box connector S (20P).

18. Check for continuity between under-dash fuse/relay box connector S (20P) terminals and the combination light switch 12P connector terminals as shown:

Under-dash fuse/ relay box connector S (20P)	Combination light switch 12P connector
1	9
11	10
13	11
5	12

COMBINATION LIGHT SWITCH 12P CONNECTOR
Wire side of female terminals



UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)
Wire side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair an open in the wire. ■

19. Check for continuity between under-dash fuse/relay box connector S (20P) terminals as shown:

From terminal	To terminal
1	11, 12, 13, 16
13	11, 12, 16

Is there continuity?

YES—Repair a short between the wires. ■

NO—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

DTC B1279: Headlight Switch DIMMER Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0) and then back to ON (II).
3. Turn the combination light (headlight) switch ON.
4. Change the dimmer switch from low beam to high beam.
5. Turn the combination light switch OFF, and then to the passing position, and wait for at least 6 seconds.
6. Check for DTCs with the HDS.

   Is DTC B1279 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■
7. Select LIGHTING from the BODY ELECTRICAL system select menu, then enter DATA LIST.
8. Check each combination light switch position value with the DATA LIST menu.

   When the passing switch is operated

Data List	Value
Headlight Switch (PASSING)	ON
Headlight Switch (High beam)	OFF

   When the headlight switch is turned ON, and the dimmer switch changed from low beam to high beam

Data List	Value
Headlight Switch (PASSING)	OFF
Headlight Switch (High beam)	ON
Headlight Switch (HEADLIGHT)	ON

   Are all data list values correct?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Disconnect the combination light switch 12P connector.
11. Turn the ignition switch to ON (II).
12. Select LIGHTING from the BODY ELECTRICAL system select menu, then enter DATA LIST.
13. Check each combination light switch position value with the DATA LIST menu.

    When the combination light switch is turned OFF

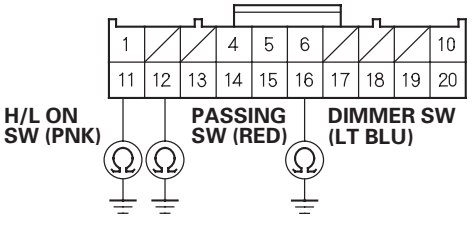
Data List	Value
Headlight Switch (PASSING)	OFF
Headlight Switch (High beam)	OFF
Headlight Switch (HEADLIGHT)	OFF

    Are all data list values indicated OFF?

    YES—Go to step 17.

    NO—Go to step 14.
14. Turn the ignition switch to LOCK (0).
15. Disconnect under-dash fuse/relay box connector S (20P).
16. Check for continuity between body ground and under-dash fuse/relay box connector S (20P) terminals No. 11, No. 12, and No. 16 individually.

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

(cont'd)

DTC Troubleshooting (cont'd)

17. Turn the ignition switch to LOCK (0).

18. Do the combination light switch test (see page 22-166).

    Is the combination light switch OK?

    YES—Go to step 19.

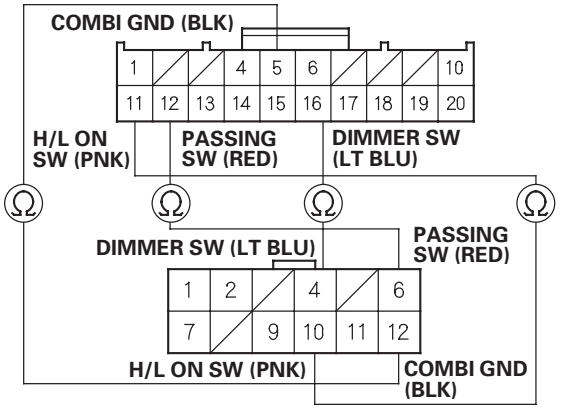
    NO—Replace the combination light switch. ■

19. Disconnect under-dash fuse/relay box connector S (20P).

20. Check for continuity between under-dash fuse/relay box connector S (20P) terminals and the combination light switch 12P connector terminals as shown:

Under-dash fuse/ relay box connector S (20P)	Combination light switch 12P connector
5	12
11	10
12	6
16	4

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)
Wire side of female terminals



COMBINATION LIGHT SWITCH 12P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 21.

NO—Repair an open in the wire. ■

21. Check for continuity between under-dash fuse/relay box connector S (20P) terminals as shown:

From terminal	To terminal
12	1, 11, 13, 16
16	1, 11, 13

Is there continuity?

YES—Repair a short between the wires. ■

NO—Faulty MICU; replace the under-dash fuse/ relay box (see page 22-66). ■

MICU Input Test

NOTE:
- The MICU turns on the headlights (high beams) in a dimming mode for the Daytime Running Lights under the following conditions:
  – With the ignition switch turned to ON (II)
  – The headlight switch OFF
  – The parking brake is released (parking brake switch OFF)
- The DRL indicator will come on when one of the headlight (high beams) bulbs is blown, or if the high beam wiring has an open circuit with the daytime running lights ON.
- If the vehicle is equipped with an optional remote control engine start system, the daytime running lights will not function when started with the remote start.

1. Before testing the lighting system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93).

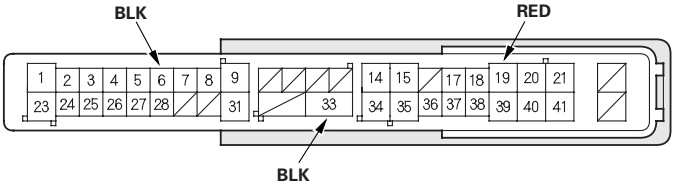
2. Check the No. 12 (10 A), No. 13 (10 A), No. 15 (7.5 A), No. 16 (15 A) *1, (10 A) *2, No. 17 (15 A) *1, (10 A) *2, No. 18 (20 A), No. 19 (15 A), No. 21 (30 A) *1, (20 A) *2, and No. 37 (7.5 A) fuses in the under-dash fuse/relay box. If any fuse is blown, replace it and go to step 3.

   * 1: With HID
   * 2: Without HID

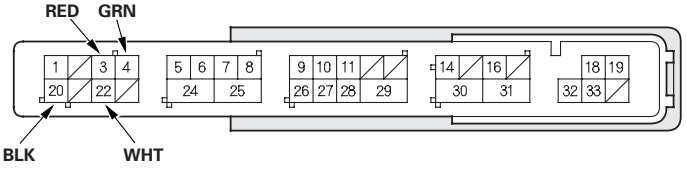
3. Disconnect under-dash fuse/relay box connectors E, F, G, S, and T.

   NOTE: All connector views are shown from wire side of female terminals.

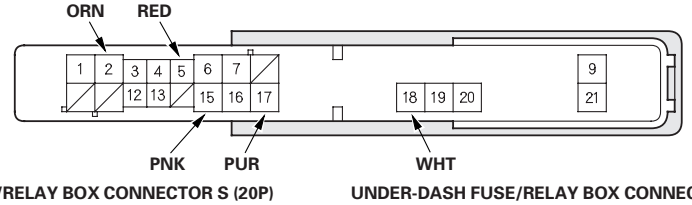
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



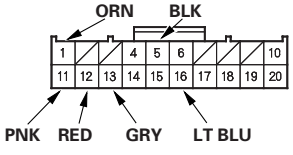
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



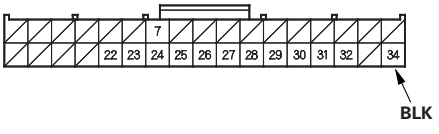
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



(cont'd)

MICU Input Test (cont'd)

4. Inspect the connector and socket terminals to be sure they are all making good contact.

   • If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   • If the terminals look OK, go to step 5.

5. With the connector still disconnected, do these input tests at the following connectors.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E19	RED	Under all conditions	Connect battery power to terminal E19: The taillights, rear side marker lights, and license plate lights should come on.	• Poor ground (G701) • Blown bulb • An open in the wire
F3	RED	Under all conditions	Connect battery power to terminal F3: The right front side marker light and right front parking light should come on.	• Poor ground (G201) • Blown bulb • An open in the wire
F4	GRN	Under all conditions	Connect battery power to terminal F4: The right headlight (low beam) should come on.	• Poor ground (G201) • Blown bulb • Faulty HID unit* • An open in the wire
F22	WHT	Under all conditions	Connect battery power to terminal F22: The right headlight (high beam) should come on.	• Poor ground (G201) • Blown bulb • An open in the wire
G5	RED	Under all conditions	Connect battery power to terminal G5: The left front side marker light and left front parking light should come on.	• Poor ground (G301) • Blown bulb • An open in the wire
G15	PNK	Under all conditions	Connect battery power to terminal G15: The left headlight (high beam) should come on.	• Poor ground (G301) • Blown bulb • An open in the wire
G17	PUR	Under all conditions	Connect battery power to terminal G17: The left headlight (low beam) should come on.	• Poor ground (G301) • Blown bulb • Faulty HID unit* • An open in the wire

*: With HID

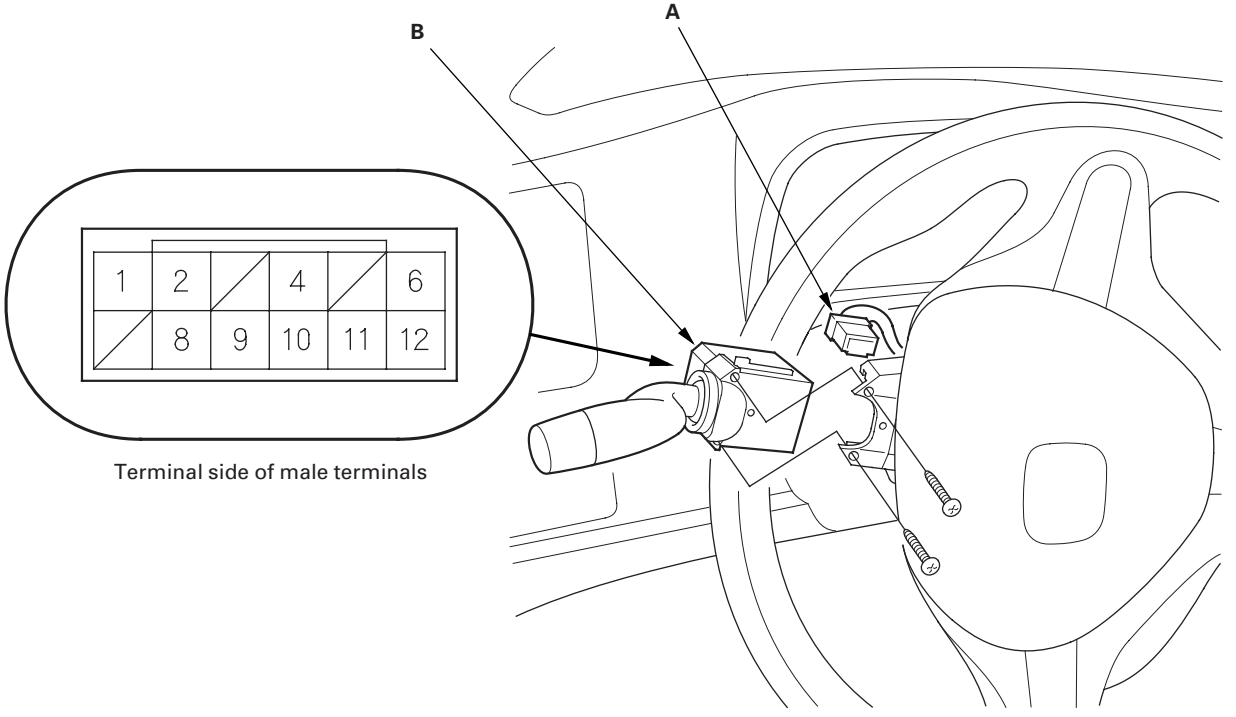
6. Reconnect the connectors to the under-dash fuse/relay box, and do these input tests at the following connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
G2	ORN	Under all conditions	Measure the voltage between terminal G2 and body ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
G18	WHT	Under all conditions	Measure the voltage between terminal G18 and body ground: There should be battery voltage.	• Blown No. 4 (50 A) fuse in the under-hood fuse/relay box • An open in the wire
E6	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
S1 . S5	ORN . BLK	Combination light switch OFF	Measure the voltage between terminals S1 and S5: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch in any other position than OFF	Measure the voltage between terminals S1 and S5: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire
S11 . S5	PNK . BLK	Combination light switch (Headlight position) ON	Measure the voltage between terminals S11 and S5: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch OFF	Measure the voltage between terminals S11 and S5: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire
S12 . S5	RED . BLK	Combination light switch lever pulled (Passing)	Measure the voltage between terminals S12 and S5: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch lever released from passing position	Measure the voltage between terminals S12 and S5: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire
S13 . S5	GRY . BLK	Combination light switch (SMALL position) ON	Measure the voltage between terminals S13 and S5: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch OFF	Measure the voltage between terminals S13 and S5: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire
S16 . S5	LT BLU . BLK	Combination light switch (Dimmer) in high beam position	Measure the voltage between terminals S16 and S5: There should be less than 1 V.	• Faulty combination light switch • An open in the wire
		Combination light switch (Dimmer) in low beam position	Measure the voltage between terminals S16 and S5: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire
C3	ORN	Ignition switch ON (II)	Measure the voltage between terminal C3 and body ground: There should be battery voltage.	• Faulty ignition switch • An open in the wire

Combination Light Switch Test/Replacement

1. Remove the driver's dashboard lower cover (see page 20-102).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the 12P connector (A) from the combination light switch (B).



Terminal side of male terminals

4. Remove the two screws, then slide out the combination light switch.

5. Inspect the connector terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, check for continuity between the terminals in each switch position according to the tables.
     – If the continuity is not as specified, replace the switch.

Light switch

Position			Terminal 4	6	9	10	11	12
Headlight switch	OFF				○			○
	≡◯≡						○	○
	≡D	LOW				○	○	○
		HIGH	○			○	○	○
Passing switch	OFF							
	ON			○				○

Turn signal switch

Position	Terminal 1	2	12
LEFT		○	○
Neutral			
RIGHT	○		○

Fog light switch (TYPE S and '08 PREMIUM and '09 models)

Position	Terminal 8	12
OFF		
ON	○	○

HID Bulb Replacement

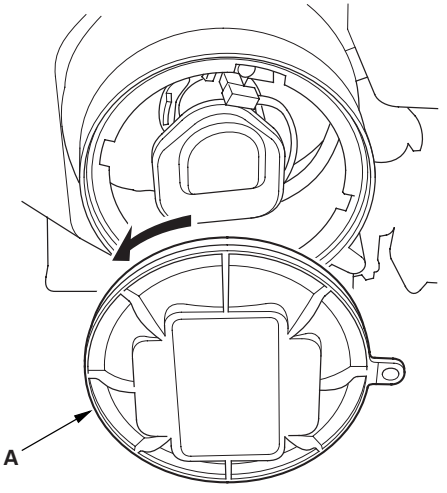
⚠WARNING

A transient high tension (25,000 V) occurs at the bulb sockets of the high intensity discharge (HID) lamps when the combination light switch is turned ON. It may cause serious electrical shock or electrocution if you do not observe the cautions.

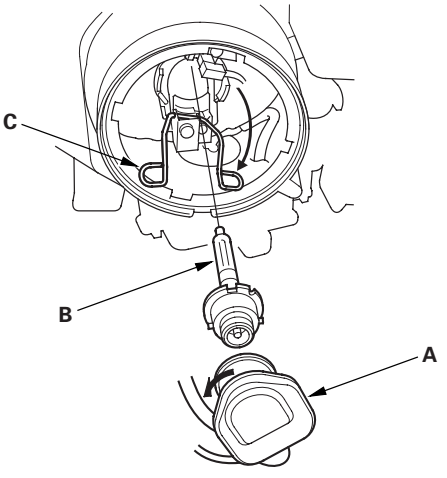
⚠CAUTION

- Never turn on the combination light switch before fitting the HID bulbs to their bulb sockets and completing the reassembly of the headlight assembly.
- Do not service the headlight assembly in wet conditions, such as rain or snow, near a sprinkler system, or when your hands are wet to prevent electrocution.
- Do not touch the surface of the HID bulbs with your bare hands and do not stain it with any oils and fats.
- Do not disassemble the inverter unit and the igniter fats.
- Do not turn on the HID bulb by using a power source other than the battery mounted on your vehicle.

1. Turn the combination light switch OFF.
2. Do the battery terminal disconnection procedure (see page 22-68).
3. Remove the battery. (left side bulb)
4. Turn the cover (A) 45 ° counterclockwise to remove it from the headlight assembly.



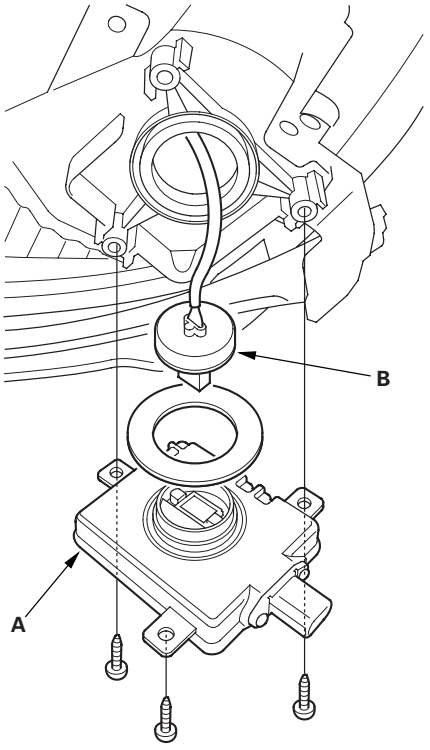
5. Turn the socket (A) 45 ° counterclockwise to remove it from the bulb (B).



6. Pull the retaining spring (C) away from the bulb then remove the bulb.
7. Install the new bulb in the reverse order of removal. Make sure the notches in the bulb align with the tabs in the headlight.
8. Install the parts in the reverse order of removal.
9. Do the battery terminal reconnection procedure (see page 22-68).

HID Unit Replacement

1. Turn the combination light switch OFF.
2. Make sure the ignition switch is in LOCK (0) position, then do the battery terminal disconnection procedure (see page 22-68).
3. Remove the headlight assembly (see page 22-174).
4. Remove the socket from the HID bulb (see page 22-168).
5. Remove the three mounting screws and the HID unit (A).



6. Disconnect the 4P connector (B) from the HID unit.
7. Install the HID unit in the reverse order of removal.
8. Do the battery terminal reconnection procedure (see page 22-68).

HID Lamp System Troubleshooting

⚠WARNING

A transient high tension (25,000 V) occurs at the bulb sockets or the high intensity discharge (HID) lamps when the combination light switch is turned ON, it may cause serious electrical shock or electrocution if you do not observe the cautions.

⚠CAUTION

- Never turn on the combination light switch before fitting the HID bulbs to their bulb sockets and completing the reassembly of the headlight assembly.
- Do not service the headlights assembly in wet conditions, such as rain or snow, near a sprinkler system, or when your hands are wet to prevent electrocution.
- Do not touch the surface of the HID bulbs with your bare hands and do not stain it with any oils and fats.
- Do not disassemble the inverter unit and the igniter unit.
- Do not turn on the HID bulb by using a power source other than the battery mounted on your vehicle.

Special Tools Required
HID bulb test light 07AAJ-S3MA100

NOTE: Before troubleshooting the HID Lamp System, do the multiplex integrated control system troubleshooting using B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Check the No. 16 (15 A), No. 17 (15 A), and No. 21 (30 A) fuses in the under-dash fuse/relay box.

   Are fuses OK?

   YES—Go to step 2.

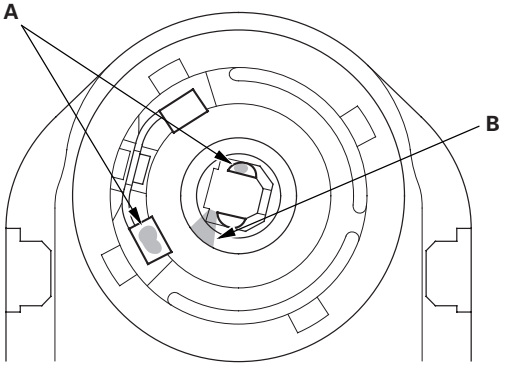
   NO—Replace the fuse(s), and recheck.■

2. Turn the combination light switch OFF.

3. Do the battery terminal disconnection procedure (see page 22-68).

4. Remove the socket from the HID bulb (see page 22-168).

5. Check for corrosion (A) and traces of electrical arcing (B) at the socket mating part.

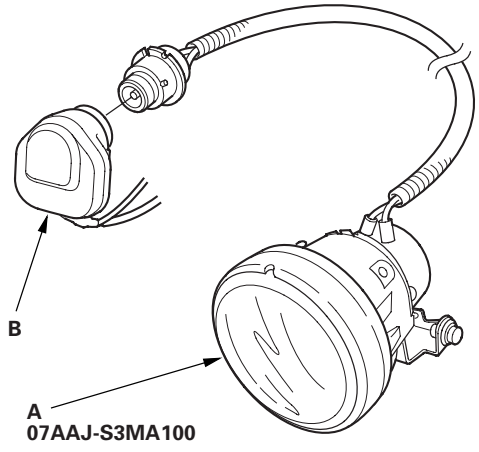


Is the socket corroded or burnt?

YES—Go to step 7.

NO—Replace the socket, and recheck.■

6. Connect the HID bulb test light (A) to the socket (B).



7. Do the battery terminal reconnection procedure (see page 22-68).

8. Turn the combination light (headlight) switch ON.

   Does the bulb in the test light come on?

   YES—Replace the original HID bulb (see page 22-168).■

   NO—Go to step 10.

9. Turn the combination light (headlight) switch OFF.

10. Do the battery terminal disconnection procedure (see page 22-68).

11. Disconnect the HID bulb test light from the socket.

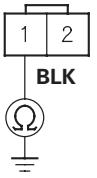
12. Do the battery terminal reconnection procedure (see page 22-68).

13. Disconnect the HID unit 2P connector.

14. Turn the combination light (headlight) switch ON.

15. Check for continuity between the HID unit 2P connector terminal No. 1 and body ground.

HID UNIT 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair an open in the wire between the HID unit and body ground. If the wire is OK, check for poor ground at G201 or G301.■

(cont'd)

HID Lamp System Troubleshooting (cont'd)

16. Measure the voltage between the HID unit 2P connector terminal No. 2 and body ground.

HID UNIT 2P CONNECTOR

Wire side of female terminals

Is there battery voltage?

YES—Substitute a known-good HID unit, and recheck. If the symptom/indication goes away, replace the original HID unit. ■

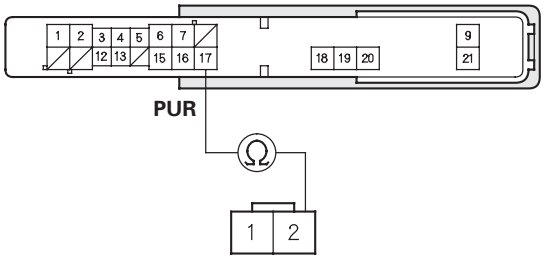
NO—Go to step 17.

17. Disconnect under-dash fuse/relay box connector G (21P)*1 and/or F (34P)*2.
    * 1: Left headlight
    * 2: Right headlight

18. Check for continuity between under-dash fuse/relay box G (21P) terminal No. 17 or F (34P) terminal No. 4 and HID unit 2P connector terminal No. 2.

LEFT HEADLIGHT

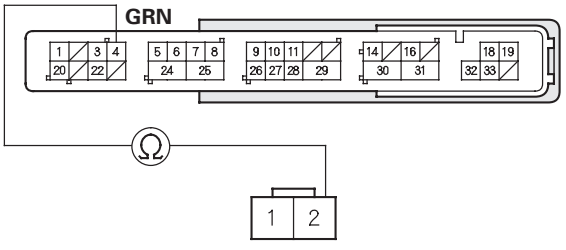
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)
Wire side of female terminals



HID UNIT 2P CONNECTOR (LEFT HEADLIGHT)
Wire side of female terminals

RIGHT HEADLIGHT

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)
Wire side of female terminals



HID UNIT 2P CONNECTOR (RIGHT HEADLIGHT)
Wire side of female terminals

Is there continuity?

YES—Replace the under-dash fuse/relay box. ■

NO—Repair an open in the wire between the under-hood fuse/relay box and the HID unit. ■

Headlight Adjustment

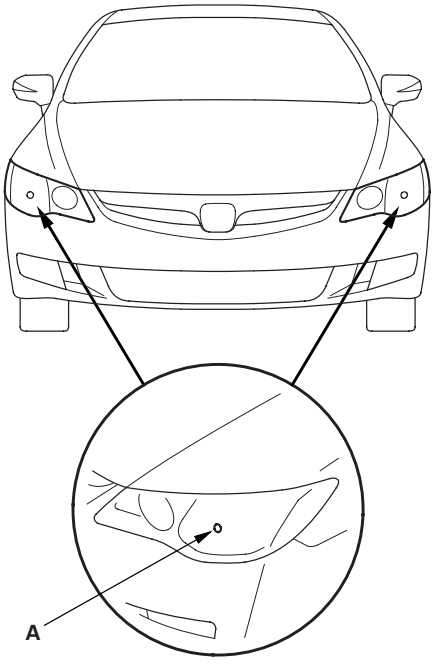
⚠CAUTION

Headlights become very hot during use; do not touch them or any attaching hardware immediately after they have been turned off.

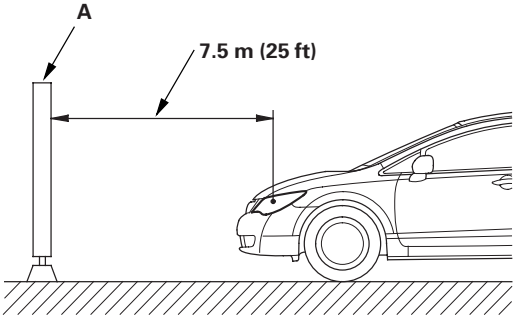
Before adjusting the headlights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weighs the same should sit in the driver's seat.

1. Clean the outer lens so that you can see the center (A) of the headlights.



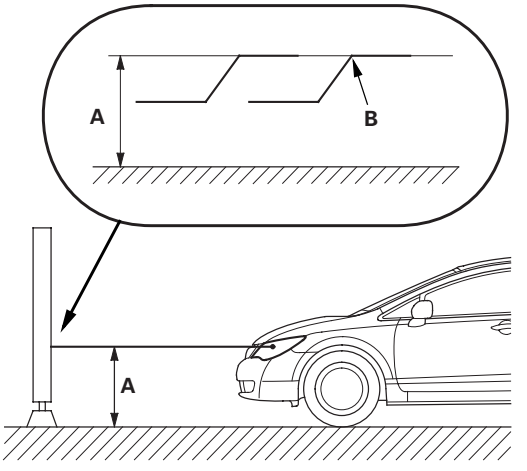
2. Park the vehicle in front of a wall or a screen (A).



3. Turn the low beams on.

4. Determine if the headlights are aimed properly.

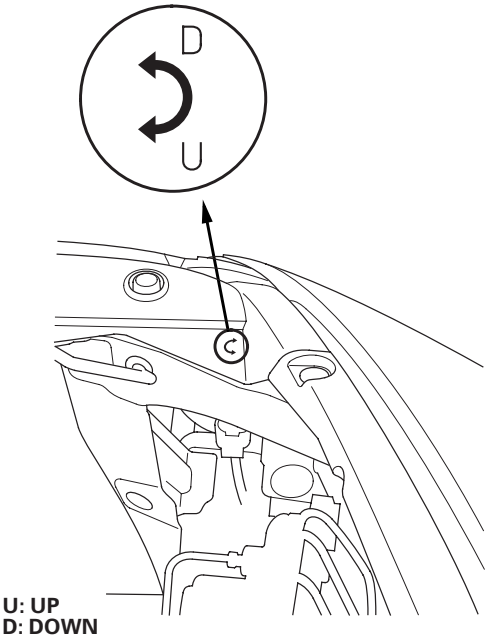
   Vertical adjustment:
   Measure the height of the headlights (A).
   Adjust the cut line (B) to the lights height.



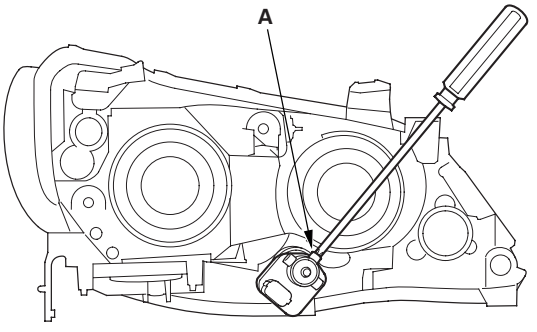
(cont'd)

Headlight Adjustment (cont'd)

5. If necessary, open the hood and adjust the headlights to local requirements by turning the adjusters (A).



U: UP
D: DOWN



The illustration is shown from back side of left headlight.

Headlight Replacement

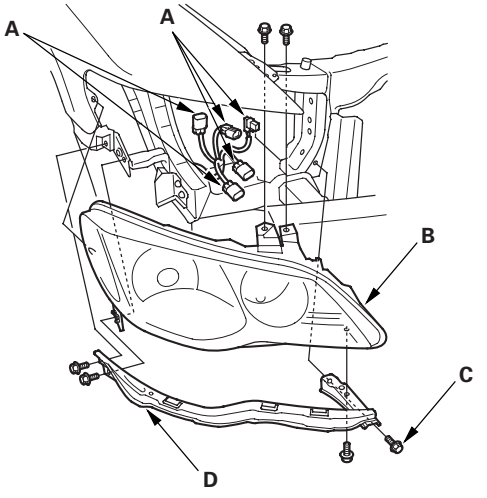
⚠ WARNING

A transient high tension (25,000 V) occurs at the bulb sockets or the high intensity discharge (HID) lamps when the combination light switch is turned ON, it may cause serious electrical shock or electrocution if you do not observe the cautions.

⚠ CAUTION

Do not service the headlights assembly in wet conditions, such as rain or snow, near a sprinkler system, or when your hands are wet to prevent electrocution.

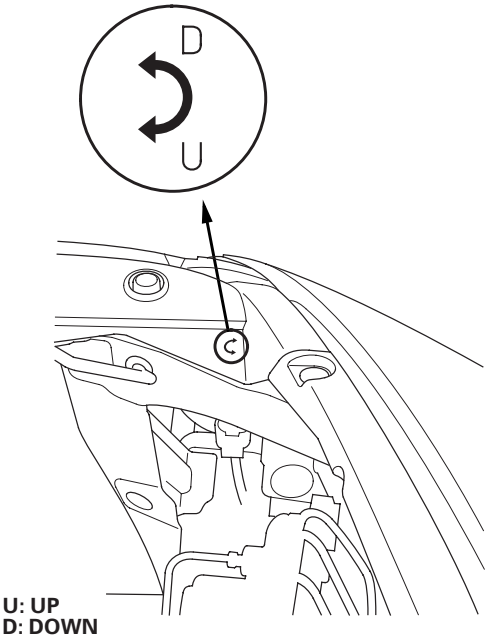
1. Remove the front bumper (see page 20-146).
2. Remove the connectors (A) from the headlight assembly (B).



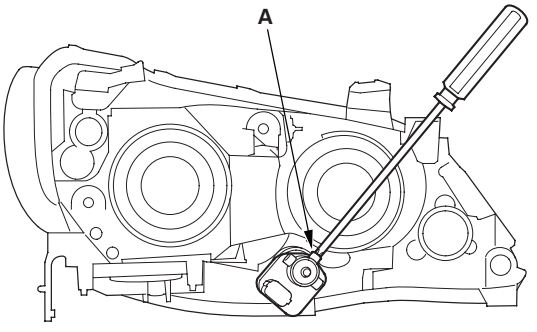
3. Remove the five bolts, then remove the headlight.
4. Remove the bolt (C) and the corner upper beam (D) from the headlight.
5. Install the headlight in the reverse order of removal.
6. After replacement, adjust the headlight to local requirements.

Headlight Adjustment (cont'd)

5. If necessary, open the hood and adjust the headlights to local requirements by turning the adjusters (A).



U: UP
D: DOWN



The illustration is shown from back side of left headlight.

Headlight Replacement

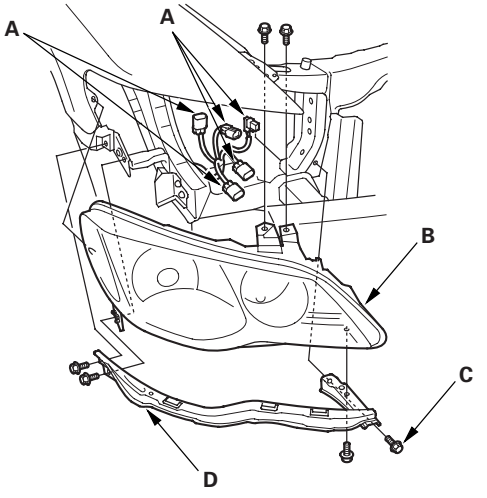
⚠ WARNING

A transient high tension (25,000 V) occurs at the bulb sockets or the high intensity discharge (HID) lamps when the combination light switch is turned ON, it may cause serious electrical shock or electrocution if you do not observe the cautions.

⚠ CAUTION

Do not service the headlights assembly in wet conditions, such as rain or snow, near a sprinkler system, or when your hands are wet to prevent electrocution.

1. Remove the front bumper (see page 20-146).
2. Remove the connectors (A) from the headlight assembly (B).

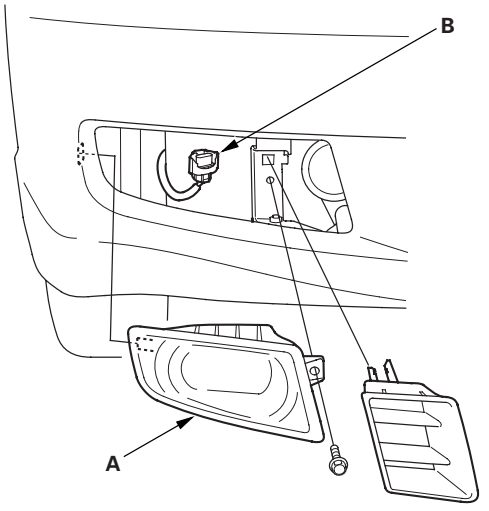


3. Remove the five bolts, then remove the headlight.
4. Remove the bolt (C) and the corner upper beam (D) from the headlight.
5. Install the headlight in the reverse order of removal.
6. After replacement, adjust the headlight to local requirements.

Fog Light Replacement

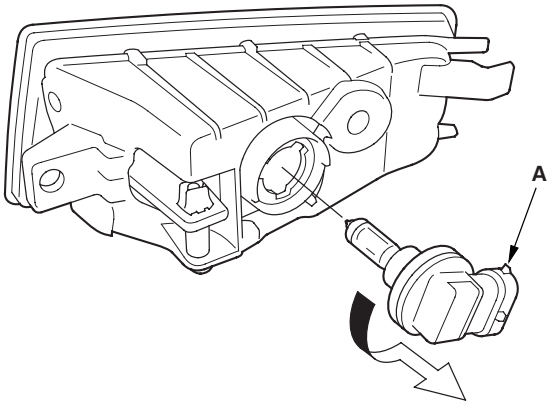
'07-08 models

1. Remove the fog light cover.
2. Remove the mounting screw from the fog light.
3. Remove the fog light (A) from the front bumper.



4. Disconnect the 2P connector (B) from the fog light.
5. Turn the bulb socket (A) 60 ° counterclockwise to remove it from the housing.

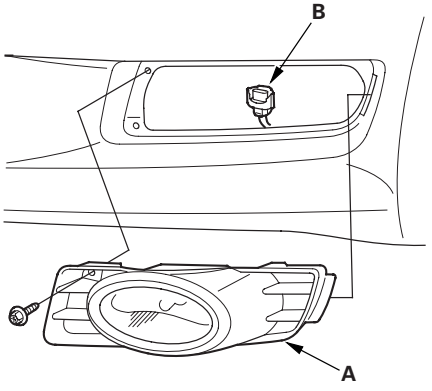
FOG LIGHT: 55 W



6. Install the fog light in the reverse order of removal.
7. After replacement, adjust the fog lights to local requirements (see page 22-176).

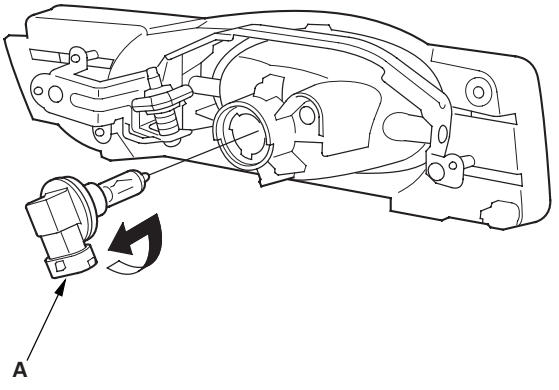
'09 model

1. Remove the mounting screw from the fog light.
2. Remove the fog light (A) from the front bumper.



3. Disconnect the 2P connector (B) from the fog light.
4. Turn the bulb socket (A) 60 ° counterclockwise to remove it from the housing.

FOG LIGHT: 55 W



5. Install the fog light in the reverse order of removal.
6. After replacement, adjust the fog lights to local requirements (see page 22-176).

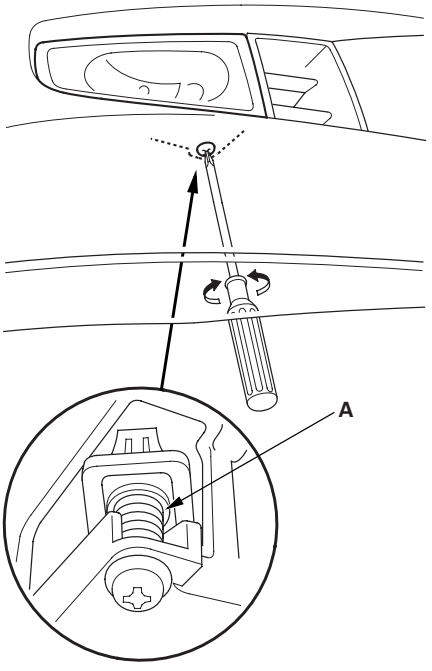
Fog Light Adjustment

Before adjusting the fog lights:

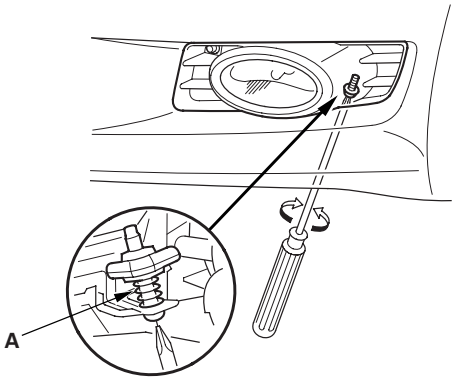
- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weights the same should sit in the driver's seat.

Adjust the fog lights to local requirements by turning the adjuster (A).

'07-08 models



'09 model



Bulb Replacement

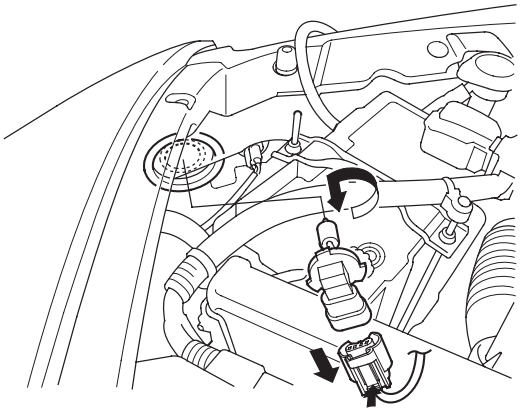
Headlight

1. For low beam *: Remove the inner fender (see page 20-171).
   *: Without HID

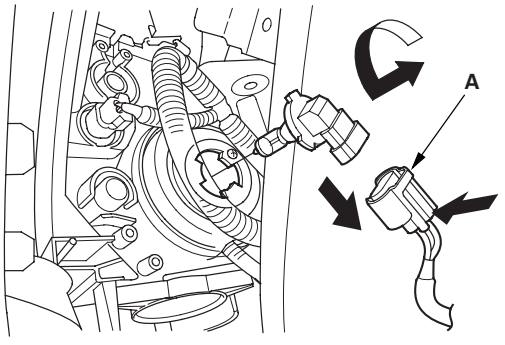
2. Disconnect the 2P connector (A) from the headlight.

   Headlight (High Beam): 60 W
   Headlight (Low Beam)*: 51 W
   ***: Without HID**

   High



   Low



3. Turn the bulb socket 45 ° counterclockwise to remove the bulb.

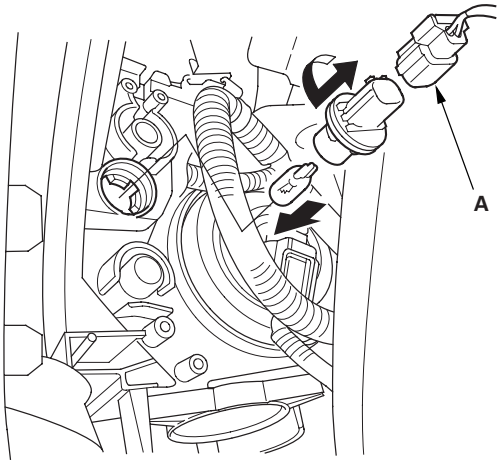
4. Install a new bulb in the reverse order of removal.

Front Side Marker Light

1. Remove the inner fender (see page 20-171).

2. Disconnect the 2P connector (A) from the front side marker light.

   Front Side Marker Light: 2 CP



3. Turn the bulb socket 45 ° counterclockwise to remove the bulb.

4. Install a new bulb in the reverse order of removal.

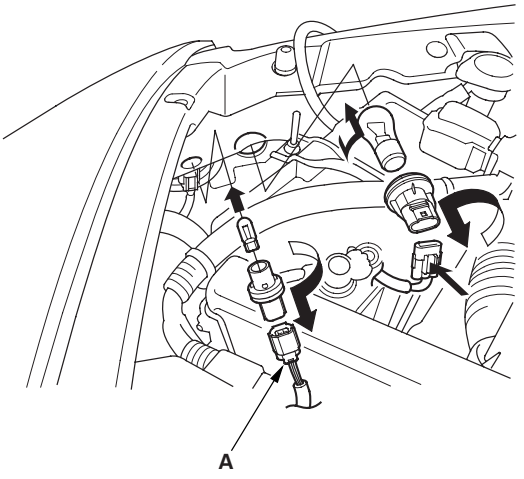
(cont'd)

Bulb Replacement (cont'd)

Front Parking Light

1. Disconnect the 2P connector (A) from the front parking light.

   Front Parking Light: 3 CP



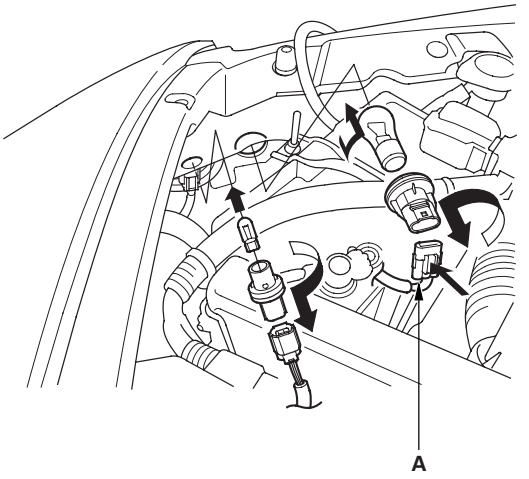
2. Turn the bulb socket 45 ° counterclockwise to remove the bulb.

3. Install a new bulb in the reverse order of removal.

Front Turn Signal Light

1. Disconnect the 3P connector (A) from the front turn signal light.

   Front Turn Signal Light: 24/2.2 CP



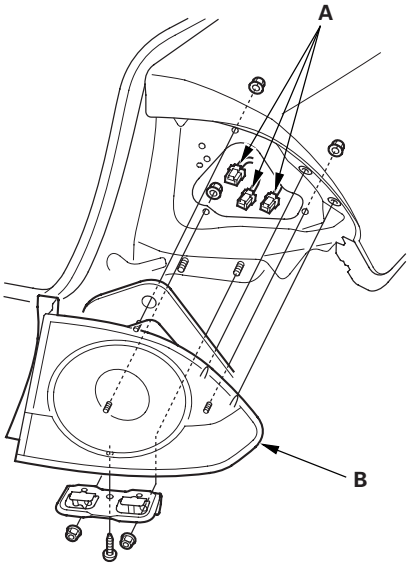
2. Turn the bulb socket 45 ° counterclockwise to remove the bulb.

3. Install a new bulb in the reverse order of removal.

Taillight Replacement

1. Remove the rear bumper (see page 20-149).
2. Disconnect the connectors (A) from the taillights (B).

Brake Lights/Taillights: 21/5 W
Rear Turn Signal Light: 21 W
Rear Side Marker Light: 3 CP

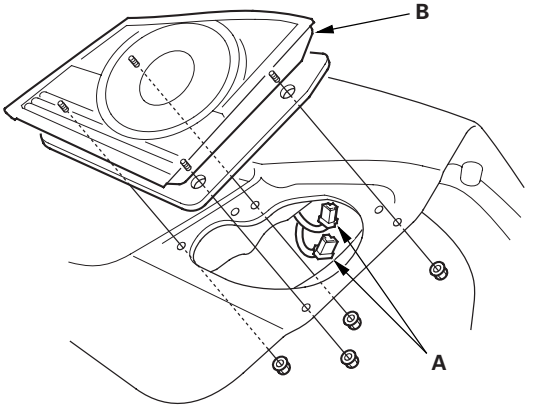


3. Turn the bulb sockets 45 ° counterclockwise to remove the bulbs.
4. Remove the nuts and screws, then remove the taillight.
5. Install the taillight in the reverse order of removal.

Inner Taillight Replacement

1. Remove the trunk lid trim (see page 20-82).
2. Disconnect the connectors (A) from the inner taillight (B).

Taillight: 5 W
Back-up Light: 16 W

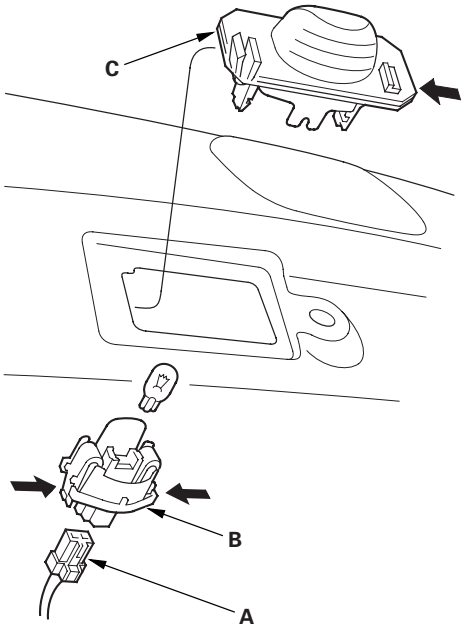


3. Turn the bulb sockets 45 ° counterclockwise to remove the bulbs.
4. Remove the nuts, then remove the taillight.
5. Install the inner taillight in the reverse order of removal.

License Plate Light Replacement

1. Open the trunk lid, and remove the rear license trim (see page 20-168).
2. Disconnect the 2P connector (A) from the license plate light.

   License Plate Light: 5 W



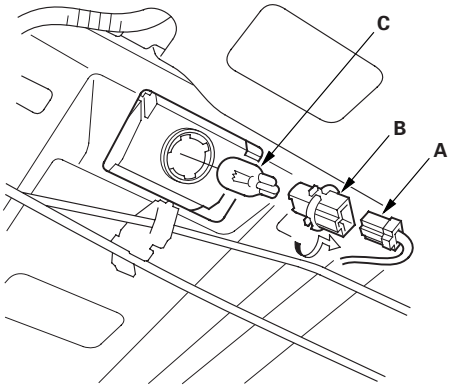
3. Release the bulb socket (B) from the lens (C) by pressing on the tabs.
4. Remove the lens from the trunk lid by pressing on the tabs.
5. Install the license plate light in the reverse order of removal.

High Mount Brake Light Replacement

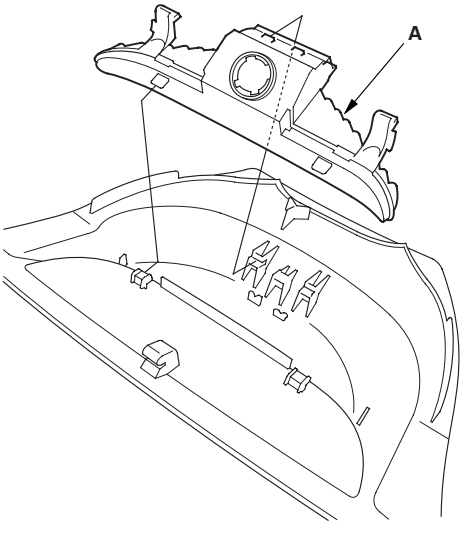
Except TYPE S model

1. Open the trunk lid.
2. Disconnect the 2P connector (A) from the high mount brake light.

   High Mount Brake Light: 21 W



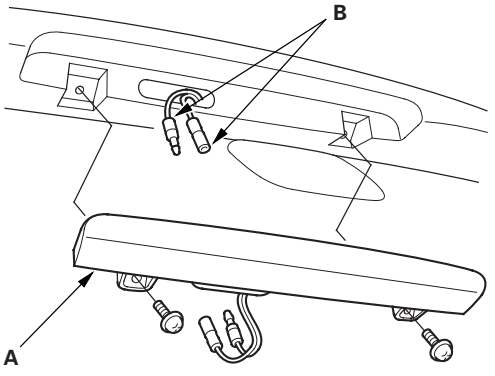
3. Turn the bulb socket (B) 45 ° counterclockwise to remove the bulb (C).
4. Remove the rear shelf (see page 20-78).
5. Remove the high mount brake light (A).



6. Install the high mount brake light in the reverse order of removal.

TYPE S model

1. Remove the two screws from the high mount brake light (A).

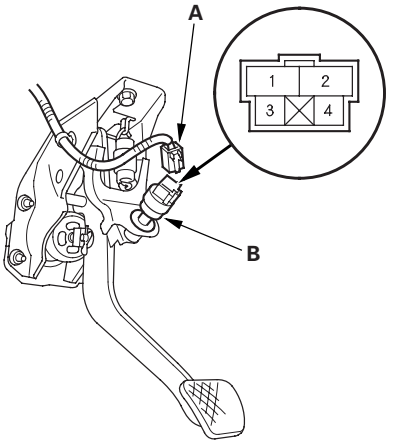


2. Disconnect the terminals (B) and remove the high mount brake light.

3. Install the high mount brake light in the reverse order of removal.

Brake Pedal Position Switch Test

1. Disconnect the 4P connector (A) from the brake pedal position switch (B).



2. Check for continuity between terminals No. 1 and No. 2.

   - There should be continuity when the brake pedal is pressed.
   - There should be no continuity when the brake pedal is released.

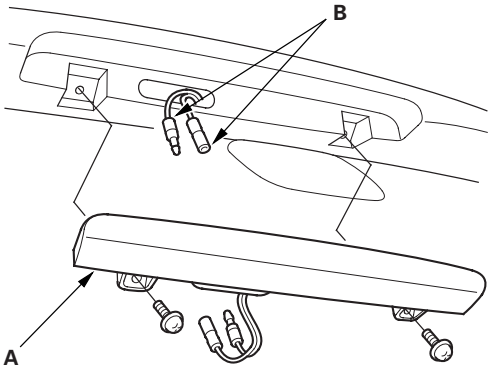
3. Check for continuity between terminals No. 3 and No. 4 (with cruise control).

   - There should be no continuity when the brake pedal is pressed.
   - There should be continuity when the brake pedal is released.

4. If necessary, adjust or replace the switch, or adjust the pedal height (see page 19-6).

TYPE S model

1. Remove the two screws from the high mount brake light (A).

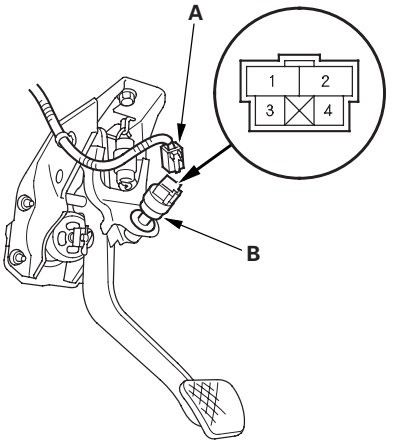


2. Disconnect the terminals (B) and remove the high mount brake light.

3. Install the high mount brake light in the reverse order of removal.

Brake Pedal Position Switch Test

1. Disconnect the 4P connector (A) from the brake pedal position switch (B).



2. Check for continuity between terminals No. 1 and No. 2.

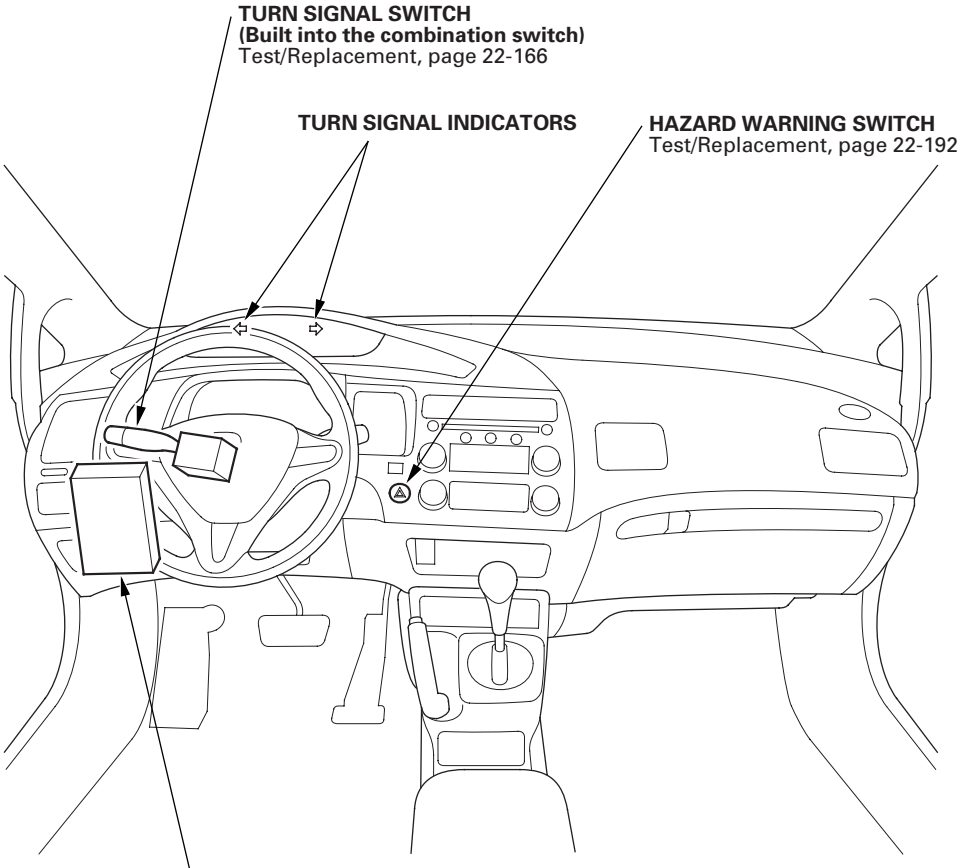
   - There should be continuity when the brake pedal is pressed.
   - There should be no continuity when the brake pedal is released.

3. Check for continuity between terminals No. 3 and No. 4 (with cruise control).

   - There should be no continuity when the brake pedal is pressed.
   - There should be continuity when the brake pedal is released.

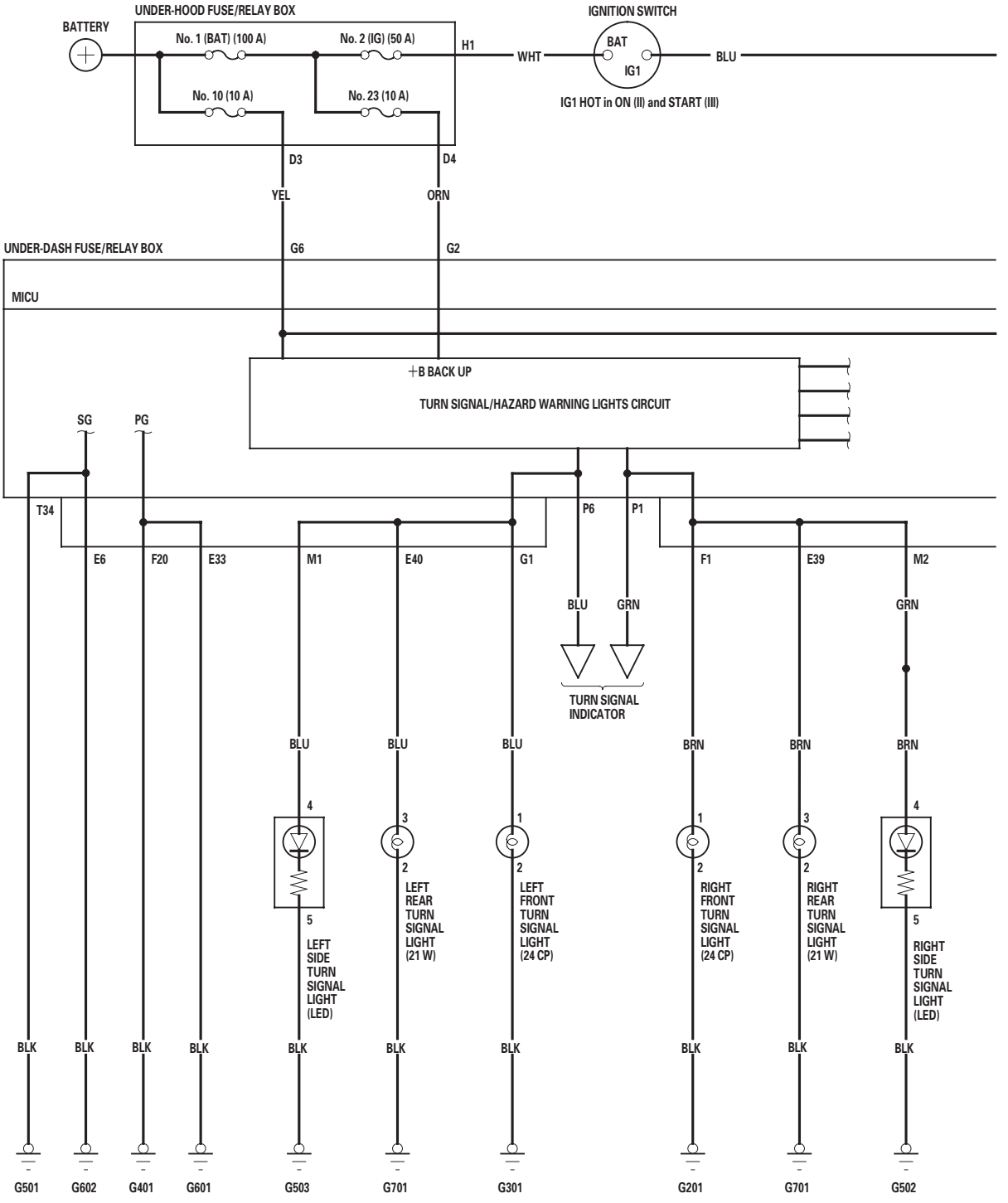
4. If necessary, adjust or replace the switch, or adjust the pedal height (see page 19-6).

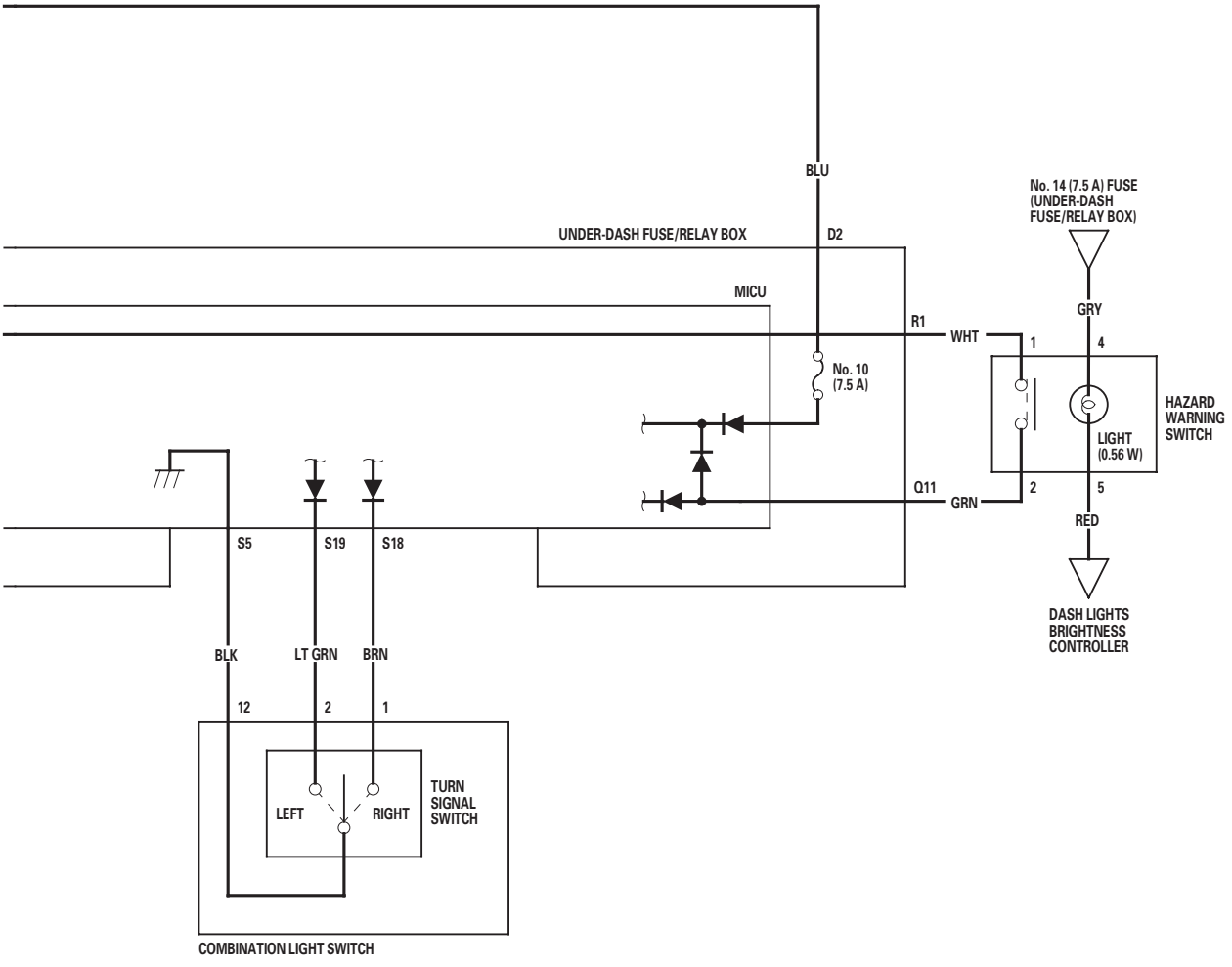
Component Location Index



Turn Signal/Hazard Warning Lights

Circuit Diagram




BLU
No. 14 (7.5 A) FUSE
(UNDER-DASH
FUSE/RELAY BOX)
UNDER-DASH FUSE/RELAY BOX
D2
MICU
GRY
R1
WHT
1
4
No. 10
(7.5 A)
HAZARD
WARNING
SWITCH
LIGHT
(0.56 W)
Q11
GRN
2
5
RED
S5
S19
S18
DASH LIGHTS
BRIGHTNESS
CONTROLLER
BLK
LT GRN
BRN
12
2
1
TURN
SIGNAL
SWITCH
LEFT
RIGHT
COMBINATION LIGHT SWITCH

DTC Troubleshooting

DTC B1280: Turn Signal Switch Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0) and then back to ON (II).
3. Operate the turn signal switch in left and right positions, and wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1280 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■
5. Select LIGHTING from the BODY ELECTRICAL system select menu, then enter DATA LIST.
6. Check each turn signal switch position value with the DATA LIST menu.

   When the turn signal switch is in left position

Data List	Value
Turn Signal Switch (LEFT)	ON
Turn Signal Switch (RIGHT)	OFF

   When the turn signal switch is in right position

Data List	Value
Turn Signal Switch (LEFT)	OFF
Turn Signal Switch (RIGHT)	ON

   Are all data list values correct?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Go to step 7.
7. Disconnect the combination light switch 12P connector.
8. Check each turn signal switch position value with the DATA LIST menu.

   When the turn signal switch is in left position

Data List	Value
Turn Signal Switch (LEFT)	ON
Turn Signal Switch (RIGHT)	OFF

   When the turn signal switch is in right position

Data List	Value
Turn Signal Switch (LEFT)	OFF
Turn Signal Switch (RIGHT)	ON

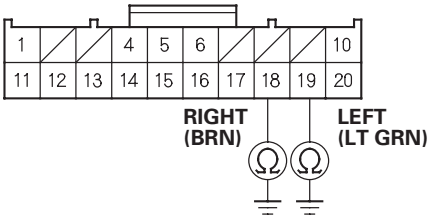
   Do both values now showing OFF?

   YES—Replace the combination light switch (see page 22-166). ■

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Disconnect under-dash fuse/relay box connector S (20P).

11. Check for continuity between body ground and under-dash fuse/relay box connector S (20P) terminals No. 18 and No. 19 individually.

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



Wire side of female terminals

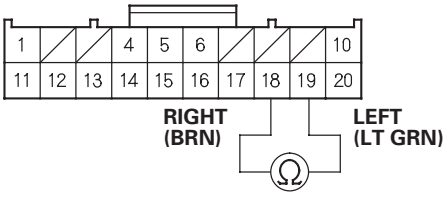
Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Go to step 12.

12. Check for continuity between under-dash fuse/relay box connector S (20P) terminals No. 18 and No. 19.

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



Wire side of female terminals

Is there continuity?

YES—Repair a short between the wires. ■

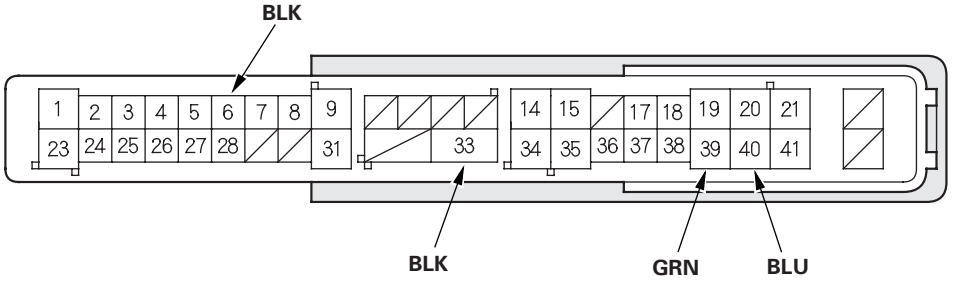
NO—Replace the combination light switch. ■

MICU Input Test

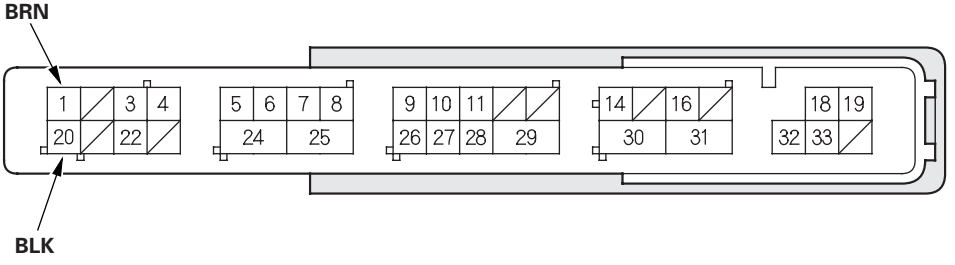
1. Before troubleshooting the turn signal/hazard warning lights system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93).
2. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is blown, replace it and go to step 3.
3. Disconnect under-dash fuse/relay box connectors E, F, G, M, P, Q, R, S, and T.

   NOTE: All connector views are shown from wire side of female terminals.

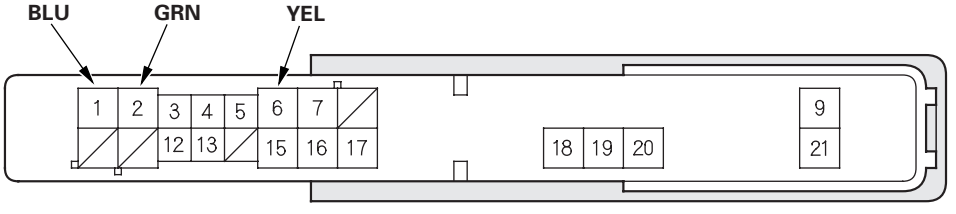
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



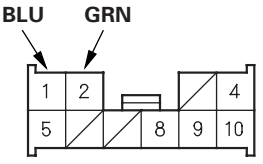
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



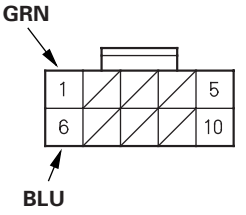
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)



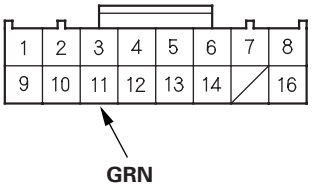
UNDER-DASH FUSE/RELAY BOX
CONNECTOR M (10P)



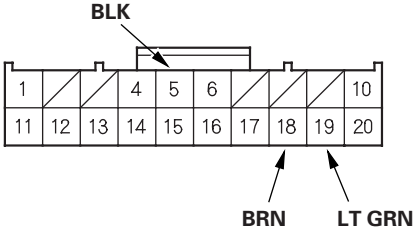
UNDER-DASH FUSE/RELAY BOX
CONNECTOR P (10P)



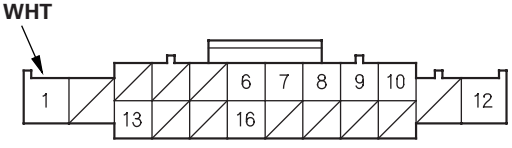
UNDER-DASH FUSE/RELAY BOX
CONNECTOR Q (16P)



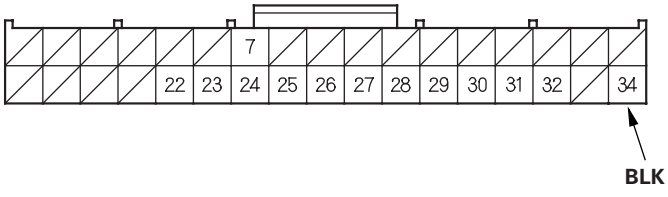
UNDER-DASH FUSE/RELAY BOX
CONNECTOR S (20P)



UNDER-DASH FUSE/RELAY BOX
CONNECTOR R (20P)



UNDER-DASH FUSE/RELAY BOX
CONNECTOR T (34P)



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

(cont'd)

MICU Input Test (cont'd)

5. With the connectors still disconnected, do these input tests at the following connectors.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result desired is not obtained
E39	BRN	Under all conditions	Connect terminals G2 and E39 with a jumper wire: The right rear turn signal light should come on.	• Poor ground (G701) • Blown bulb • An open in the wire
E40	BLU	Under all conditions	Connect terminals G2 and E40 with a jumper wire: The left rear turn signal light should come on.	• Poor ground (G701) • Blown bulb • An open in the wire
F1	BRN	Under all conditions	Connect terminals G2 and F1 with a jumper wire: The right front turn signal light should come on.	• Poor ground (G201) • Blown bulb • An open in the wire
G1	BLU	Under all conditions	Connect terminals G2 and G1 with a jumper wire: The left front turn signal light should come on.	• Poor ground (G301) • Blown bulb • An open in the wire
M1	BLU	Under all conditions	Connect terminals G2 and M1 with a jumper wire: The left side turn signal light should come on.	• Poor ground (G503) • Blown LED • An open in the wire
M2	GRN	Under all conditions	Connect terminals G2 and M2 with a jumper wire: The right side turn signal light should come on.	• Poor ground (G502) • Blown LED • An open in the wire
P1	GRN	Under all conditions	Connect terminals G2 and P1 with a jumper wire: The right turn signal indicator should come on.	• Poor ground (G504) • Faulty gauge control module (speedo) • An open in the wire
P6	BLU	Under all conditions	Connect terminals G2 and P6 with a jumper wire: The left turn signal indicator should come on.	• Poor ground (G504) • Faulty gauge control module (speedo) • An open in the wire

6. Reconnect connectors to the under-dash fuse/relay box, and do these input tests at the following connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

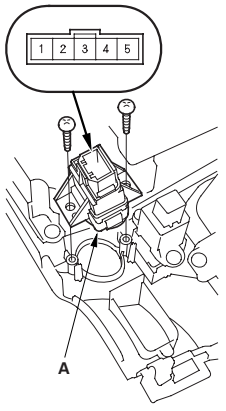
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
G2	ORN	Under all conditions	Measure the voltage between terminal G2 and body ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
G6	YEL	Under all conditions	Measure the voltage between terminal G6 and body ground: There should be battery voltage.	• Blown No. 10 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
E6	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
R1	WHT	Under all conditions	Measure the voltage to ground: There should be battery voltage.	Faulty under-dash fuse/relay box
Q11	GRN	Hazard warning switch ON	Measure the voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • Faulty hazard warning switch • An open in the wire
S18 · S5	BRN · BLK	Turn signal switch in right position	Measure the voltage between terminals S18 and S5: There should be less than 0.5 V.	• Faulty combination light switch • An open in the wire
		Turn signal switch in left or neutral position	Measure the voltage between terminals S18 and S5: There should be 5 V or more.	• Faulty combination light switch • A short to ground in the wire
S19 · S5	LT GRN · BLK	Turn signal switch in left position	Measure the voltage between terminals S19 and S5: There should be less than 0.5 V.	• Faulty combination light switch • An open in the wire
		Turn signal switch in right or neutral position	Measure the voltage between terminals S19 and S5: There should be 5 V or more.	• Faulty combination light switch • A short to ground in the wire

Hazard Warning Switch Test/ Replacement

1. Remove the center panel.

   - With audio:
     – '06-08 models (see page 23-80)
     – '09 model (see page 23-256)
   - With navigation:
     – '06-08 models (see page 23-155)
     – '09 model (see page 23-355)

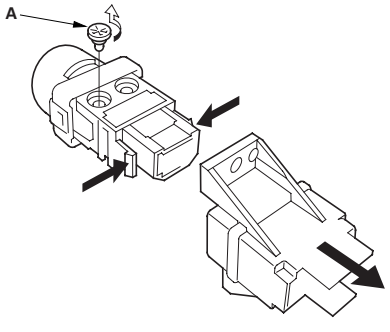
2. Remove the screws and the hazard warning switch (A).



3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	1	2	4		5
OFF			○	○	○
ON	○	○	○	○	○

4. If the continuity is not as specified, replace the bulb (A) or the hazard warning switch.

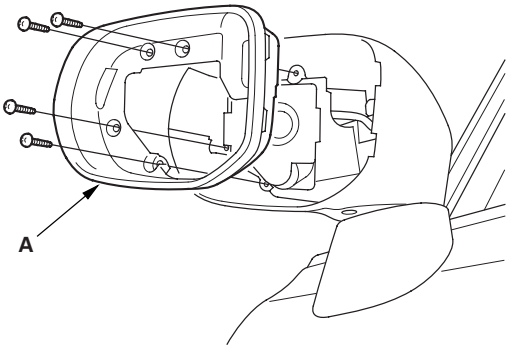


5. Install the hazard warning switch in the reverse order of removal.

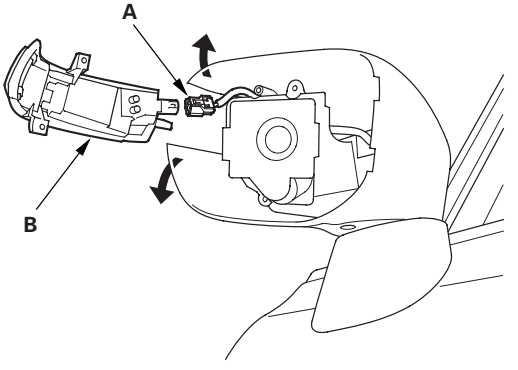
Side Turn Signal Light Replacement

1. Remove the mirror holder (see page 20-34).

2. Remove the four screws and the mirror visor (A).



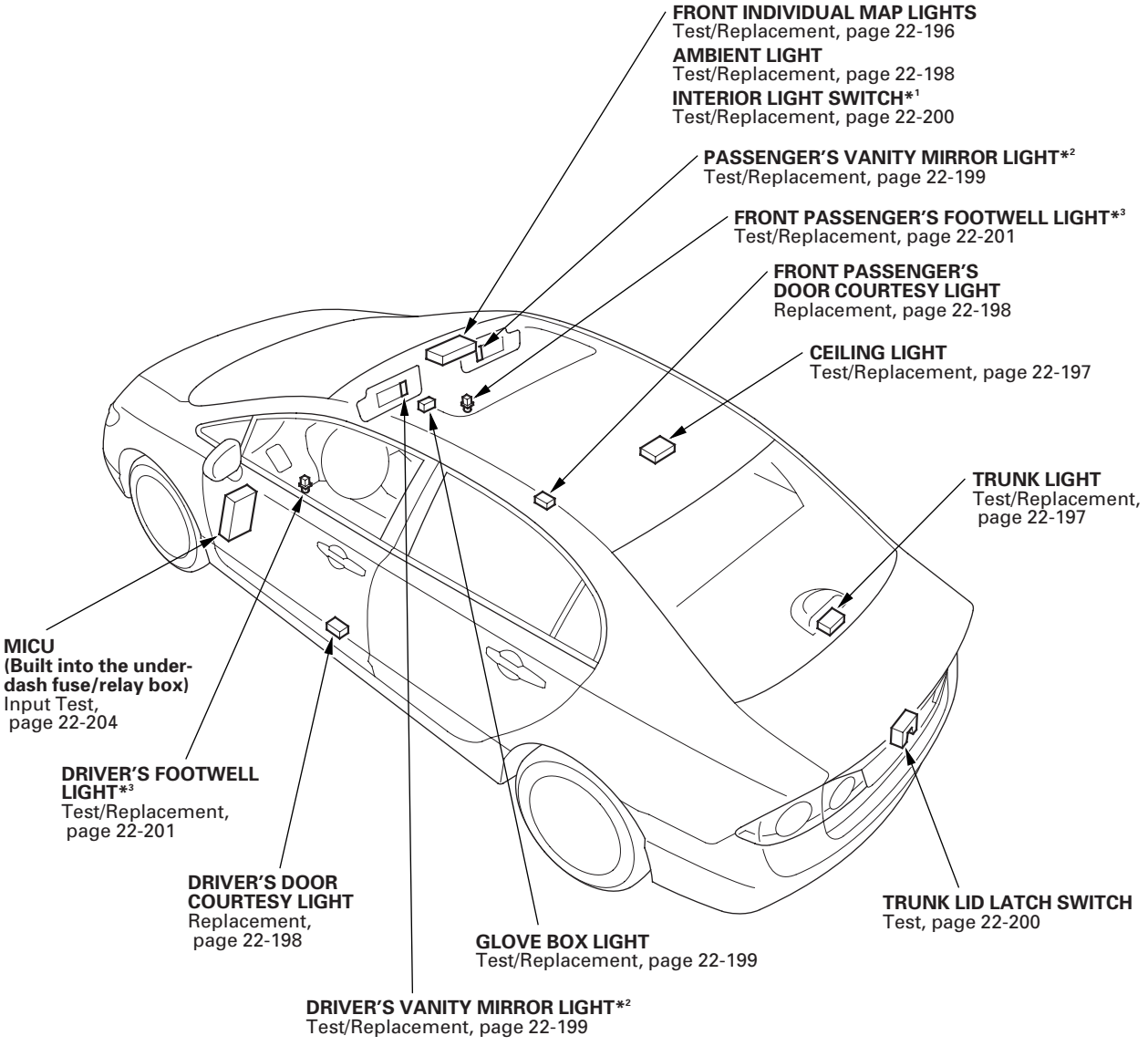
3. Disconnect the 2P connector (A) from the side turn signal light (B), then remove the side turn signal light.



4. Install the side turn signal light in the reverse order of removal.

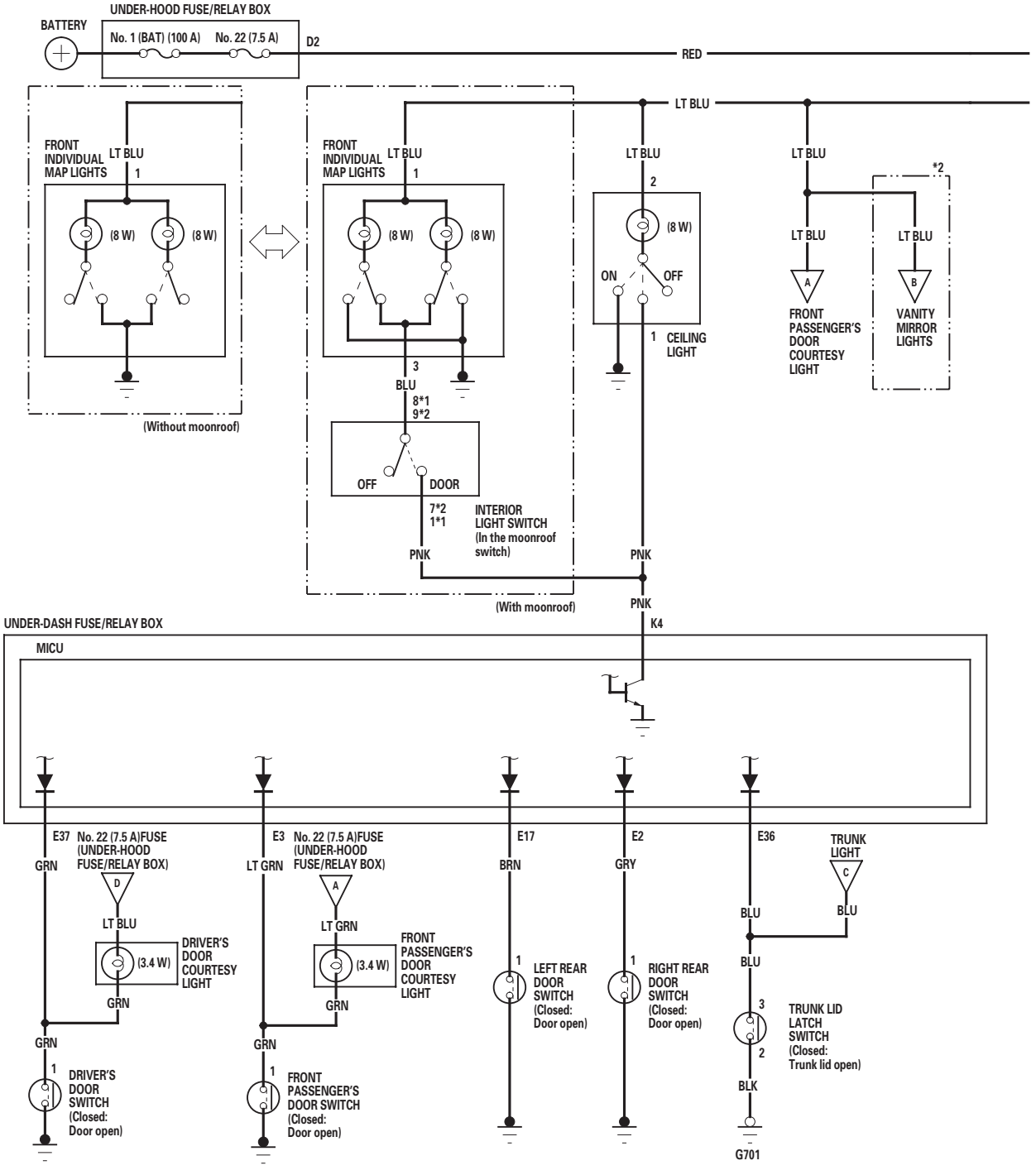
Interior Lights

Component Location Index

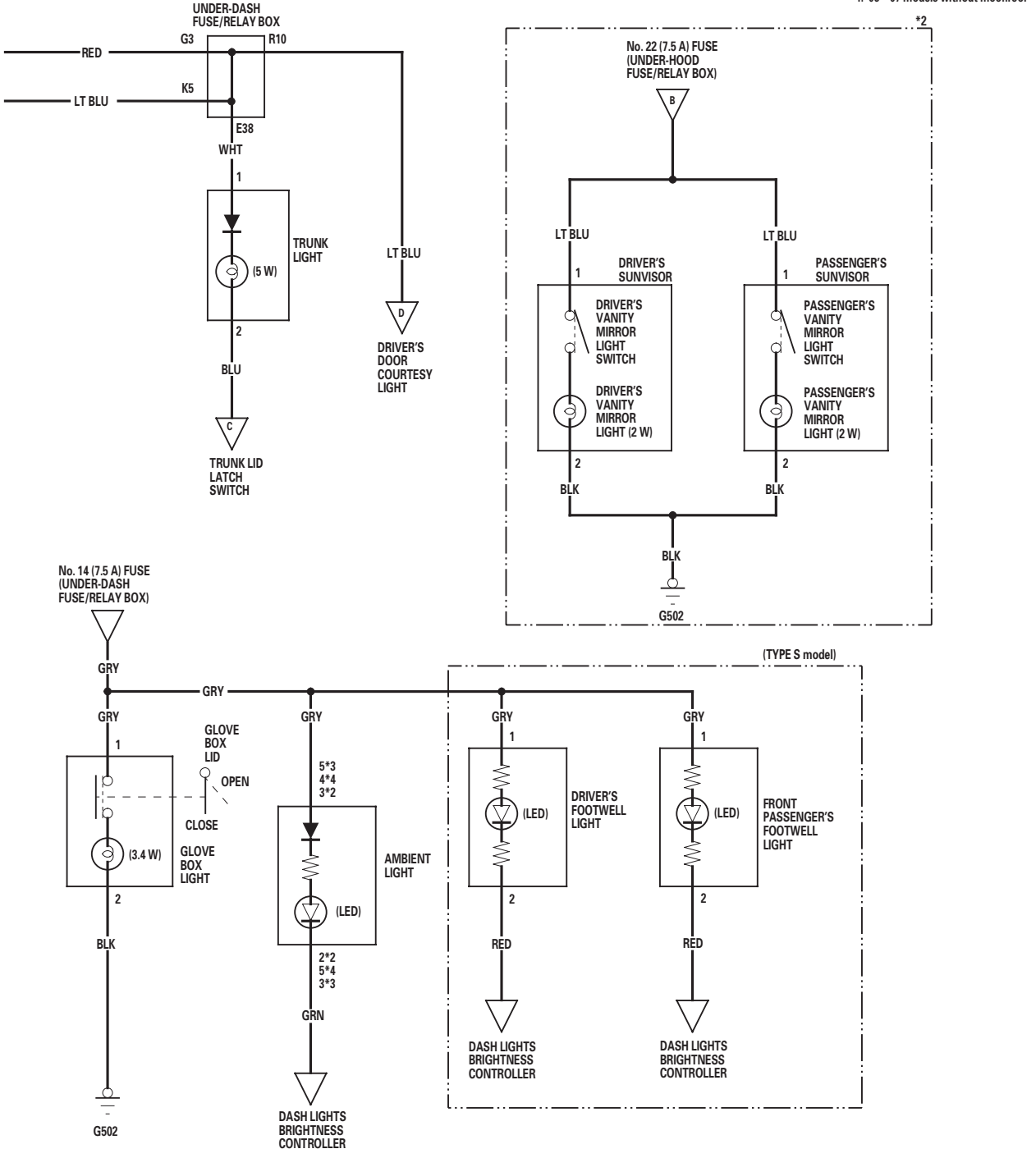


*1: With moonroof
*2: '08-09 models
*3: TYPE S model

Circuit Diagram



*1: '06—07 models
*2: '08—09 models
*3: '06—07 models with moonroof
*4: '06—07 models without moonroof

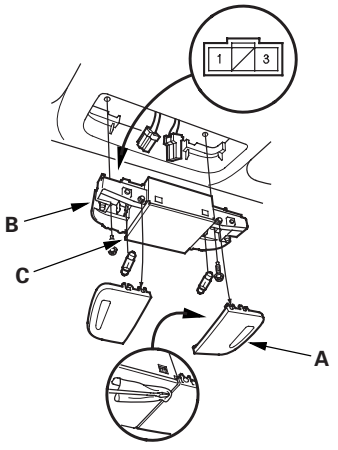


Front Individual Map Light Test/Replacement

With moonroof

1. Turn the map light switch OFF.
2. Carefully pry the lens (A) off with a small screwdriver.

Front Individual Map Light: 8 W x 2



3. Remove the screws, then remove the map lights (B) and moonroof switch or navigation microphone (C).
4. Disconnect the 3P connector from the map lights and the 10P connector from the moonroof switch or navigation microphone.
5. Check for continuity between the terminals in each switch position according to the table.

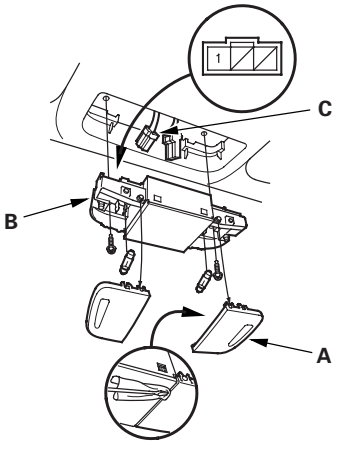
Position		Terminal 1		3	Body ground
RIGHT	ON	○	○		○
	OFF	○	○	○	
LEFT	ON	○	○		○
	OFF	○	○	○	

6. If the continuity is not as specified, check the bulb(s). If the bulb(s) are OK, replace the light assembly.
7. Install the map light in the reverse order of removal.

Without moonroof

1. Turn the map light switch OFF.
2. Carefully pry the lens (A) off with a small screwdriver.

Front Individual Map Light: 8 W x 2



3. Remove the screws, then remove the map lights (B).
4. Disconnect the 3P connector (C) from the map lights.
5. Check for continuity between the terminals in each switch position according to the table.

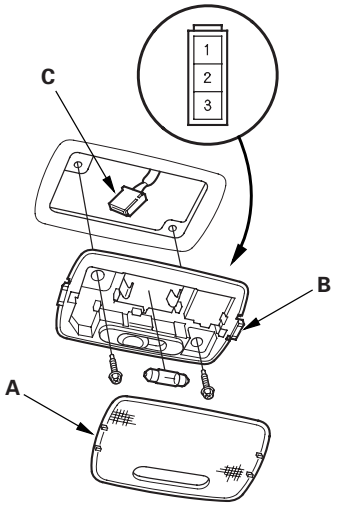
Position		Terminal 1		Body ground
RIGHT	ON	○	○	○
	OFF			
LEFT	ON	○	○	○
	OFF			

6. If the continuity is not as specified, check the bulb(s). If the bulb(s) are OK, replace the light assembly.
7. Install the map light in the reverse order of removal.

Ceiling Light Test/Replacement

1. Turn the ceiling light switch OFF.
2. Carefully pry the lens (A) off with a small screwdriver.

   Ceiling Light: 8 W

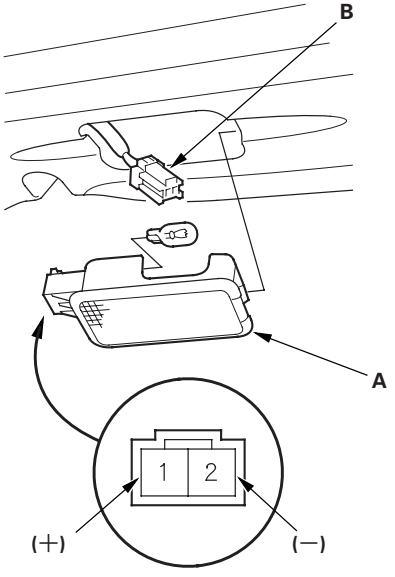


3. Remove the screws, then remove the ceiling light (B).
4. Disconnect the 3P connector (C) from the ceiling light.
5. Check for continuity between the terminals.
   - There should be continuity between terminals No. 1 and No. 2 with the switch in the MIDDLE position.
   - There should be continuity between terminals No. 2 and No. 3 (Body ground) with the switch in the ON position.
   - There should be no continuity between terminals No. 1 and No. 2, and between No. 2 and body ground with the switch in the OFF position.
6. If the continuity is not as specified, check the bulb. If the bulb is OK, replace the light.
7. Install the ceiling light in the reverse order of removal.

Trunk Light Test/Replacement

1. Open the trunk lid.
2. Carefully pry out the trunk light (A).

   Trunk Light: 5 W

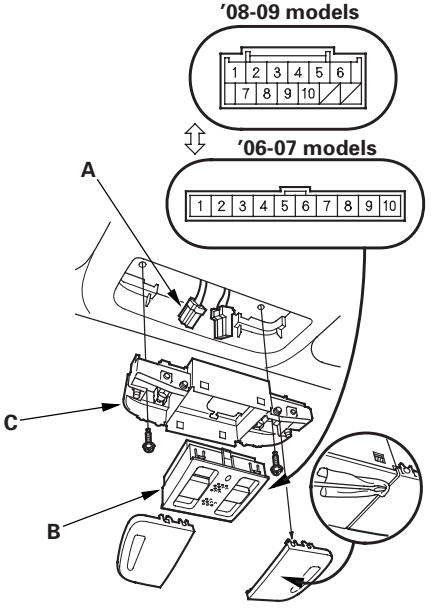


3. Disconnect the 2P connector (B) from the light.
4. Check for continuity between terminals No. 1 (+) and No. 2 (−). There should be continuity. If there is no continuity, check the bulb. If the bulb is OK, replace the trunk light assembly.
5. Install the trunk light in the reverse order of removal.

Ambient Light Test/Replacement

1. Remove the front individual map light.
   - With moonroof (see page 22-196)
   - Without moonroof (see page 22-196)
2. Disconnect the 10P*1 (or 12P*2) connector (A) from the ambient light (B), then remove the ambient light from the front individual map light housing (C).

   * 1: '06-07 models
   * 2: '08-09 models

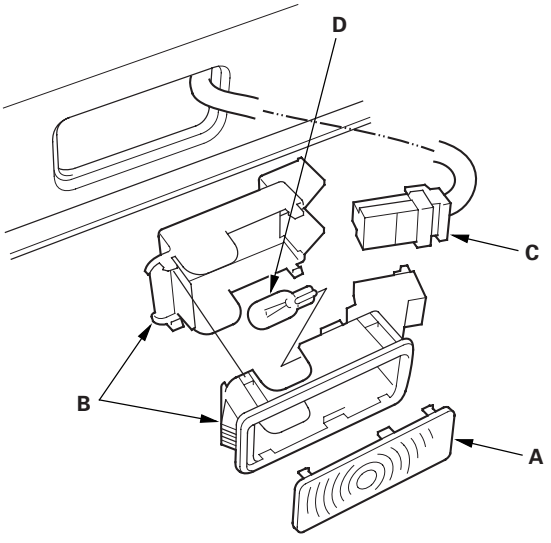


3. Connect battery power to the terminal No. 5 and ground to the No. 3 terminal. The ambient light should turn on. If the light does not turn on, replace the ambient light.
4. Install the ambient light in the reverse order of removal.

Courtesy Light Replacement

1. Carefully pry off the lens (A) with a small screwdriver.

   Courtesy light: 3.4 W

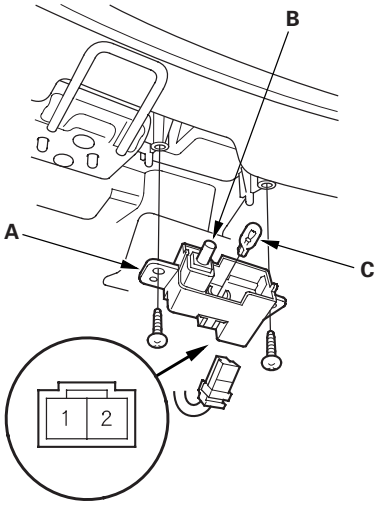


2. Pry out the housing (B) from the door panel, then disconnect the 2P connector (C).
3. Separate the housing, then remove the bulb (D) from the socket.
4. Install the courtesy light in the reverse order of removal.

Glove Box Light Test/Replacement

1. Open the glove box.
2. Remove the screws, then disconnect the 2P connector from the glove box light (A).

   Glove Box Light: 3.4 W



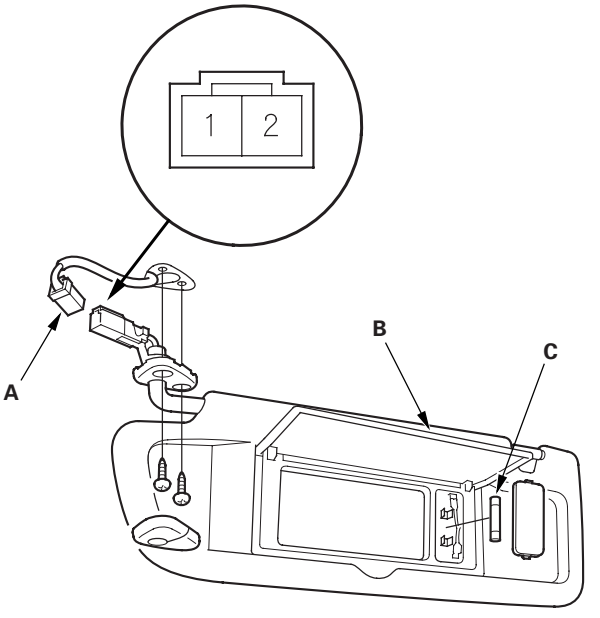
3. Check for continuity between terminals No. 1 and No. 2.
   - There should be continuity with the switch (B) released.
   - There should be no continuity with the switch (B) pushed.
4. If the continuity is not as specified, check the bulb (C). If the bulb is OK, replace the light.
5. Install the glove box light in the reverse order of removal.

Vanity Mirror Light Test/ Replacement

'08-09 models

1. Open the sunvisor.
2. Remove the sunvisor (see page 20-84).
3. Disconnect the 2P connector (A) from the vanity mirror light.

   Vanity Mirror Light: 2 W



4. Check for continuity between terminals No. 1 and No. 2.
   - With the vanity mirror cover (B) opened, there should be continuity.
   - With the vanity mirror cover closed, there should be no continuity.
5. If the continuity is not as specified, replace the bulb (C) or the sunvisor.
6. Install the vanity mirror light in the reverse order of removal.

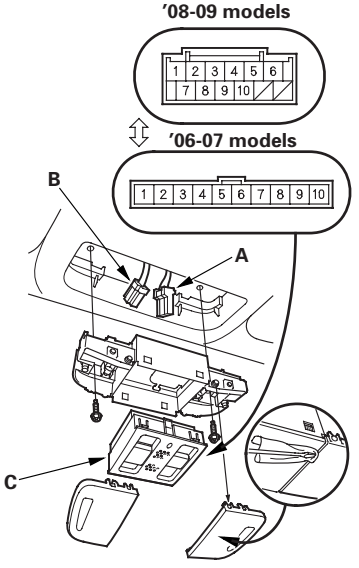
Interior Light Switch Test/ Replacement

With moonroof

NOTE: The interior light switch is built into the moonroof switch, and it switches the front individual map light OFF and DOOR positions.

1. Remove the front individual map lights (see page 22-196).

2. Disconnect the moonroof switch 10P*1 (12P*2) connector (A) and map light 3P connector (B).
   * 1: '06-07 models
   * 2: '08-09 models



3. Remove the moonroof switch (C).

4. Check for continuity between moonroof switch 10P*1 (12P*2) connector check for continuity between terminals No. 1*1 (No. 7*2) and No. 8*1 (No. 9*2).
   * 1: '06-07 models
   * 2: '08-09 models

   - There should be continuity when the interior light switch is in the DOOR position.
   - There should be no continuity when the interior light switch is in the OFF position.

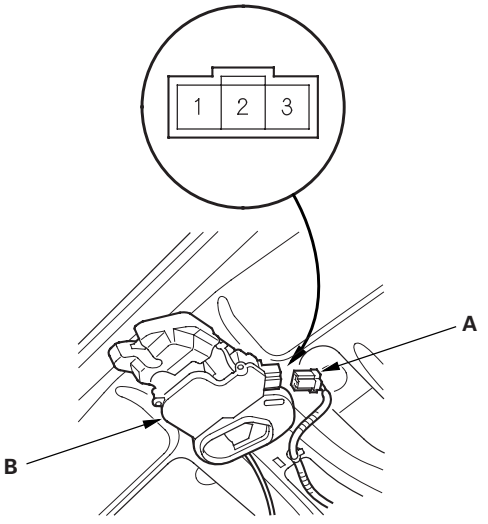
5. If the continuity check is not as specified, replace the switch.

6. Install the interior light switch in the reverse order of removal.

Trunk Lid Latch Switch Test

1. Open the trunk lid.

2. Disconnect the 3P connector (A) from the trunk lid latch assembly (B).



3. Check for continuity between terminals No. 2 and No. 3.

   - There should be continuity with the trunk lid open.
   - There should be no continuity with the trunk lid closed.

4. If the continuity is not as specified, replace the trunk lid latch assembly.

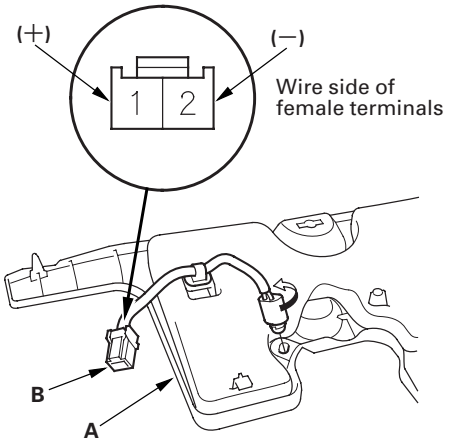
Footwell Light Test/Replacement

TYPE S model

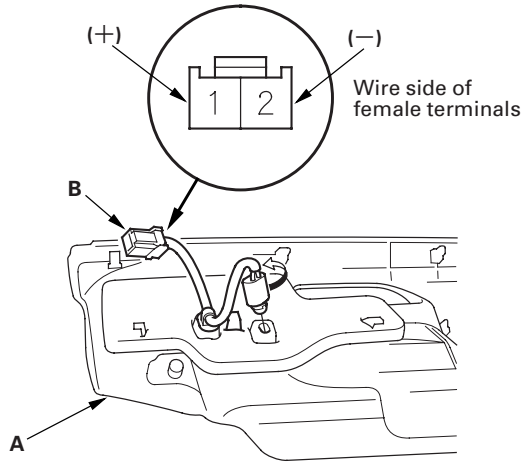
1. Remove the dashboard undercover (A).

   - Driver's dashboard undercover (see page 20-103)
   - Passenger's dashboard undercover (see page 20-104)

Driver's Footwell Light



Front Passenger's Footwell Light

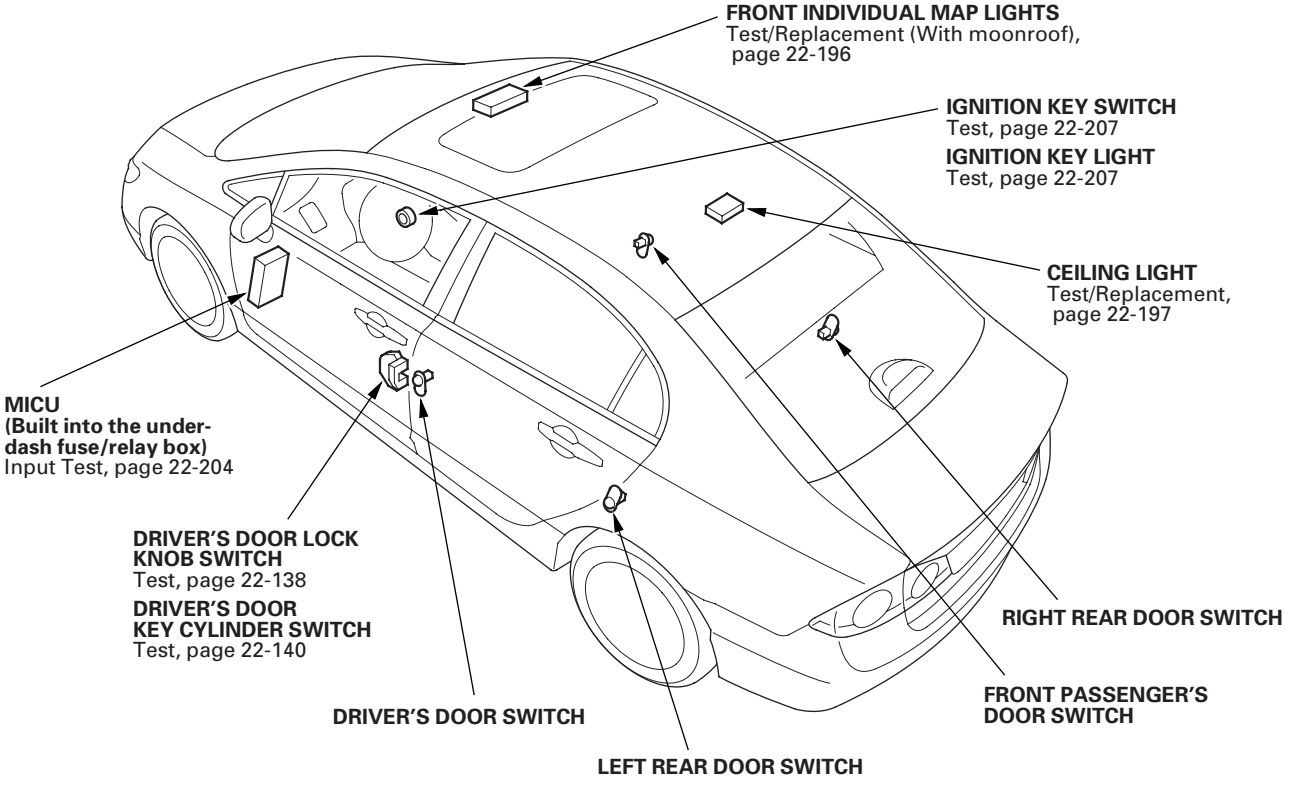


2. The LED should come on when power is connected to footwell light illumination 2P connector (B) terminal No. 1 and ground is connected to terminal No. 2.

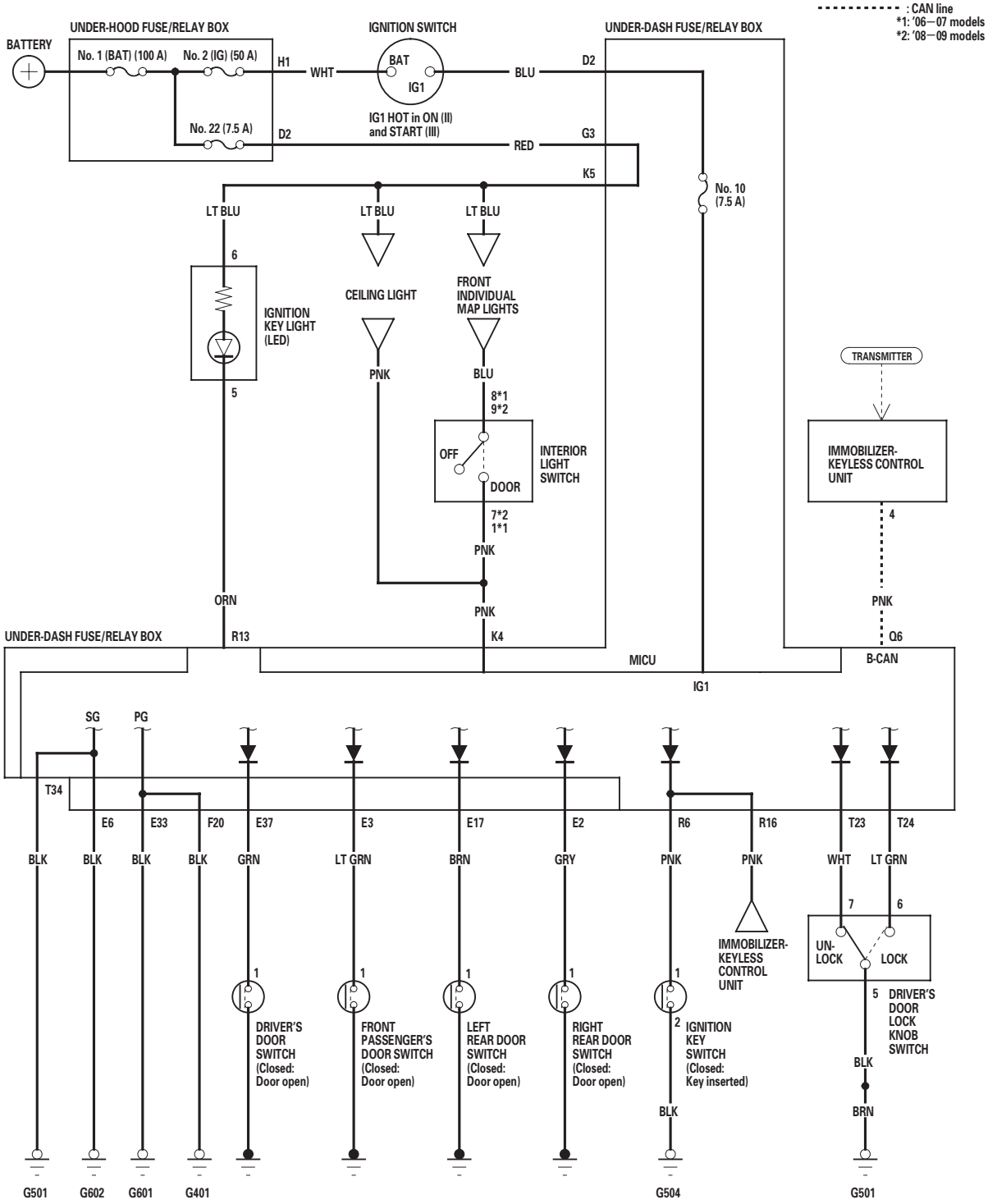
3. If the LED does not come on, replace the footwell light.

4. Install the footwell light in the reverse order of removal.

Component Location Index



Circuit Diagram

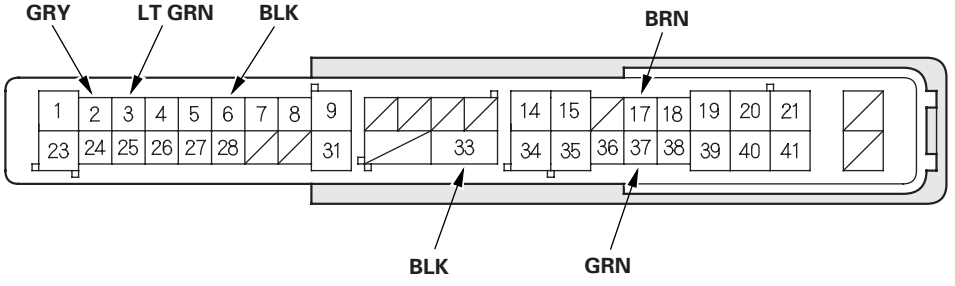


MICU Input Test

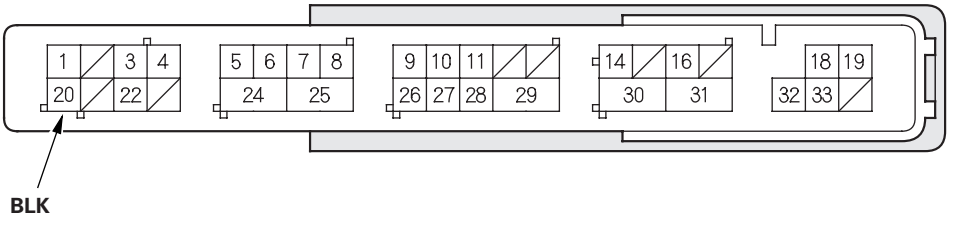
1. Before testing the entry lights control system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93).
2. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If any fuse is blown, replace it and go to step 3.
3. Disconnect under-dash fuse/relay box connectors E, F, K, R, and T.

   NOTE: All connector views are shown from wire side of female terminals.

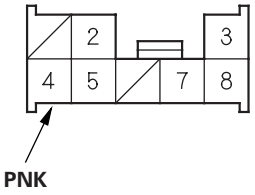
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



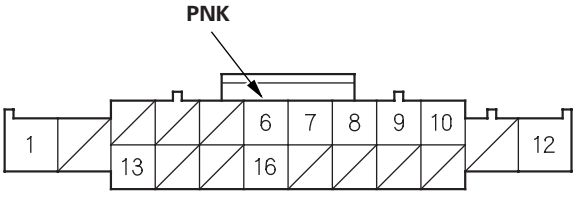
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



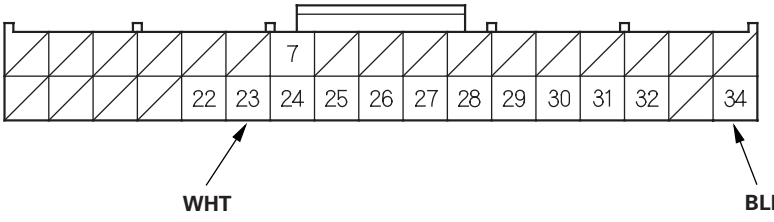
UNDER-DASH FUSE/RELAY BOX
CONNECTOR K (8P)



UNDER-DASH FUSE/RELAY BOX
CONNECTOR R (20P)



UNDER-DASH FUSE/RELAY BOX
CONNECTOR T (34P)



4. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

5. With the connectors still disconnected, do this input test at the following connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
K4	PNK	With the ceiling light switch in the middle position With moonroof: with the interior light switch in DOOR position	Attach to ground: The ceiling light and front individual map lights should come on.	• Blown No. 22 (7.5 A) fuse in the under-hood fuse/relay box • Blown bulb(s) • Faulty ceiling light • Faulty front individual map light • Faulty interior light switch (with moonroof) • An open in the wire

(cont'd)

MICU Input Test (cont'd)

6. Reconnect the connectors to the under-dash fuse/relay box, and do these input tests at the following connectors.

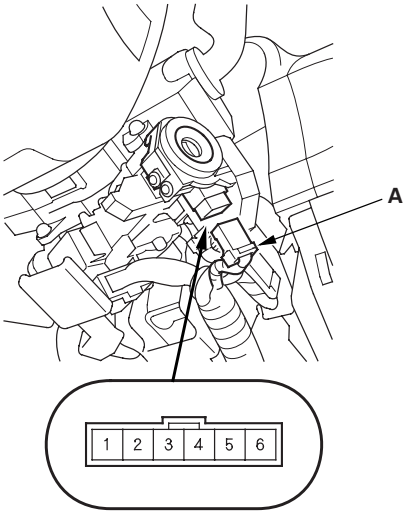
- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E6	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
E37	GRN	Driver's door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver's door switch • A short to ground in the wire
E3	LT GRN	Front passenger's door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty front passenger's door switch • A short to ground in the wire
E2	GRY	Right rear door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty right rear door switch • An open in the wire
		Right rear door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty right rear door switch • A short to ground in the wire
E17	BRN	Left rear door open	Measure the voltage to ground: There should be less than 1 V.	• Faulty left rear door switch • An open in the wire
		Left rear door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty left rear door switch • A short to ground in the wire
R6	PNK	Ignition key inserted into the ignition switch	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty ignition key switch • An open in the wire
		Ignition switch OFF and ignition key removed from the ignition switch	Measure the voltage to ground: There should be more than 5 V.	• Faulty ignition key switch • A short to ground in the wire
T23	WHT	Driver door lock knob switch unlocked	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty driver door lock knob switch • An open in the wire
		Driver door lock knob switch locked	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver door lock knob switch • A short to ground in the wire

Ignition Key Switch Test

1. Remove the steering column upper and lower covers (see page 17-9).

2. Disconnect the 6P connector (A) from the ignition key switch.



3. Check for continuity between terminals No. 1 and No. 2.

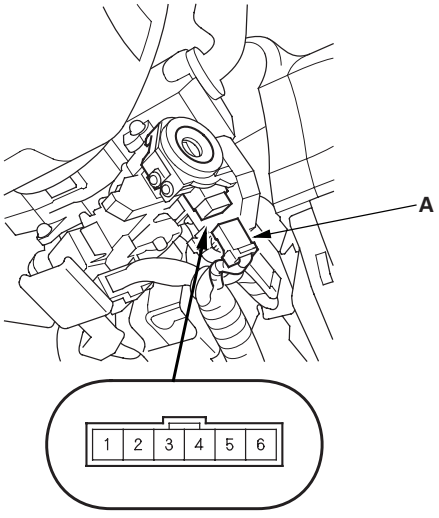
   - There should be continuity with the key in the ignition switch.
   - There should be no continuity with the key removed.

4. If the continuity is not as specified, replace the steering lock assembly.

Ignition Key Light Test

1. Remove the steering column upper and lower covers (see page 17-9).

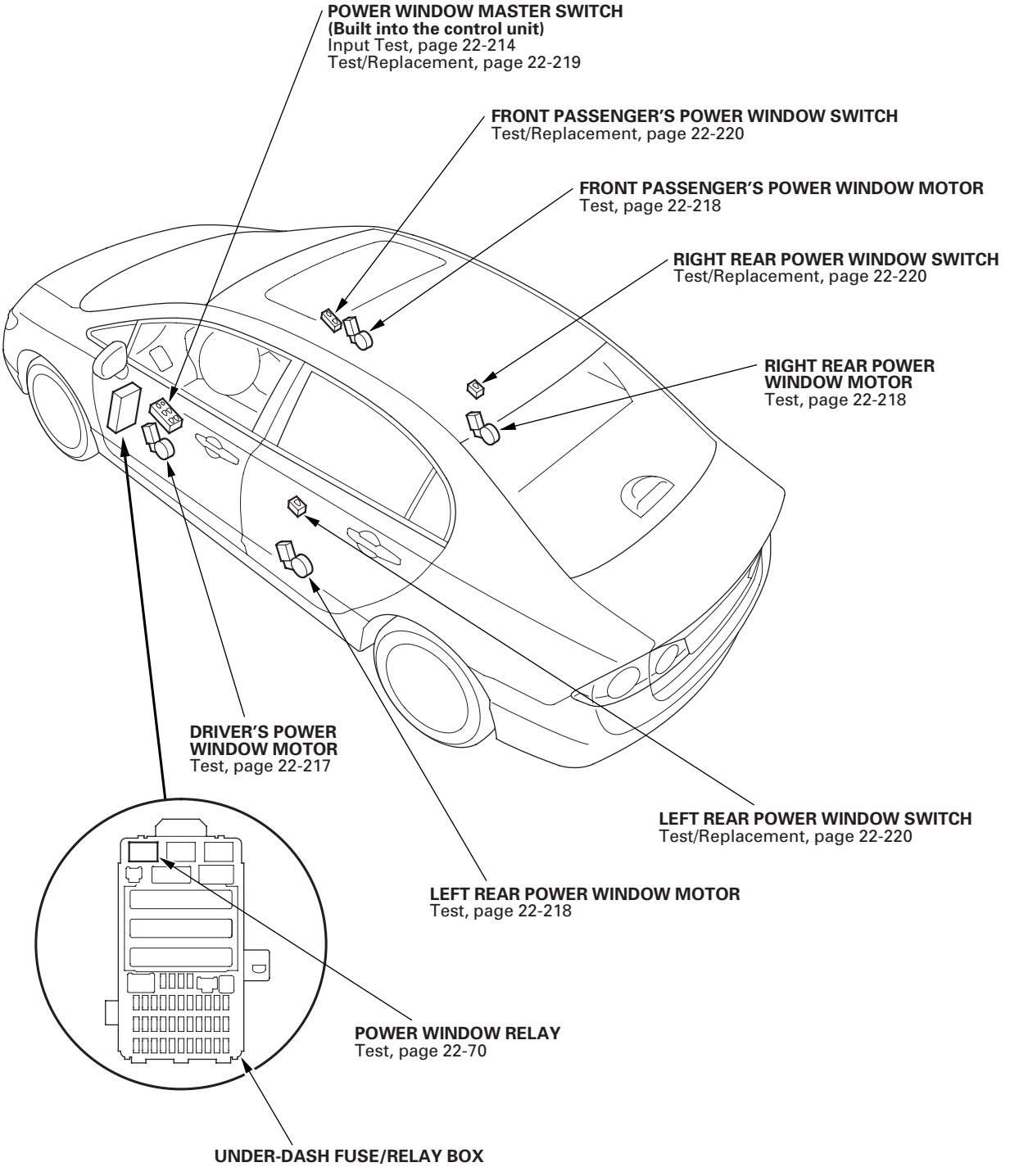
2. Disconnect the 6P connector (A) from the ignition key switch.



3. The LED should come on when power is connected to terminal No. 6 and ground is connected to terminal No. 5.

4. If the LED does not come on, replace the steering lock assembly.

Component Location Index

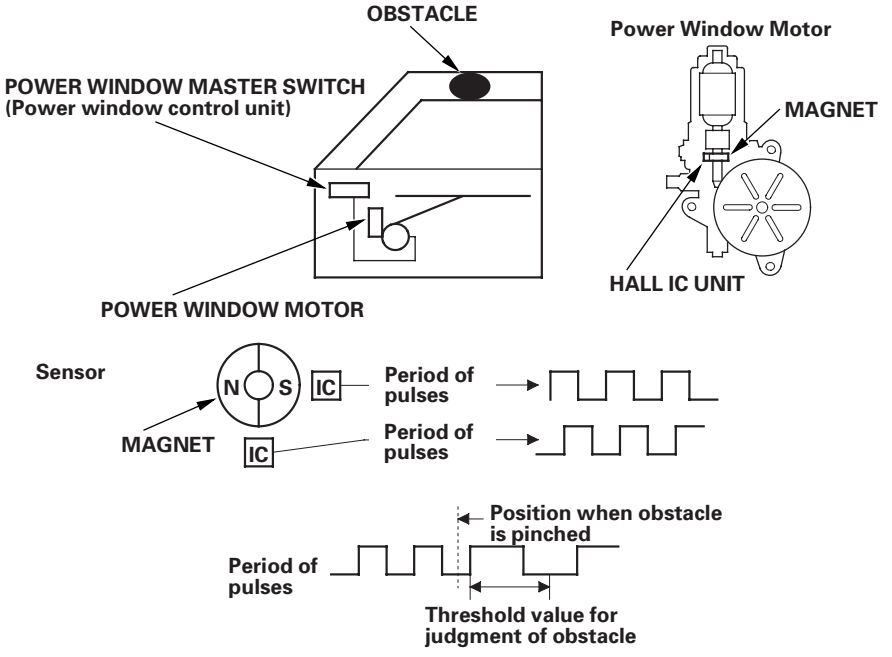


System Description

Auto Reverse Operation

The system is composed of the power window master switch and the driver's power window motor.

The driver's power window motor incorporates a Hall IC unit (pulser) which generates pulses during the motor's operation and sends the pulses to the driver's power window control unit. As soon as the power window control unit detects a change in the pulse frequency from the Hall IC unit, the power window control unit makes the driver's power window motor stop and reverse. If the window is more than halfway closed, it will reverse to half open position. If the window is less than halfway closed, it will stop and reverse about 50 mm (2 in.). This prevents pinching your hand or fingers during auto-up operation. The auto reverse operation is not active when the switch is held in the up position.



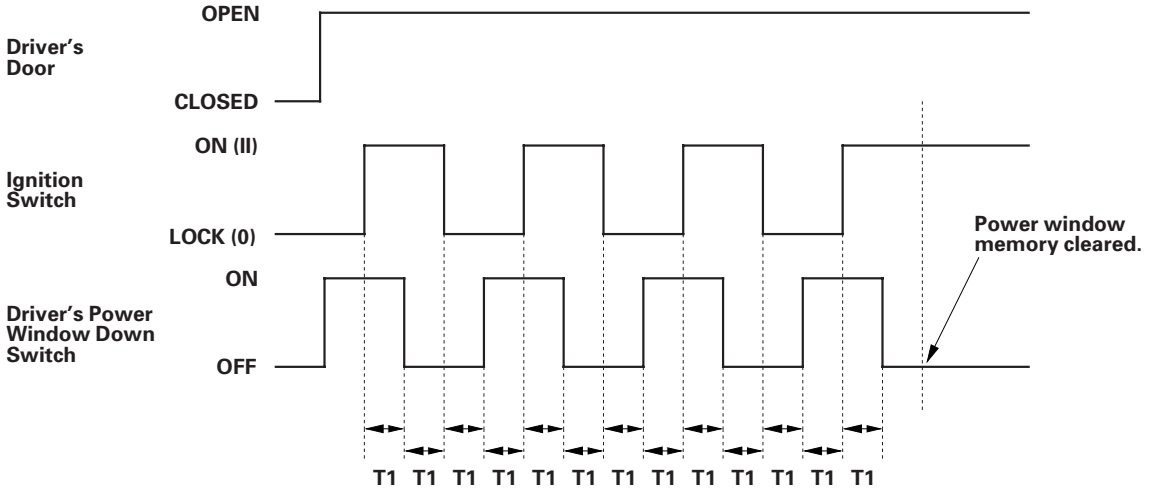
Resetting the Power Window Control Unit

Resetting the driver's power window is required when any of the following have occurred:

- Power window regulator replacement or repair
- Power window motor replacement or repair
- Window run channel replacement or repair
- Driver's door glass replacement or repair
- Power is removed from the power window control unit while the power window timer is ON.

1. Turn the ignition switch to ON (II).
2. Move the driver's power window all the way down by using the driver's power window DOWN switch.
3. Open the driver's door.

   NOTE: Steps 4—7 must be done within 5 seconds of each other.

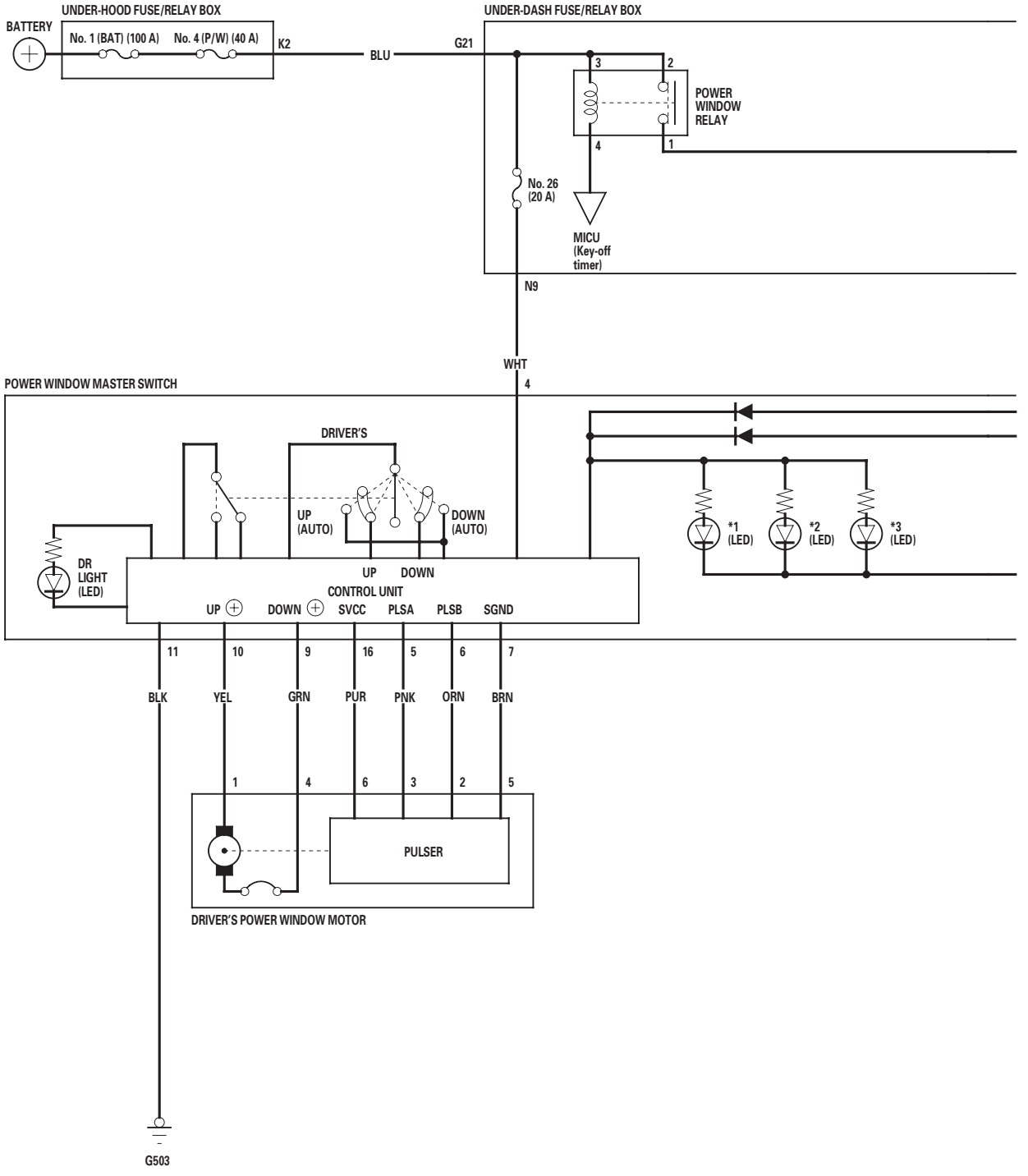


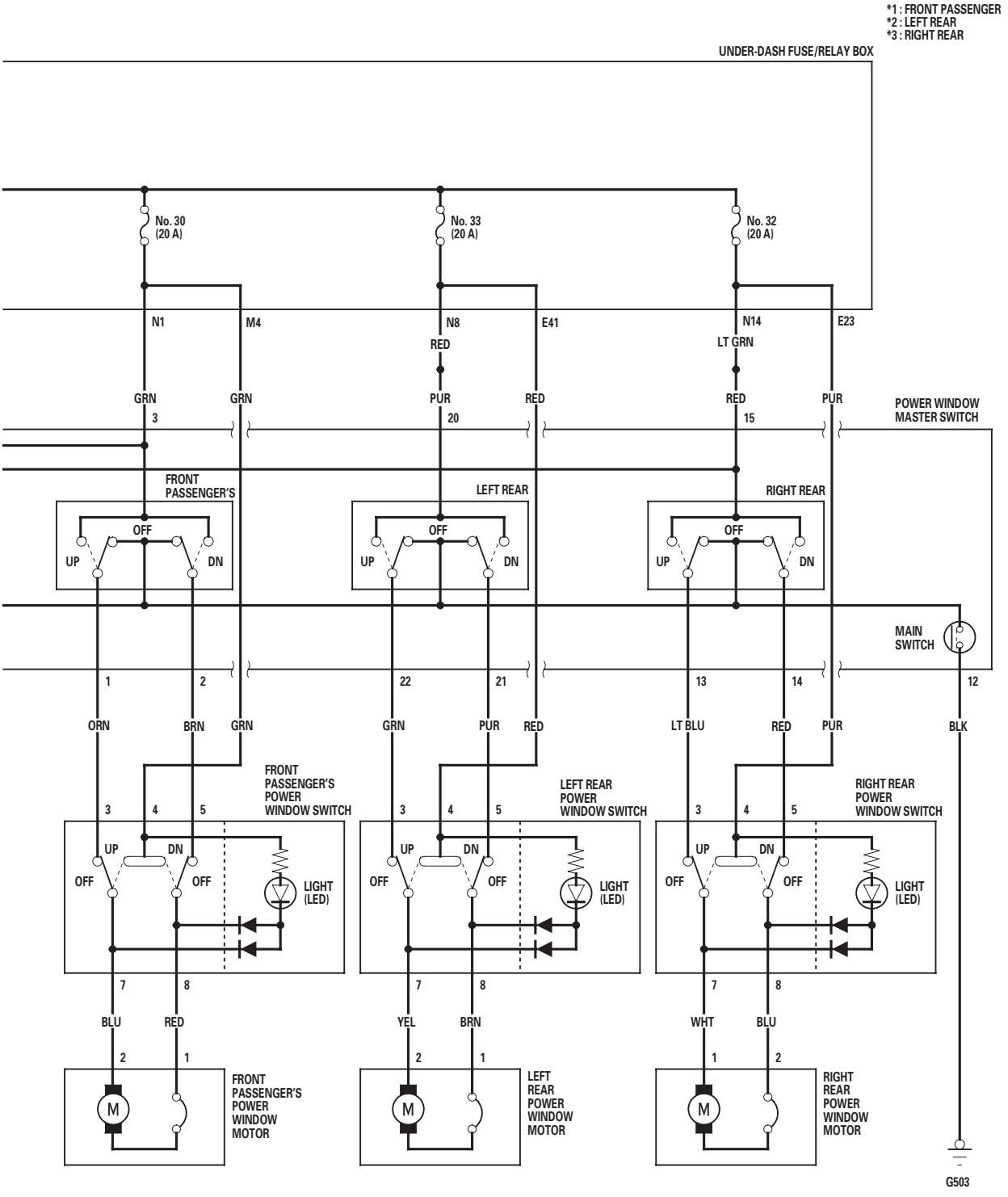
T1=Less than 5 seconds

4. Turn the ignition switch to LOCK (0).
5. Push and hold the driver's power window DOWN switch.
6. Turn the ignition switch to ON (II).
7. Release the driver's power window DOWN switch.
8. Repeat step 4—7 three more times.
9. Wait 1 second.
10. Confirm that AUTO UP and AUTO DOWN do not work. If AUTO UP and DOWN work, go back to step 1. If they do not, go to step 11.
11. Move the driver's power window all the way down by using the driver's power window DOWN switch.
12. Pull up and hold the driver's window UP switch until the window reaches the fully closed position, then continue to hold the switch for 1 second.
13. Confirm that the power window control unit is reset by using the driver's power window AUTO UP and AUTO DOWN functions.

    If the window still does not work in AUTO, repeat the procedure several times, paying close attention to the 5 second time limit between steps. If it still does not work, refer to the power window master switch input test (see page 22-214).

Circuit Diagram

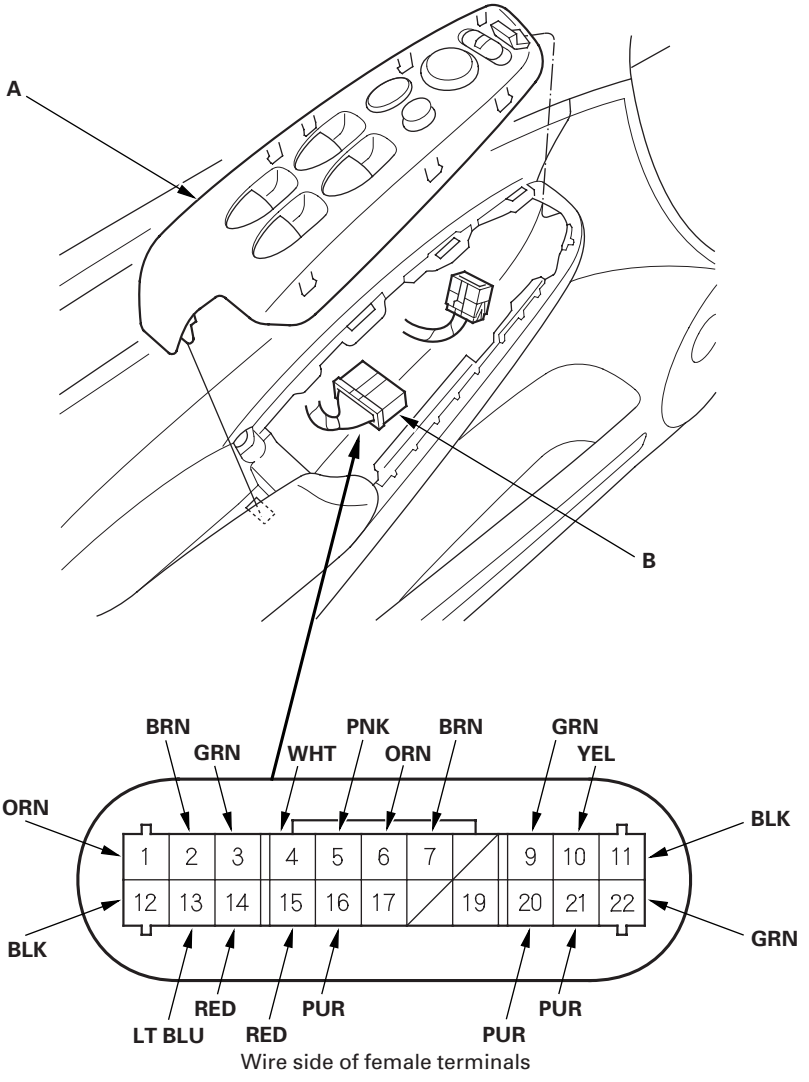



*1 : FRONT PASSENGER
*2 : LEFT REAR
*3 : RIGHT REAR
UNDER-DASH FUSE/RELAY BOX
No. 30 (20 A)
No. 33 (20 A)
No. 32 (20 A)
N1
M4
N8
E41
N14
E23
RED
LT GRN
GRN
GRN
PUR
RED
RED
PUR
3
20
15
POWER WINDOW MASTER SWITCH
FRONT PASSENGER'S
LEFT REAR
RIGHT REAR
OFF
UP
DN
MAIN SWITCH
1
2
22
21
13
14
12
ORN
BRN
GRN
GRN
PUR
RED
LT BLU
RED
PUR
BLK
FRONT PASSENGER'S POWER WINDOW SWITCH
LEFT REAR POWER WINDOW SWITCH
RIGHT REAR POWER WINDOW SWITCH
3
4
5
LIGHT (LED)
7
8
BLU
RED
YEL
BRN
WHT
BLU
2
1
M
FRONT PASSENGER'S POWER WINDOW MOTOR
LEFT REAR POWER WINDOW MOTOR
RIGHT REAR POWER WINDOW MOTOR
G503

Power Window Master Switch Input Test

NOTE: The power window control unit is built into the power window master switch, and it only controls the driver's window operations.

1. Remove the power window master switch (A).



Wire side of female terminals

2. Disconnect the 22P connector (B) from the power window master switch.

3. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 4.

4. With the power window master switch still disconnected, do these input tests at the following connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
9	GRN	Connect terminals No. 4 and No. 9, and terminals No. 10 and No. 11 momentarily with jumper wires	Check driver's power window motor operation: The window should go down.	• Faulty driver's power window motor • An open in the wire
10	YEL	Connect terminals No. 4 and No. 10, and terminals No. 9 and No. 11 momentarily with jumper wires	Check driver's power window motor operation: The window should go up.	
1	ORN	Connect terminals No. 3 and No. 2, and terminals No. 1 and No. 12 momentarily with jumper wires	Check front passenger's power window motor operation: The window should go down.	• Faulty front passenger's power window motor • Faulty front passenger's power window switch • An open in the wire
2	BRN	Connect terminals No. 3 and No. 1, and terminals No. 2 and No. 12 momentarily with jumper wires	Check front passenger's power window motor operation: The window should go up.	
13	LT BLU	Connect terminals No. 15 and No. 14, and terminals No. 13 and No. 12 momentarily with jumper wires	Check right rear power window motor operation: The window should go down.	• Faulty right rear power window motor • Faulty right rear power window switch • An open in the wire
14	RED	Connect terminals No. 15 and No. 13, and terminals No. 14 and No. 12 momentarily with jumper wires	Check right rear power window motor operation: The window should go up.	
21	PUR	Connect terminals No. 20 and No. 21, and terminals No. 22 and No. 12 momentarily with jumper wires	Check left rear power window motor operation: The window should go down.	• Faulty left rear power window motor • Faulty left rear power window switch • An open in the wire
22	GRN	Connect terminals No. 20 and No. 22, and terminals No. 21 and No. 12 momentarily with jumper wires	Check left rear power window motor operation: The window should go up.	

(cont'd)

Power Window Master Switch Input Test (cont'd)

5. Reconnect the 22P connector to the power window master switch. Turn the ignition switch to ON (II), and do these input tests at the following connector.

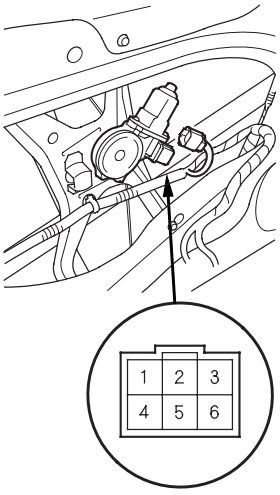
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
3	GRN	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 30 (20 A) fuse in the under-dash fuse/relay box • Faulty power window relay • Faulty MICU • An open in the wire
4	WHT	Under all conditions	Measure the voltage to ground: There should be battery voltage.	• Blown No. 26 (20 A) fuse in the under-dash fuse/relay box • An open in the wire
15	RED	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 32 (20 A) fuse in the under-dash fuse/relay box • Faulty power window relay • Faulty MICU • An open in the wire
20	PUR	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 33 (20 A) fuse in the under-dash fuse/relay box • Faulty power window relay • Faulty MICU • An open in the wire
7	BRN	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
11	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
12	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
16	PUR	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Faulty power window master switch • A short to ground in the wire
5	PNK	Ignition switch ON (II), and driver's power window switch moving up or down	Measure the voltage between terminals No. 5 and No. 7: There should be 0 V—about 5 V—0 V— about 5 V repeatedly (a digital voltmeter should read about 2.5 V while the window moves).	• Faulty power window master switch • Faulty driver's power window motor • An open in the wire • A short to ground in the wire
6	ORN	Ignition switch ON (II), and driver's power window switch moving up or down	Measure the voltage between terminals No. 6 and No. 7: There should be 0 V—about 5 V—0 V— about 5 V repeatedly (a digital voltmeter should read about 2.5 V while the window moves).	

6. Reset the power window control unit (see page 22-210).

Driver's Power Window Motor Test

1. Remove the door panel (see page 20-7).
2. Disconnect the 6P connector from the driver's power window motor.



Motor Test

3. Test the motor in each direction by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal / Direction	1	4
UP	⊕	⊖
DOWN	⊖	⊕

4. If the motor does not run or fails to run smoothly, replace it.

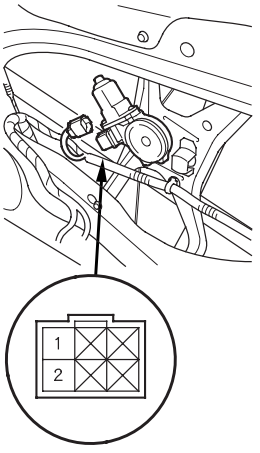
Pulser Test

5. Reconnect the 6P connector to the driver's power window motor.
6. Turn the ignition switch to ON (II).
7. Measure the voltage between the terminals.
   - There should be battery voltage between terminals No. 6 (+) and No. 5 (−).
   - Connect an analog voltmeter between terminals No. 3 (+) and No. 5 (−), and run the power window motor down or up. The voltmeter needle should move back and forth alternately between 0 V and about 5 V (a digital voltmeter reads about 2.5 V).
   - Connect an analog voltmeter between terminals No. 2 (+) and No. 5 (−), and run the power window motor down or up. The voltmeter needle should move back and forth alternately between 0 V and about 5 V (a digital voltmeter reads about 2.5 V).
8. If the voltage is not as specified, do the power window master switch input test at the appropriate terminals: No. 5, 6, 7, and 16 (see page 22-214).
9. If the switch is OK, replace the power window motor.
10. Reset the power window control unit (see page 22-210).

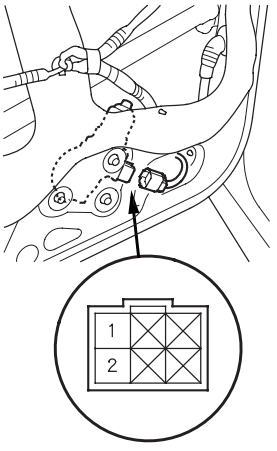
Passenger's Power Window Motor Test

1. Remove the door panel.
   - Front door panel (see page 20-7)
   - Rear door panel (see page 20-17)
2. Disconnect the 2P connector from the power window motor.

Front passenger's



Rear



3. Test the motor by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

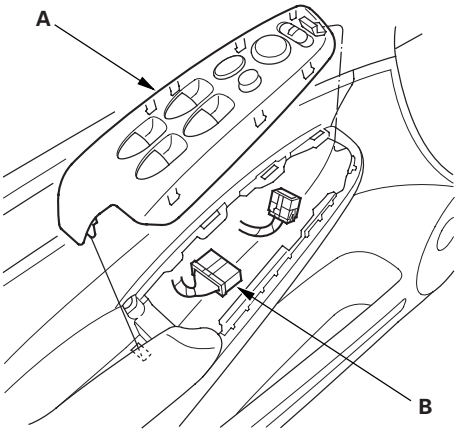
Direction \ Terminal	2 [1]	1 [2]
UP	⊕	⊖
DOWN	⊖	⊕

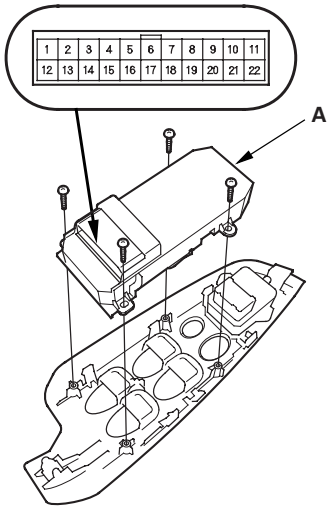
[ ] : **Right rear power window motor**

4. If the motor does not run or fails to run smoothly, replace it.

Power Window Master Switch Test/Replacement

1. Carefully pry out the power window master switch (A).





2. Disconnect the 22P connector (B) from the power window master switch.

3. Check for continuity between the terminals in each switch position according to the tables.

Driver's Switch

The driver's switch is combined with the control unit, so you cannot isolate the switch to test it. Instead, run the power window master switch input test procedures (see page 22-214). If the tests are normal, the driver's switch must be faulty. Replace the switch.

Front Passenger's Switch

Position \ Terminal	Main Switch	1	2	3	12
OFF	ON	○	○		○
	OFF	○	○		
UP	ON	○		○	
			○		○
	OFF	○		○	
DOWN	ON		○	○	
		○			○
	OFF		○	○	

Left Rear Switch

Position \ Terminal	Main Switch	20	21	22	12
OFF	ON		○	○	○
	OFF		○	○	
UP	ON	○		○	
			○		○
	OFF	○		○	
DOWN	ON	○	○	○	○
	OFF	○	○		

Right Rear Switch

Position \ Terminal	Main Switch	13	14	15	12
OFF	ON	○	○		○
	OFF	○	○		
UP	ON	○		○	
			○		○
	OFF	○		○	
DOWN	ON		○	○	
		○			○
	OFF		○	○	

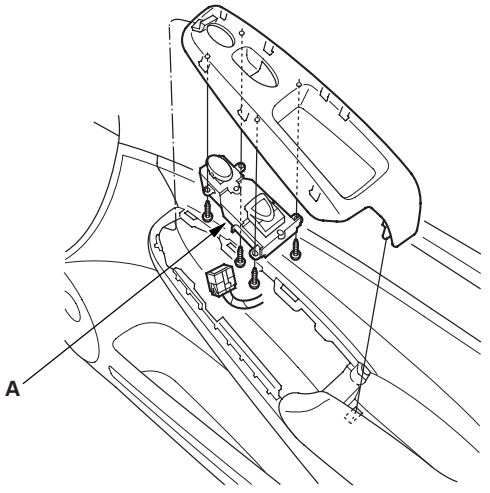
4. If the continuity is not as specified, remove the screws and replace the switch.

5. Install the power window master switch in the reverse order of removal.

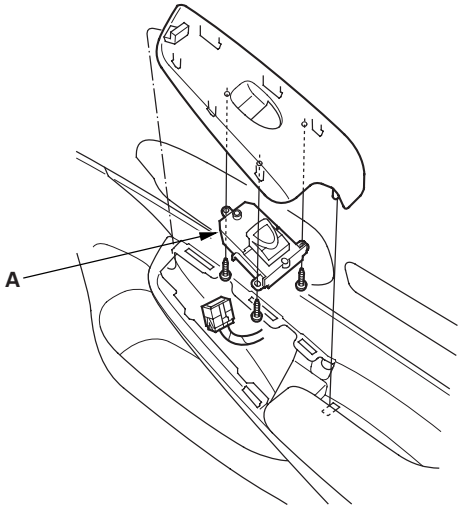
Passenger's Power Window Switch Test/Replacement

1. Remove the passenger's power window switch (A).

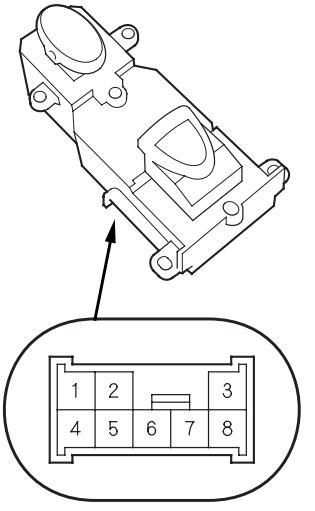
Front passenger's



Rear



NOTE: The illustration shows the front passenger's door.



2. Check for continuity between the terminals in each switch position according to the table.

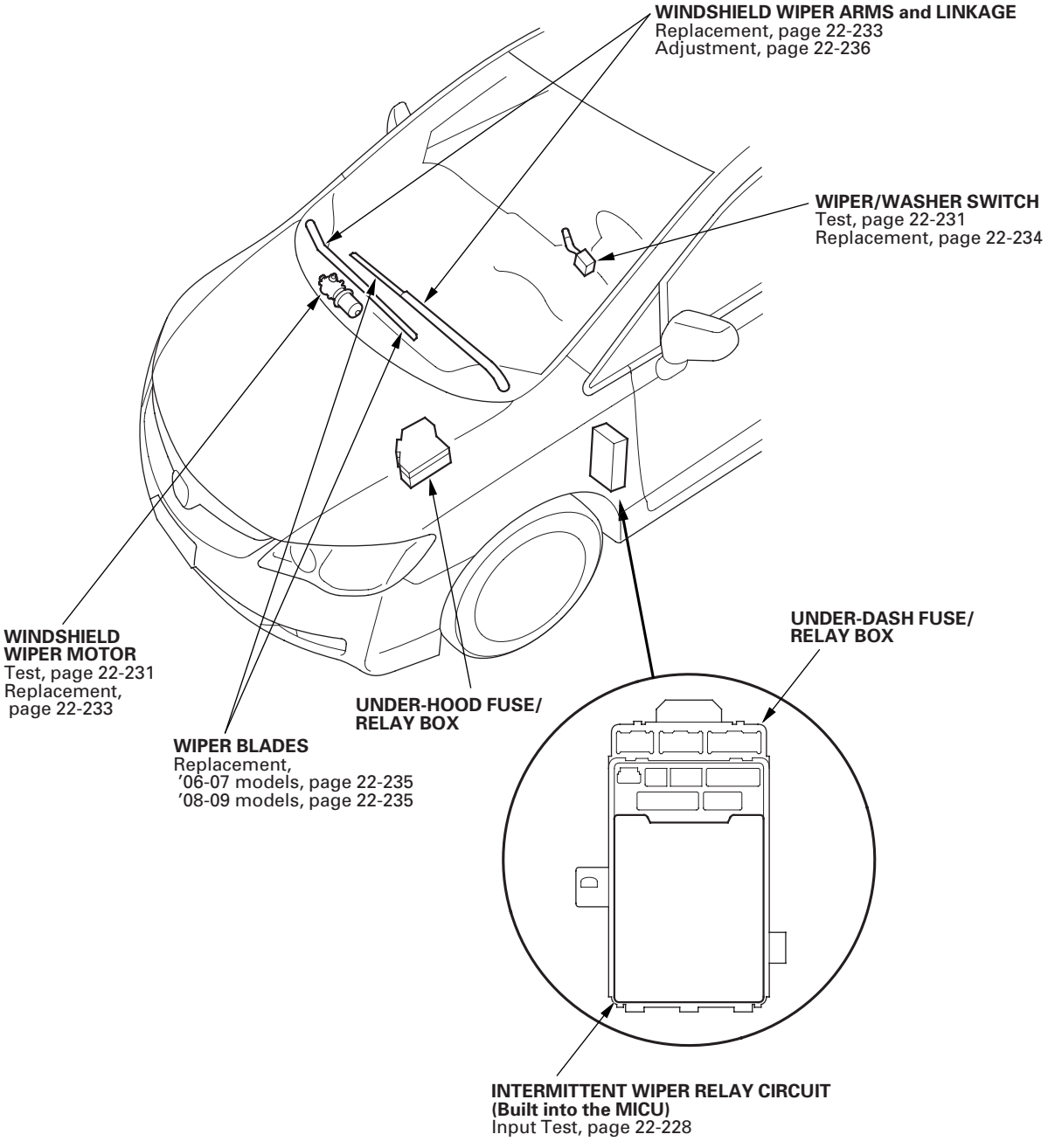
Position \ Terminal	3	4	5	7	8
OFF	○		○	○	○
UP		○	○	○	○
DOWN	○		○	○	○

3. Connect battery power to terminal No. 4 and ground terminal No. 7 (or No. 8). The switch light should come on.

4. If the continuity or switch light tests is not as specified, remove the screws and replace the switch.

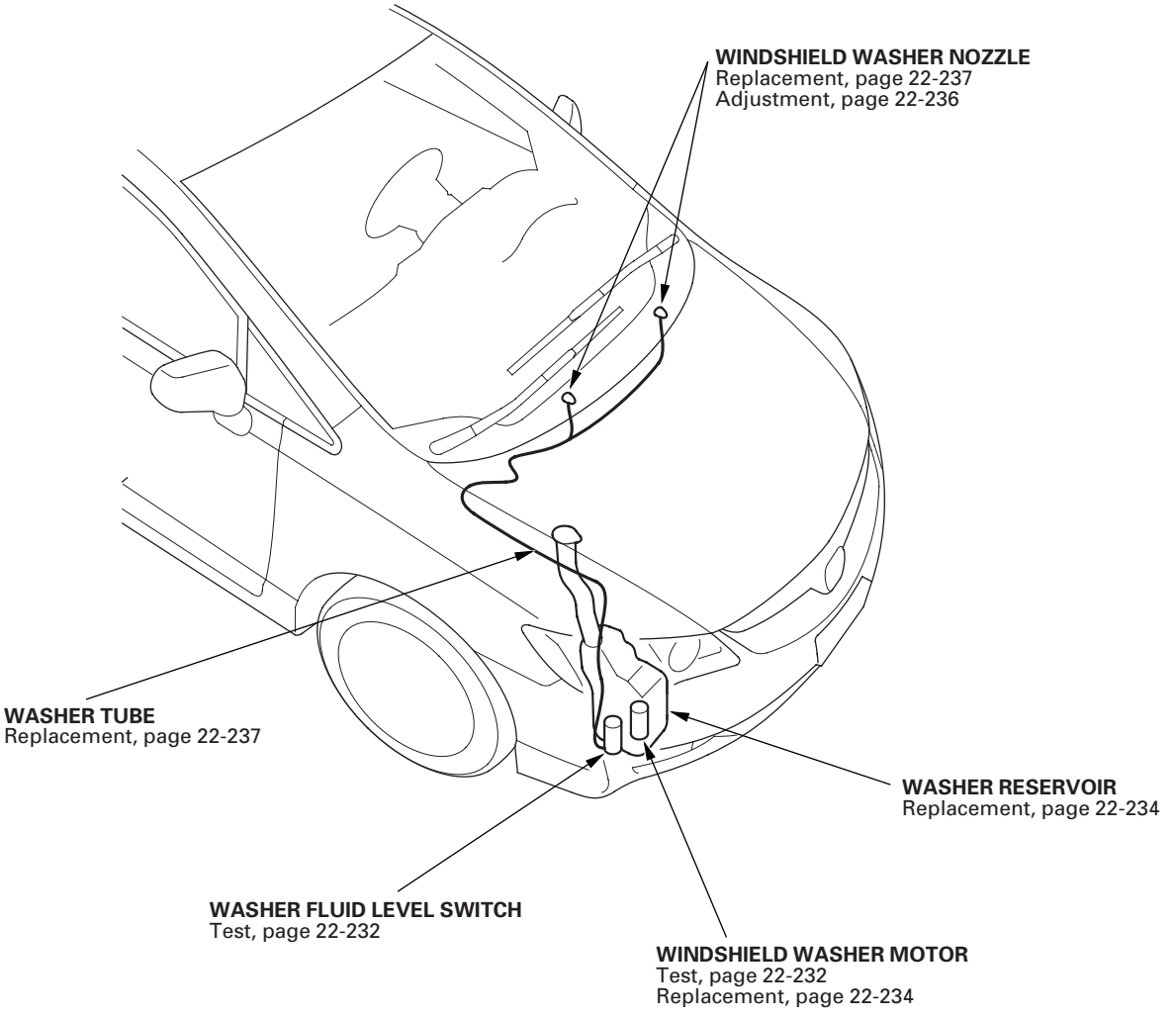
5. Install the passenger's power window switch in the reverse order of removal.

Component Location Index

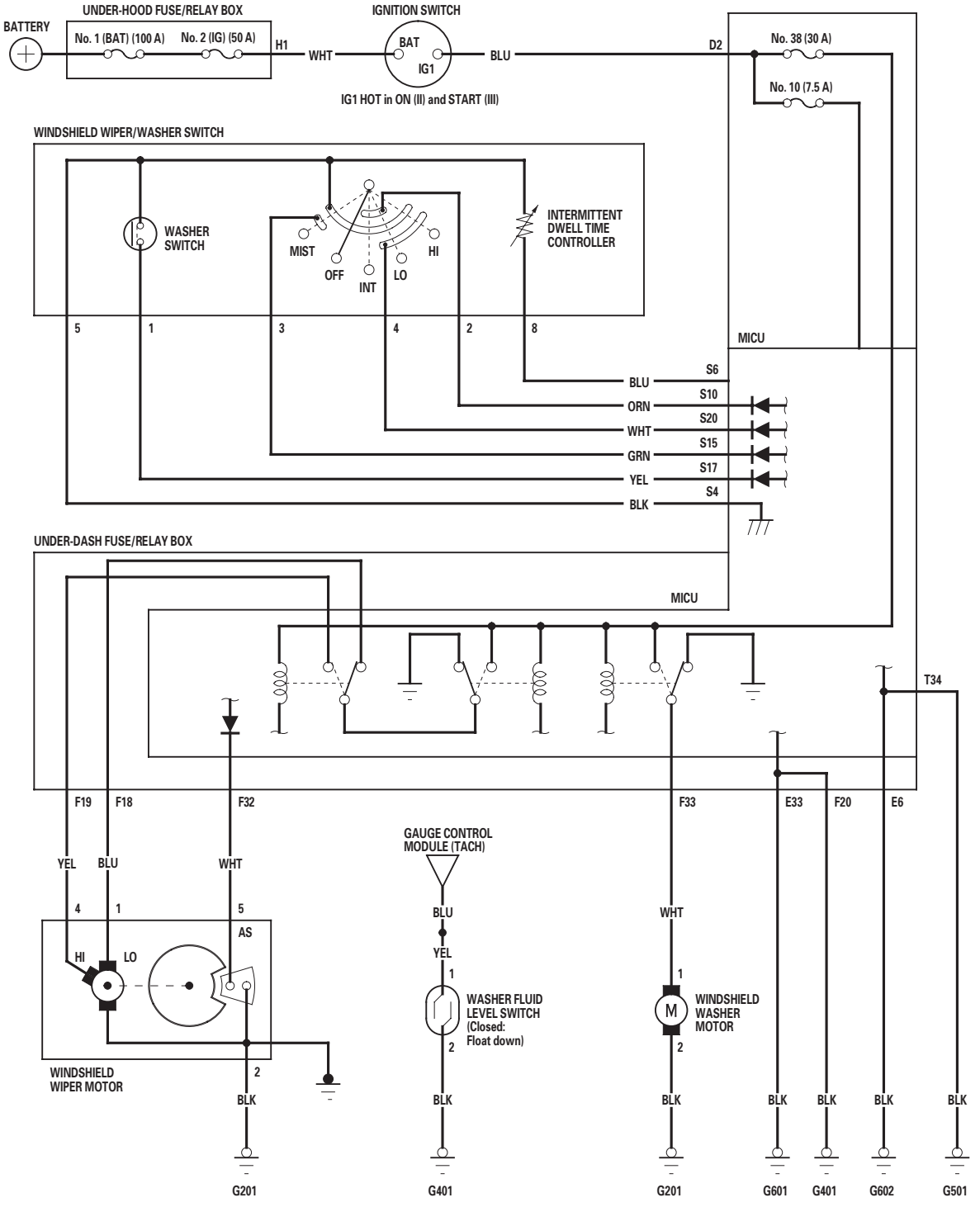


(cont'd)

Component Location Index (cont'd)



Circuit Diagram



DTC Troubleshooting

DTC B1077: Windshield Wiper (As) Signal Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Turn the wiper switch to LOW or HIGH for 15 seconds or more, then turn the switch OFF.

   Do the windshield wiper run?

   YES—Go to step 4.

   NO—Go to step 12.
4. Check for DTCs with the HDS.

   Is DTC B1077 indicated?

   YES—Go to step 5.

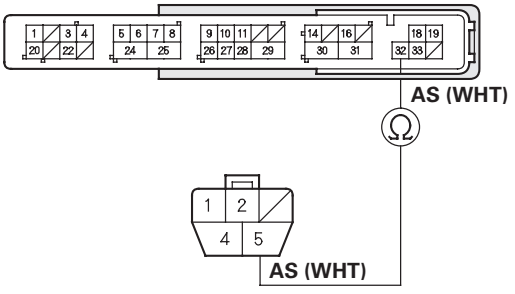
   NO—Intermittent failure. The windshield wiper system is OK at this time. Check for loose or poor connections. ■
5. Turn the ignition switch to LOCK (0).
6. Do the wiper motor test (see page 22-231).

   Does the wiper motor run normally and does it pulse?

   YES—Go to step 7.

   NO—Replace the windshield wiper motor (see page 22-233) and recheck. ■
7. Disconnect under-dash fuse/relay box connector F (34P) and windshield wiper motor 5P connector.
8. Check for continuity between windshield wiper motor 5P connector terminal No. 5 and under-dash fuse/relay box connector F (34P) terminal No. 32.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)
Wire side of female terminals



WINDSHIELD WIPER MOTOR 5P CONNECTOR
Wire side of female terminals

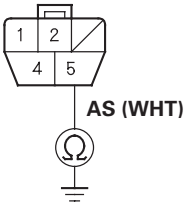
Is there continuity?

YES—Go to step 9.

NO—Repair an open in the WHT wire. ■

9. Check for continuity between windshield wiper motor 5P connector terminal No. 5 and body ground.

WINDSHIELD WIPER MOTOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

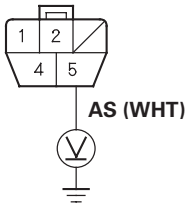
YES—Repair a short in the WHT wire. ■

NO—Go to step 10.

10. Turn the ignition switch to ON (II).

11. Measure the voltage between windshield wiper motor 5P connector terminal No. 5 and body ground.

WINDSHIELD WIPER MOTOR 5P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair a short to power in the WHT wire. ■

NO—Faulty MICU; replace the under-dash fuse/relay box. ■

12. Turn the ignition switch to LOCK (0).

13. Check the No. 38 (30 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 14.

NO—Replace the fuse and recheck the system. ■

14. Do the wiper motor test (see page 22-231).

Does the wiper motor run normally?

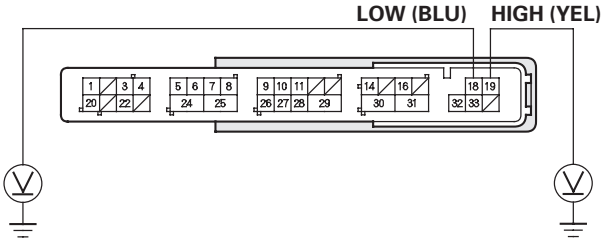
YES—Go to step 15.

NO—Replace the windshield wiper motor (see page 22-233) and recheck. ■

15. Reconnect the windshield wiper motor 5P connector.

16. Measure the voltage between under-dash fuse/relay box connector F (34P) terminals No. 18 (LOW) and No. 19 (HIGH) and body ground with the wiper switch in corresponding position.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



Wire side of female terminals

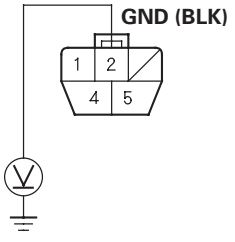
Is there battery voltage?

YES—Go to step 17.

NO—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

17. Measure the voltage between windshield wiper motor 5P connector terminal No. 2 and body ground.

WINDSHIELD WIPER MOTOR 5P CONNECTOR



Wire side of female terminals

Is there less than 0.5 V?

YES—Repair an open in the BLU (LOW) or YEL (HIGH) wire. ■

NO—Repair an open in the BLK wire or poor ground (G201). ■

DTC Troubleshooting (cont'd)

DTC B1281: Windshield Wiper Switch MIST Position Circuit Malfunction

DTC B1282: Windshield Wiper Switch INT Position Circuit Malfunction

DTC B1283: Windshield Wiper Switch LOW Position Circuit Malfunction

DTC B1284: Windshield Wiper Switch HIGH Position Circuit Malfunction

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0) and then back to ON (II).
3. Turn the wiper switch to the MIST, INT, LOW, HIGH, and OFF positions, and wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1281, B1282, B1283, or B1284 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the wiper system is OK at this time. Check for loose or poor connections. ■
5. Select WIPERS from the BODY ELECTRICAL menu, and enter DATA LIST.
6. Check each wiper switch position value with the DATA LIST menu.

   When the wiper switch is turned OFF

Data List	Value
Wiper switch (LOW)	OFF
Wiper switch (HIGH)	OFF
Wiper switch (MIST)	OFF
Wiper switch (INT)	OFF

   Are all data list values correct?

   YES—Go to step 7.

   NO—Go to step 10.
7. Turn the ignition switch to LOCK (0).
8. Disconnect under-dash fuse/relay box connector S (20P).
9. Check for continuity between under-dash fuse/relay box connector S (20P) terminals as shown:

From terminal	To terminal
10	6, 15, 20
15	6, 20

   Is there continuity?

   YES—Repair a short between the wires. ■

   NO—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■
10. Turn the ignition switch to LOCK (0).
11. Disconnect the 8P connector from the wiper switch.
12. Turn the ignition switch to ON (II).
13. Check each wiper switch position value with the DATA LIST menu.

    When the wiper switch is turned OFF

Data List	Value
Wiper switch (LOW)	OFF
Wiper switch (HIGH)	OFF
Wiper switch (MIST)	OFF
Wiper switch (INT)	OFF

    Are all data list values correct?

    YES—Replace the wiper/washer switch (see page 22-234). ■

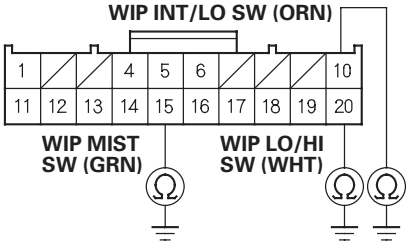
    NO—Go to step 14.

14. Turn the ignition switch to LOCK (0).

15. Disconnect under-dash fuse/relay box connector S (20P).

16. Check for continuity between body ground and under-dash fuse/relay box connector S (20P) terminals No. 10, No. 15, and No. 20 individually.

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



Wire side of female terminals

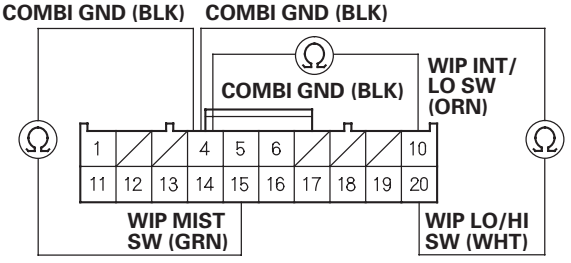
Is there continuity?

YES—Repair a short to ground in the wire. ■

NO—Go to step 17.

17. Check for continuity between under-dash fuse/relay box connector S (20P) terminal No. 4 and terminals No. 10, No. 15, and No. 20 individually.

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



Wire side of female terminals

Is there continuity?

YES—Repair a short between the wires. ■

NO—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

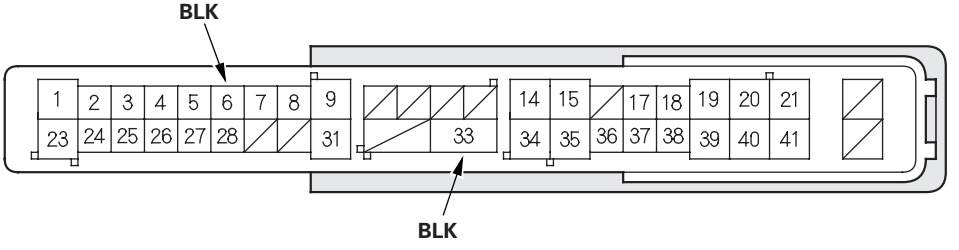
MICU Input Test

1. Before testing the wiper/washer system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93), and check the No. 10 (7.5 A) and No. 38 (30 A) fuses in the under-dash fuse/relay box.

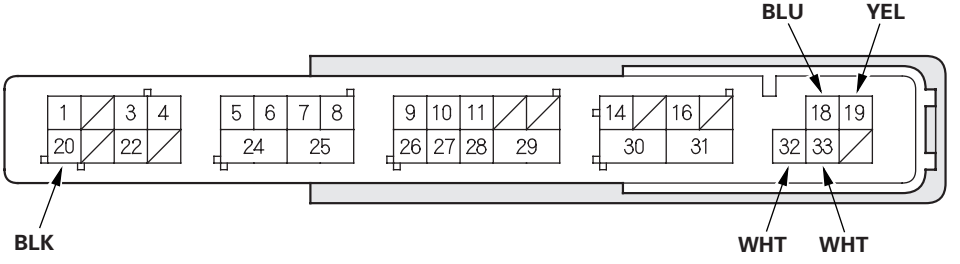
2. Disconnect the under-dash fuse/relay box connectors E, F, S, and T.

   NOTE: All connector views are shown from wire side of female terminals.

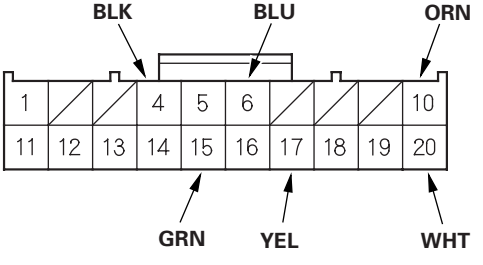
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



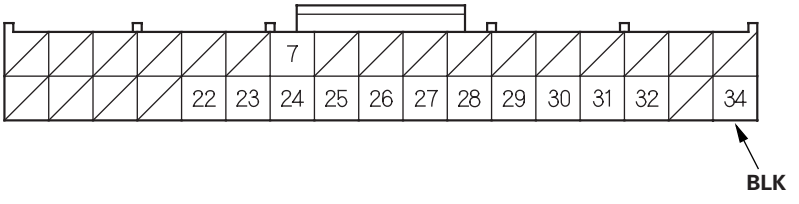
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR T (34P)



3. Inspect the connector and socket terminals to be sure they are all making good contact.

   • If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   • If the terminals look OK, go to step 4.

4. With the connectors still disconnected, do these input tests at the following connectors.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
F18	BLU	Under all conditions	Connect battery power to terminal F18: The windshield wiper motor should run at low speed.	• Poor ground (G201) • Faulty windshield wiper motor • An open in the wire
F19	YEL	Under all conditions	Connect battery power to terminal F19: The windshield wiper motor should run at high speed.	• Poor ground (G201) • Faulty windshield wiper motor • An open in the wire
F32	WHT	Disconnect the windshield wiper motor 5P connector	Check for continuity between terminal F32 and wiper motor 5P connector terminal No. 5: There should be continuity.	An open in the wire
F33	WHT	Under all conditions	Connect battery power to terminal F33: The windshield washer motor should run.	• Poor ground (G201) • Faulty windshield washer motor • An open in the wire
S6 · S4	BLU · BLK	Windshield wiper/ washer switch (intermittent dwell timer) turned	Measure the resistance between terminals S6 and S4: There resistance should vary from about 0 to 1 kΩ.	• Faulty windshield wiper/ washer switch • An open in the wire • A short to ground in the wire

(cont'd)

MICU Input Test (cont'd)

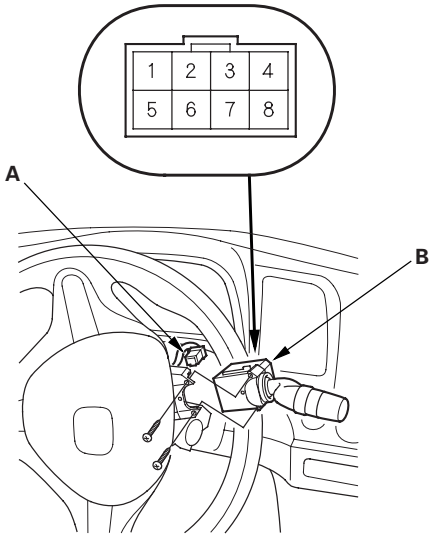
5. Reconnect the connectors to the under-dash fuse/relay box, and do these input tests at the following connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E6	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G602) • An open in the wire
E33	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G601) • An open in the wire
F20	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G401) • An open in the wire
T34	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
S10 · S4	ORN · BLK	Ignition switch ON (II), windshield wiper/ washer switch (INT) ON	Measure the voltage between terminals S10 and S4, and terminals S20 and S4: There should be less than 1 V.	• Faulty windshield wiper/ washer switch • An open in the wire
		Ignition switch ON (II), windshield wiper/ washer switch OFF	Measure the voltage between terminals S10 and S4, and terminals S20 and S4: There should be more than 5 V.	• Faulty windshield wiper/ washer switch • A short to ground in the wire
S15 · S4	GRN · BLK	Ignition switch ON (II), windshield wiper/ washer switch (MIST) ON	Measure the voltage between terminals S15 and S4: There should be less than 1 V.	• Faulty windshield wiper/ washer switch • An open in the wire
		Ignition switch ON (II), windshield wiper/ washer switch (MIST) OFF	Measure the voltage between terminals S15 and S4: There should be more than 5 V.	• Faulty windshield wiper/ washer switch • A short to ground in the wire
S17 · S4	YEL · BLK	Ignition switch ON (II), windshield washer switch ON	Measure the voltage between terminals S17 and S4: There should be less than 1 V.	• Faulty windshield wiper/ washer switch • An open in the wire
		Ignition switch ON (II), windshield washer switch OFF	Measure the voltage between terminals S17 and S4: There should be more than 5 V.	• Faulty windshield wiper/ washer switch • A short to ground in the wire
S20 · S4	WHT · BLK	Ignition switch ON (II), windshield wiper/ washer switch (LOW) ON	Measure the voltage between terminals S20 and S4: There should be less than 1 V.	• Faulty windshield wiper/ washer switch • An open in the wire
		Ignition switch ON (II), windshield wiper/ washer switch OFF	Measure the voltage between terminals S20 and S4: There should be more than 5 V.	• Faulty windshield wiper/ washer switch • A short to ground in the wire
		Ignition switch ON (II), windshield wiper/ washer switch (HIGH) ON	Measure the voltage between terminals S20 and S4: There should be less than 1 V.	• Faulty windshield wiper/ washer switch • An open in the wire
		Ignition switch ON (II), windshield wiper/ washer switch OFF	Measure the voltage between terminals S20 and S4: There should be more than 5 V.	• Faulty windshield wiper/ washer switch • A short to ground in the wire

Wiper/Washer Switch Test

1. Remove the wiper/washer switch (see page 22-234).
2. Disconnect the dashboard wire harness 8P connector (A) from the wiper/washer switch (B).



3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	1	2	3	4	5		8
OFF							
INT		○			○		
LO		○		○	○		
HI				○	○		
Mist ON			○		○		
Washer ON	○				○		
Intermittent dwell timer turned					○	⌇	○

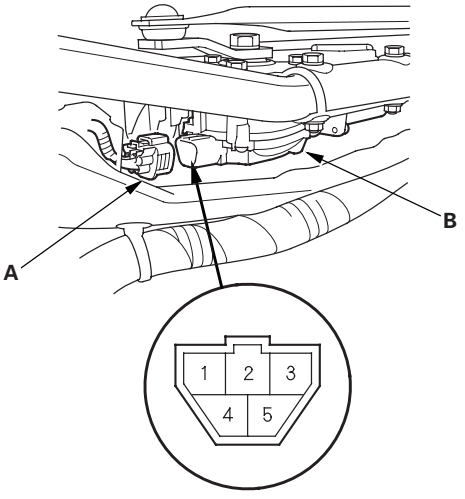
4. If the continuity is not as specified, replace the switch.

Wiper Motor Test

1. Remove the wiper arms (see page 22-233).

   NOTE: Carefully remove the wiper arms so that they do not touch the hood.

2. Remove the hood seal and cowl cover.
3. Disconnect the 5P connector (A) from the wiper motor (B).



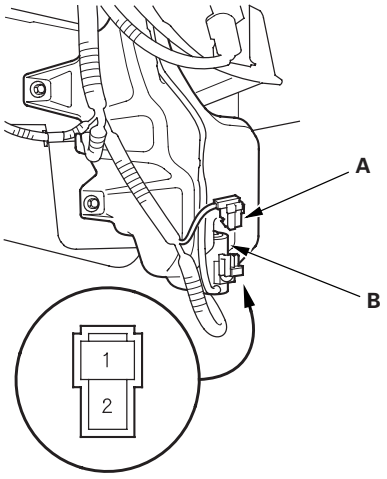
4. Test the motor by connecting battery power and ground according to the table. If the motor does not run or fails to run smoothly, replace the motor.

Position \ Terminal	1	2	3
LOW SPEED	⊕	⊖	
HIGH SPEED		⊖	⊕

5. Connect the battery power to terminal No. 1, and body ground to terminal No. 2 of the 5P connector. Then connect an analog voltmeter between terminal No. 1 (+) and terminal No. 5 (−). When the park switch makes contact, the pointer should swing. If not, replace the motor.

Washer Motor Test

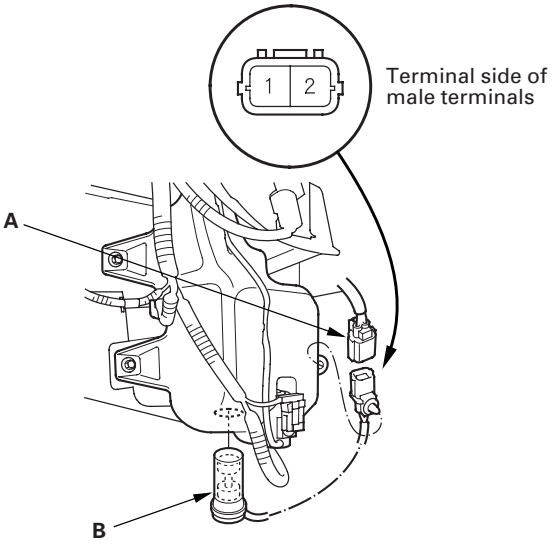
1. Remove the right inner fender (see page 20-171).
2. Disconnect the 2P connector (A) from the washer motor (B).



3. Test the motor by connecting battery power to terminal No. 1 and ground terminal No. 2 of the washer motor. The motor should run.
   - If the motor does not run, or fails to run smoothly, replace it.
   - If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged washer motor outlet.

Washer Fluid Level Switch Test

1. Remove the right inner fender (see page 20-171).
2. Disconnect the 2P connector (A) from the washer fluid level switch (B).



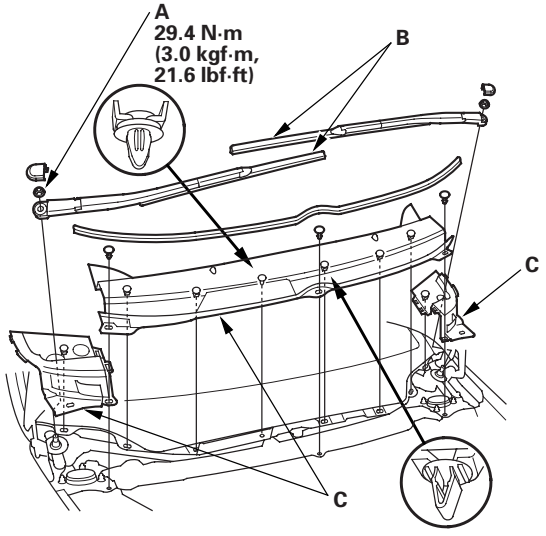
3. Remove the washer fluid level switch from the washer reservoir.

   NOTE: Fluid may flow out of the opening.

4. Check for continuity between terminals No. 1 and No. 2 in each float position.
   - There should be continuity when the float is down.
   - There should be no continuity when the float is up.
5. If the continuity is not as specified, replace the switch.

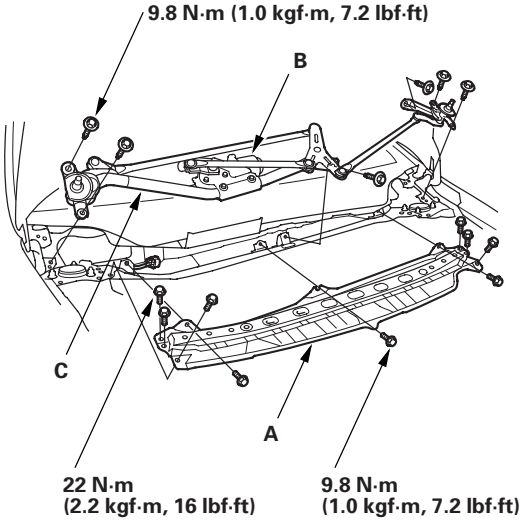
Wiper Motor Replacement

1. Open the hood. Remove the caps, nuts (A), and the windshield wiper arms (B).



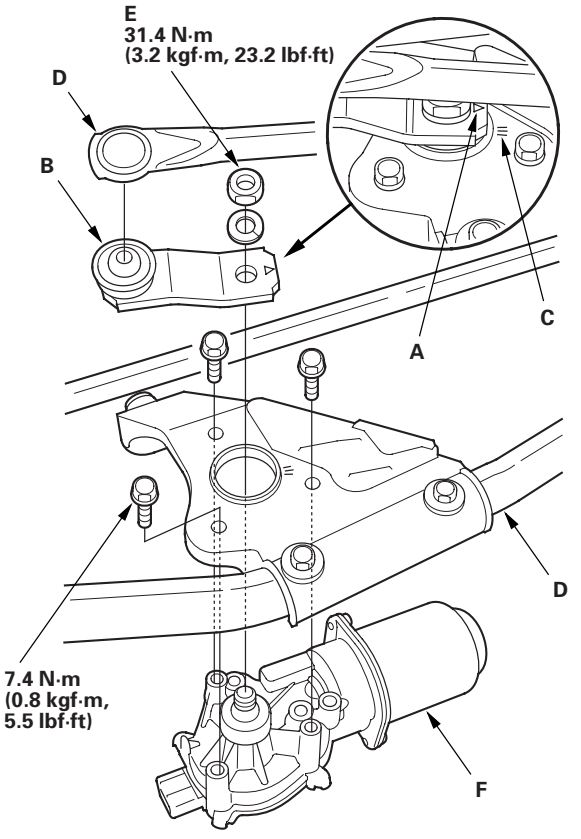
2. Remove the cowl covers (C).

3. Remove the bolts and the under-cowl panel (A).



4. Disconnect the 5P connector from the wiper motor (B), then remove the six bolts and wiper linkage assembly (C).

5. Make sure the mark (A) on the link (B) is aligned with the mark (C) on the windshield wiper linkage (D).



6. Remove the nut (E), and separate the link and windshield wiper linkage.

7. Remove the three bolts, and separate the windshield wiper linkage from the wiper motor (F).

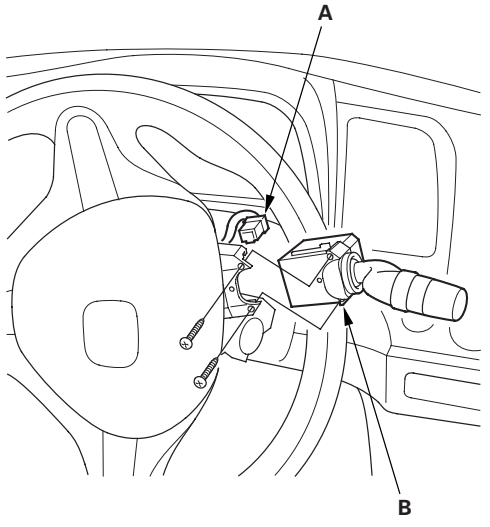
8. Install the wiper motor in the reverse order of removal, and note these items:

   - Align the marks of the link and the linkage to install the linkage with the original adjustment.
   - Apply multipurpose grease to the moving parts.
   - Before installing the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
   - If necessary, replace any damaged clips.

9. After installation, adjust the wiper arms (see page 22-236).

Wiper/Washer Switch Replacement

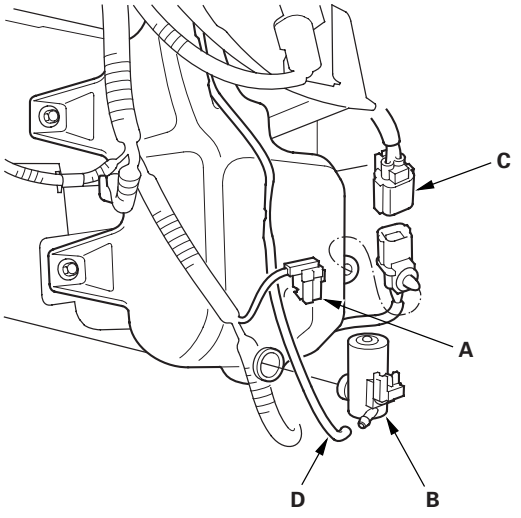
1. Remove the driver's dashboard lower cover (see page 20-102).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the dashboard wire harness 8P connector (A) from the wiper/washer switch (B).



4. Remove the two screws, then slide out the wiper/washer switch.
5. Install the wiper/washer switch in the reverse order of removal.

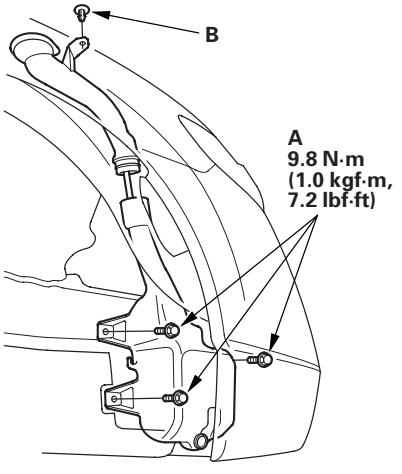
Washer Reservoir Replacement

1. Remove the right inner fender (see page 20-171).
2. Disconnect the 2P connector(s) (A) from the windshield washer motor (B) and the washer fluid level switch (C).



3. Disconnect the windshield washer tube (D).
4. Remove the bolts (A) and the clip (B), then remove the washer reservoir.

Washer reservoir capacity: 4.5 L (4.8 US qt)

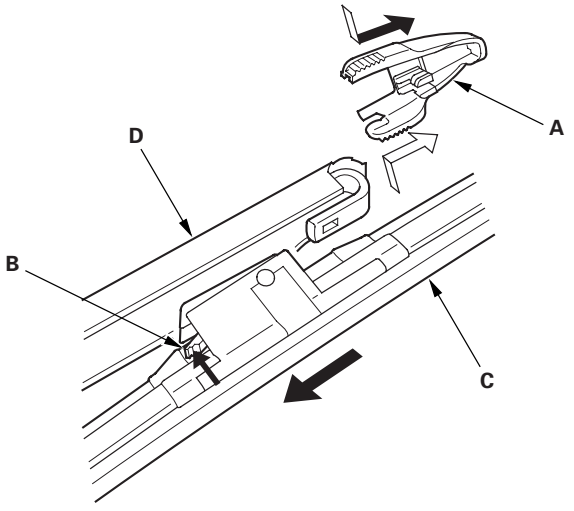


5. Install the washer reservoir in the reverse order of removal.

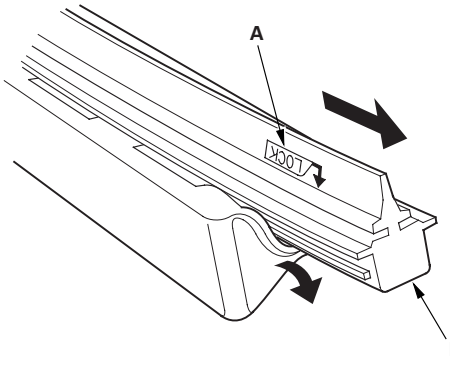
Wiper Blade Replacement

'06-07 models

1. Lift the wiper arm off the windshield, raising the driver's side first, then the passenger's side.
2. Remove the cover (A), by squeezing the two tabs and pulling it straight out.



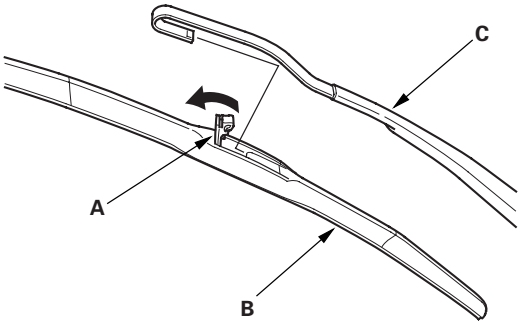
3. Press and hold the tab (B), and slide the wiper blade (C) toward the tab until it releases from the wiper arm (D).
4. Find the side of the blade labeled ''LOCK'' (A), then pull back the end of the blade and slide out the old rubber (B).



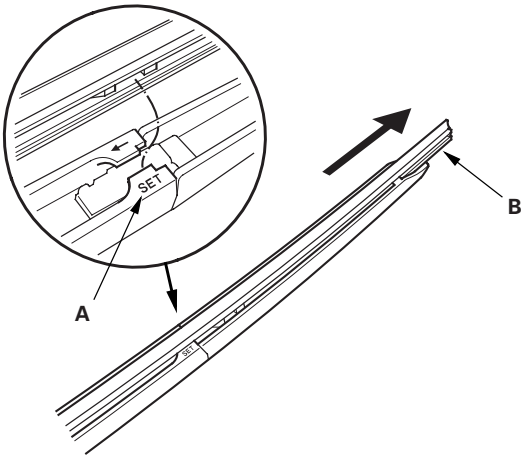
5. Install a new rubber in the reverse order of removal.
6. Install the wiper blades onto the windshield wiper arms in the reverse order of removal.
7. Test by turning on the wipers. If the blades slip, turn off the wipers and seat the attachments more firmly.

'08-09 models

1. Lift the wiper arm off the windshield, raising the driver's side first, then the passenger's side.
2. Pull up the tab (A), and slide the wiper blade (B) until it releases from the wiper arm (C).



3. Find the blade labeled ''SET'' (A), then release the blade from it.



4. Pull back the end of the blade and slide out the old rubber (B).
5. Install a new rubber in the reverse order of removal.
6. Install the wiper blades onto the windshield wiper arms in the reverse order of removal.
7. Test by turning on the wipers. If the blades slip, turn off the wipers and seat the attachments more firmly.

Wiper Arm/Nozzle Adjustment

Wiper arms stop position

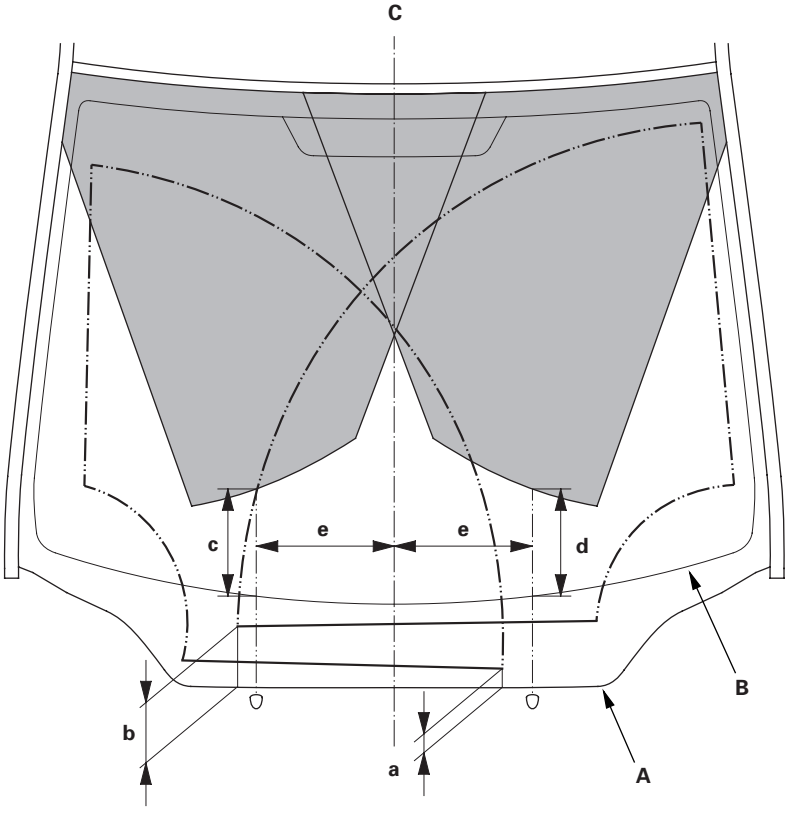
1. When the wiper arms stop at the automatic stop position, confirm that they are at the standard position.

   a: Position at about 23 mm (0.9 in.) from the top of cowl cover (A)
   b: Position at about 96 mm (3.8 in.) [114 mm (4.5 in.)] from the top of cowl cover (A)
   [ ] : '08-09 models

Washer nozzle position

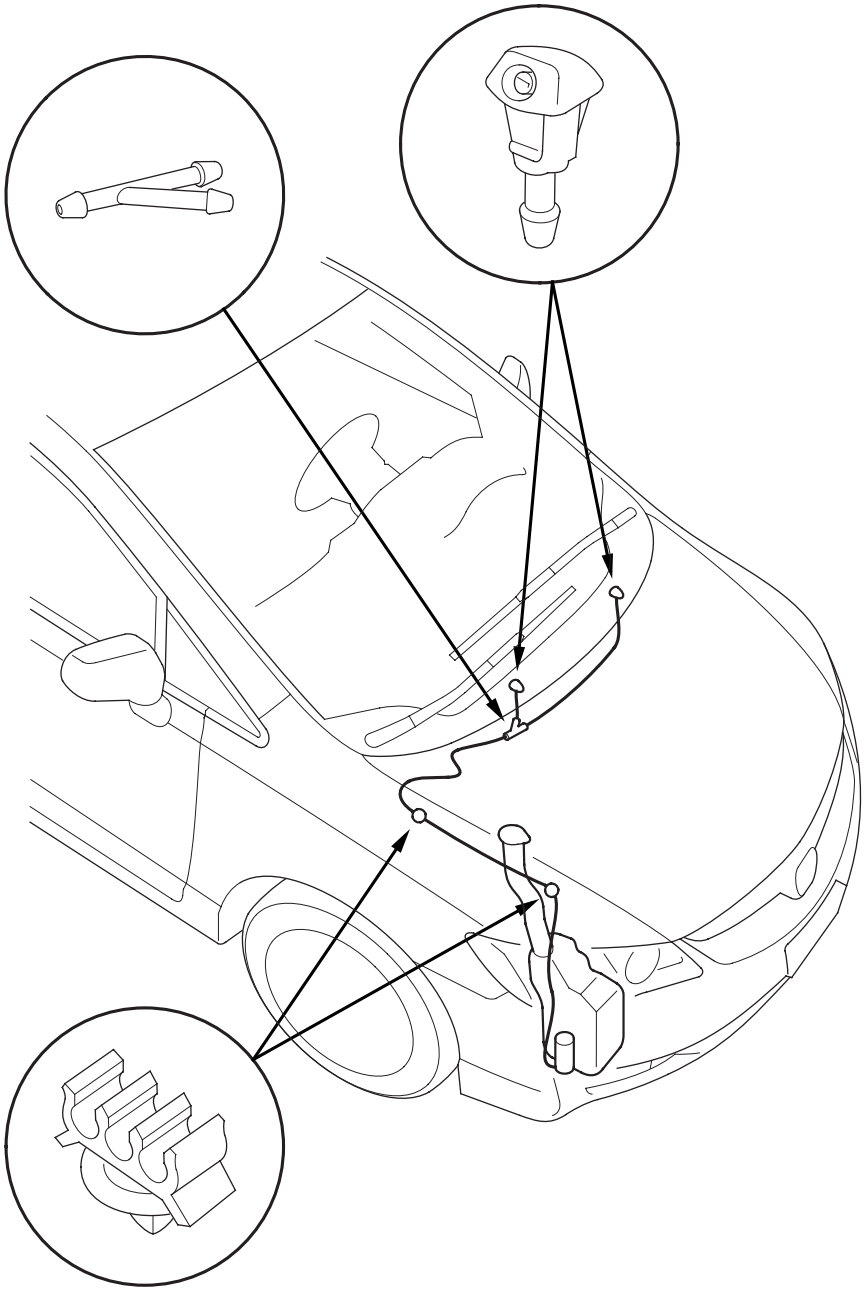
2. When you turn on the washers, confirm 50 % or more of the washer fluid lands within the spray area. If the spray area is not within the standard positions, adjust the nozzles.

   c: Position at about 192 mm (7.6 in.) from the top of the black ceramic area (B) at the lower windshield
   d: Position at about 192 mm (7.6 in.) from the top of the black ceramic area (B) at the lower windshield
   e: Position at about 250 mm (9.8 in.) from the windshield center line (C)



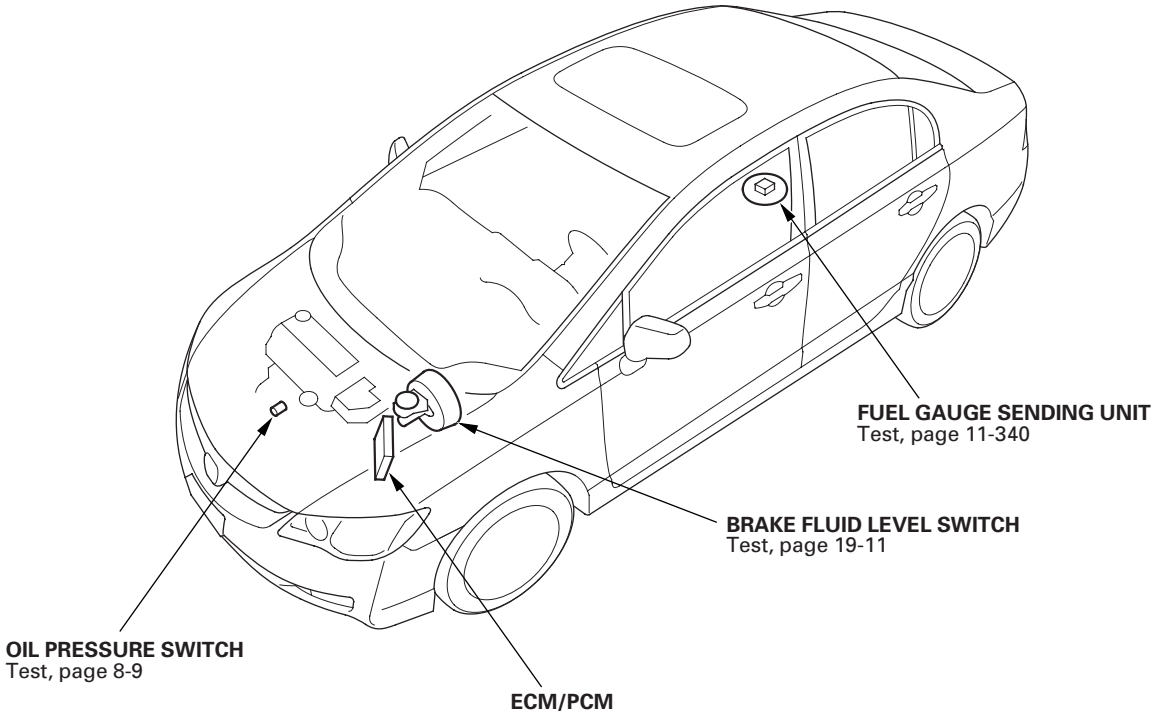
Washer Tube Replacement

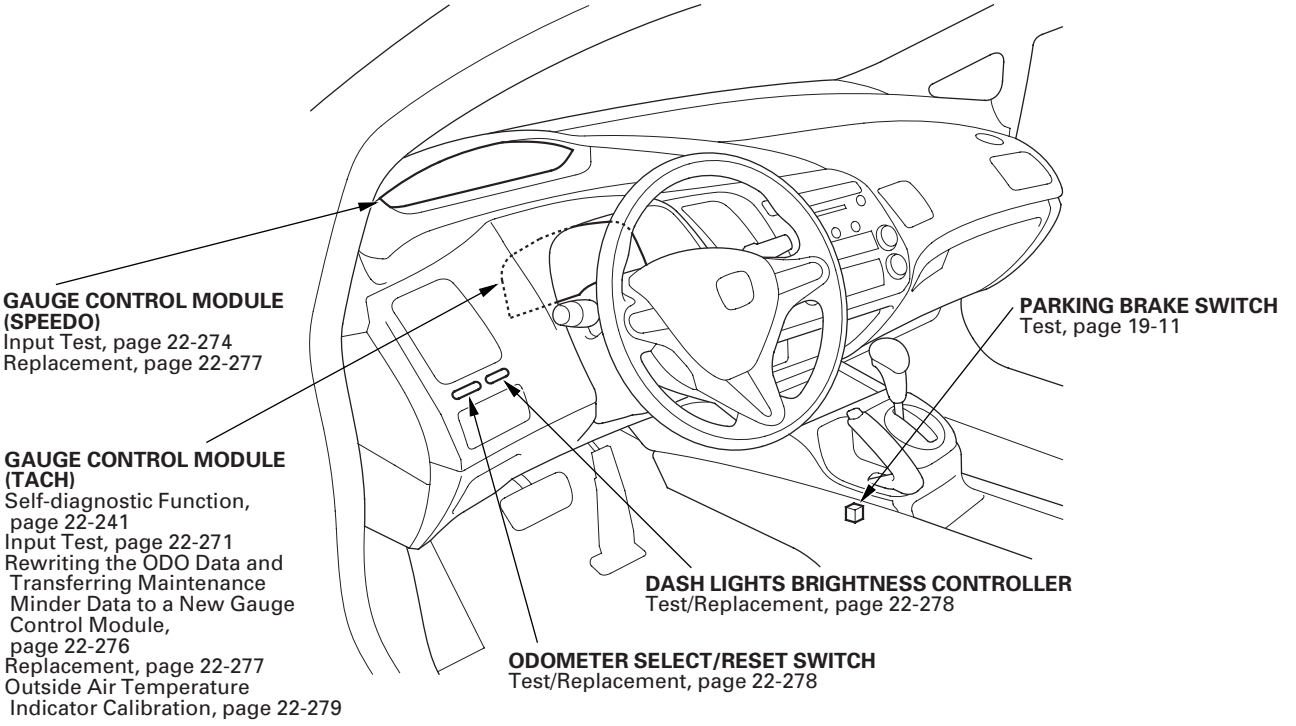
1. Remove the right inner fender (see page 20-171).
2. Remove the washer nozzles and clips, then remove the tubes.

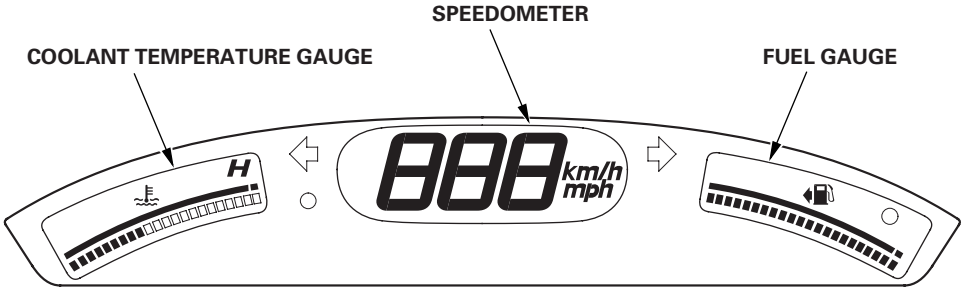


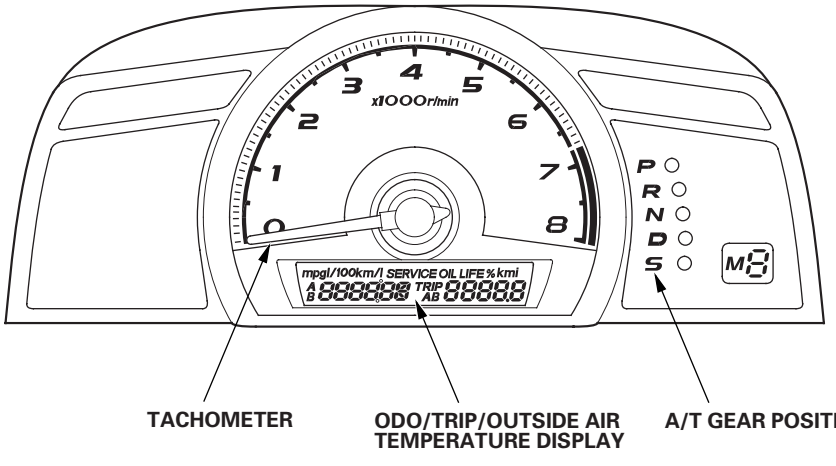
3. Install the parts in the reverse order of removal. Take care not to pinch the washer tube. Check the windshield washer operation.

Component Location Index





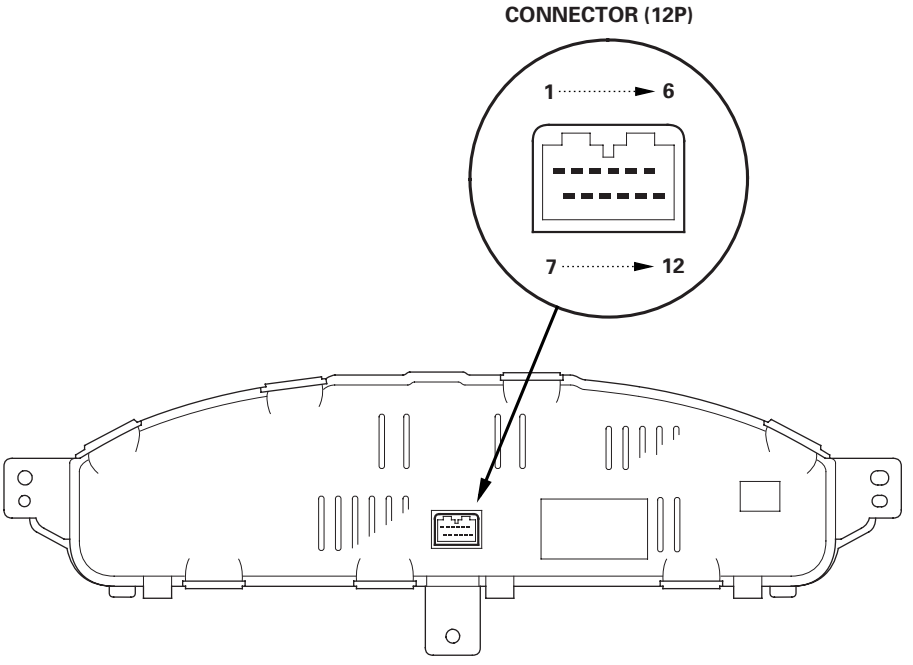

SPEEDOMETER
COOLANT TEMPERATURE GAUGE
FUEL GAUGE
H
km/h
mph


x1000r/min
0
1
2
3
4
5
6
7
8
P
R
N
D
S
M
mpgl/100km/l SERVICE OIL LIFE % kmi
TRIP
A
B
TACHOMETER
ODO/TRIP/OUTSIDE AIR TEMPERATURE DISPLAY
A/T GEAR POSITION INDICATOR

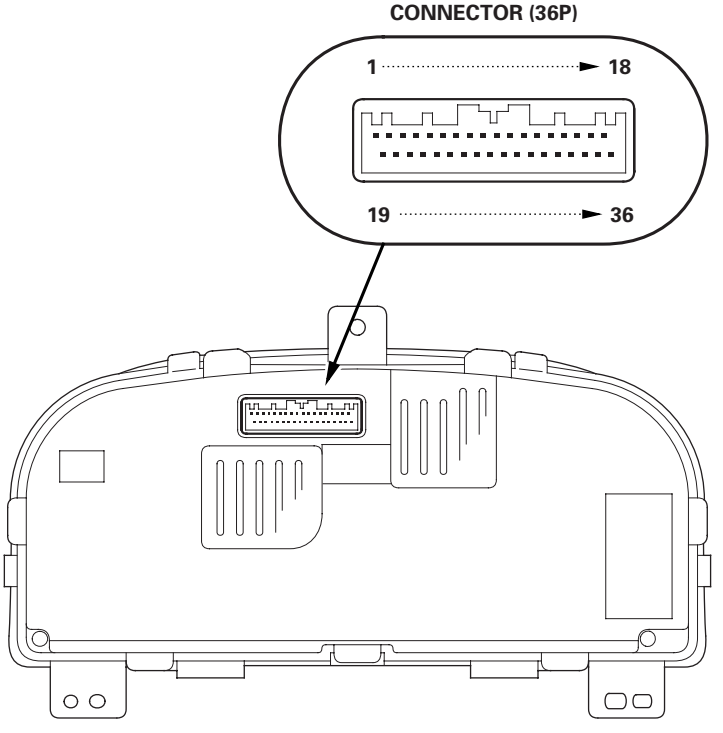
(cont'd)

Component Location Index (cont'd)

Gauge Control Module (Speedo)



Gauge Control Module (Tach)



Self-diagnostic Function

Before troubleshooting the gauge system, refer to multiplex integrated control system B-CAN System Diagnosis Test Mode A (see page 22-93).

The gauge control module (tach) has a self-diagnostic function shown, and also has a customizable reset function.

- The beeper drive circuit check.
- The indicator drive circuit check.
- The switch input test.
- The LCD segments check.
- The gauges drive circuit check (Tachometer, Fuel gauge, Coolant temperature gauge).
- The communication line check (B-CAN, F-CAN, and UART lines).

NOTE: Indicators are also controlled via the communication line.

Entering the self-diagnostic function with the HDS

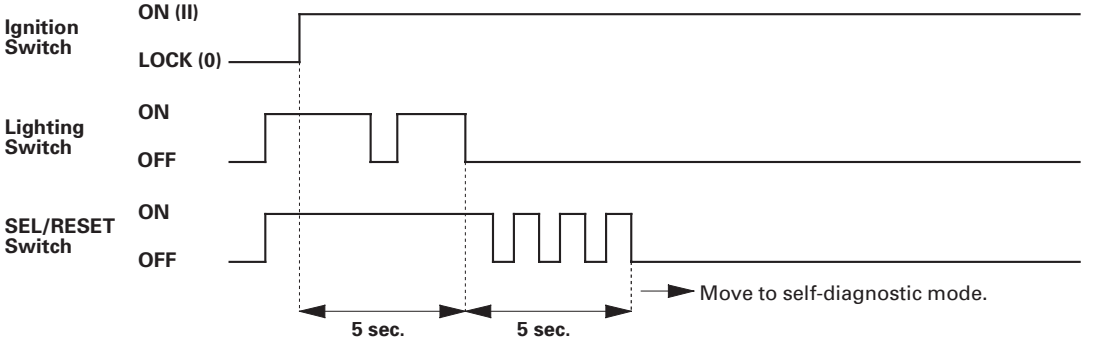
Using the HDS, select Body Electrical, Gauges, then Function Test and do the self-diagnostic function.

Entering the self-diagnostic function (manual method)

Before doing the self-diagnostic function, check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box and the No. 23 (10 A) fuse in the under-hood fuse/relay box.

1. Push and hold the SEL/RESET switch button.
2. Turn the headlights ON.
3. Turn the ignition switch to ON (II).
4. Within 5 sec., turn the headlights OFF, then ON and OFF again.
5. Within 5 sec., release the SEL/RESET switch button, and then push and release the button three times repeatedly.

NOTE:
- While in the self-diagnostic mode, the dash lights brightness controller operates normally.
- While in the self-diagnostic mode, the SEL/RESET switch button is used to start the Beeper Drive Circuit Test and the Gauge Drive Circuit Check.
- If the vehicle speed exceeds 2 km/h (1.2 mph) or the ignition switch is turned to LOCK (0), the self-diagnostic mode ends.



(cont'd)

Self-diagnostic Function (cont'd)

The Indicator Drive Circuit Check

When entering the self-diagnostic mode, the following indicators blink:
A/T gear position indicator, ABS indicator, brake system indicator, charging system indicator, cruise control indicator, cruise main indicator, door indicator, DRL indicator, EPS indicator, fog light indicator*3, high beam indicator, immobilizer indicator, lights-on indicator, low fuel indicator, low oil pressure indicator, low tire pressure indicator*2, maintenance minder indicator, malfunction indicator lamp (MIL), REV limit indicator (TYPE S model), seat belt reminder indicator, security indicator, side airbag cutoff indicator, SRS indicator, TPMS indicator*2, trunk indicator, VSA activation indicator*1, VSA indicator*1, and washer fluid level indicator.
* 1: '07 TYPE S and '08-09 models
* 2: '08-09 models
* 3: TYPE S and '08 Premium and '09 models

Switch Input Check

At the initial stage of the self-diagnostic function, the beep sounds intermittently, the beeper sounds continuously when any of the following switch inputs are switched from OFF to ON:
Cruise control main, dash lights brightness controller volume (+), (−) button, mph km/h switch, parking brake switch, SEL/RESET switch, SET, RESUME, CANCEL switches, and VSA OFF switch*.
*: '07 TYPE S and '08-09 models

The Beeper Drive Circuit Check

When entering the self-diagnostic mode, the beeper sounds five times.

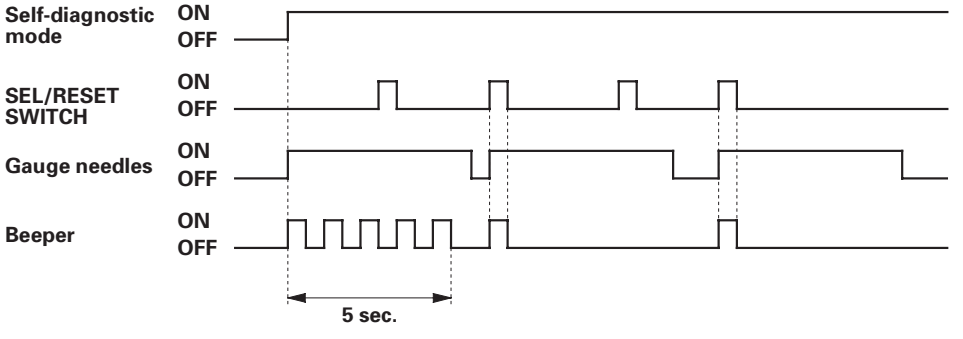
The LCD Segment Check

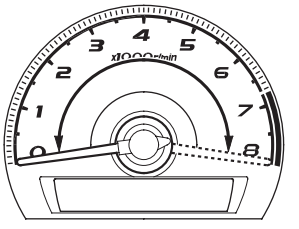
When entering the self-diagnostic mode, all the segments blink five times.

The Gauge Drive Circuit Check

When entering the self-diagnostic mode, the tachometer needle sweeps from the minimum position to maximum position, then returns to the minimum position.

NOTE:
After the beeper stops sounding and the gauge needle returns to the minimum position, pushing the SEL/RESET switch starts the Beeper Drive Circuit Check (one beep) and the Gauge Drive Circuit Check again.
The check cannot be started again until the gauge needle returns to the minimum position.





The needle sweeps from the minimum position to the maximum position, then return to the minimum position.

If the needle fails to sweep, or the beeper does not sound, replace the gauge control module (tach).

The Communication Line Check

While in the self-diagnostic mode, the Communication Line Check starts after the LCD Segments Check.
If all segments come on, the communication line is OK. If faulty, the word ''Error'' will be indicated on the odometer display followed by number(s).

TYPE S model Error Code List

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 12	F-CAN and B-CAN communication

Except TYPE S model Error Code List

Error code	Type of communication line(s) error
Error 1	F-CAN communication
Error 2	B-CAN communication
Error 3	UART communication
Error 12	F-CAN and B-CAN communication
Error 13	F-CAN and UART communication
Error 23	B-CAN and UART communication
Error 123	F-CAN, B-CAN and UART communication

Example Indication

Normal (all segments come on.):

Faulty (Error 1):

Fault (Error 13):

Fault (Error 123):

- If the word ''Error 1'' is indicated, there is a malfunction in the communication line between the gauge control module (tach) and the fast-controller area network (F-CAN). Check for DTCs in the ECM/PCM and troubleshoot any DTCs found. If no DTCs are found, go to indicated troubleshooting.
- If the word ''Error 2'' is indicated, there is a malfunction in the communication line between the gauge control module (tach) and the body-controller area network (B-CAN). Go to indicated troubleshooting (B1155 to B1160).
- Except TYPE S model: If the word ''Error 3'' is indicated, there is a malfunction in the UART communication line between the gauge control module (tach) and the gauge control module (speedo). Go to the gauge control module (tach) input test and check terminal No. 20. If the wire harness is OK, substitute a known-good gauge control module (speedo) and recheck.

If any F-CAN or B-CAN communication line errors are found, go to DTC check using HDS.

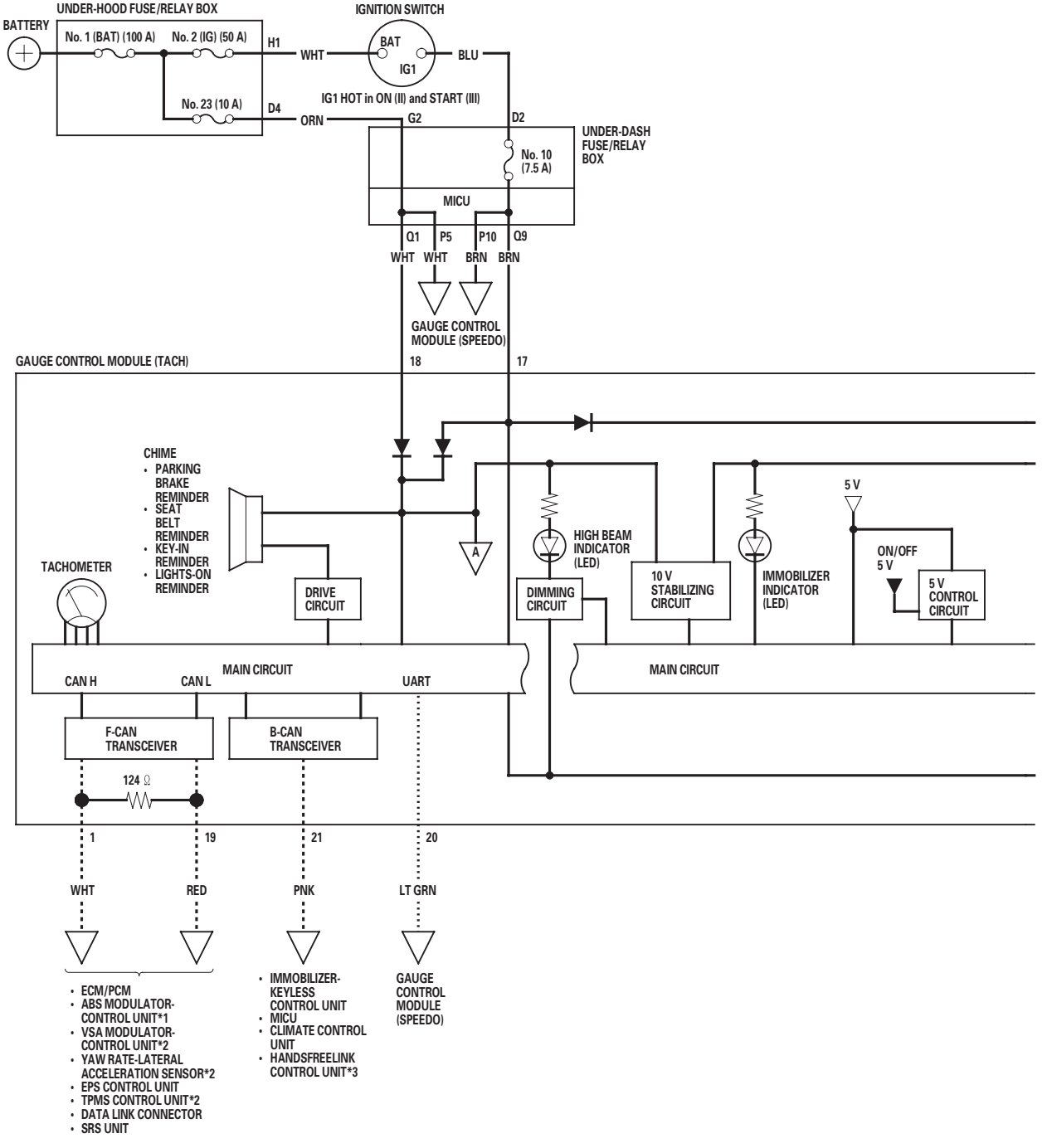
Ending the self-diagnostic function

Turn the ignition switch to LOCK (0).

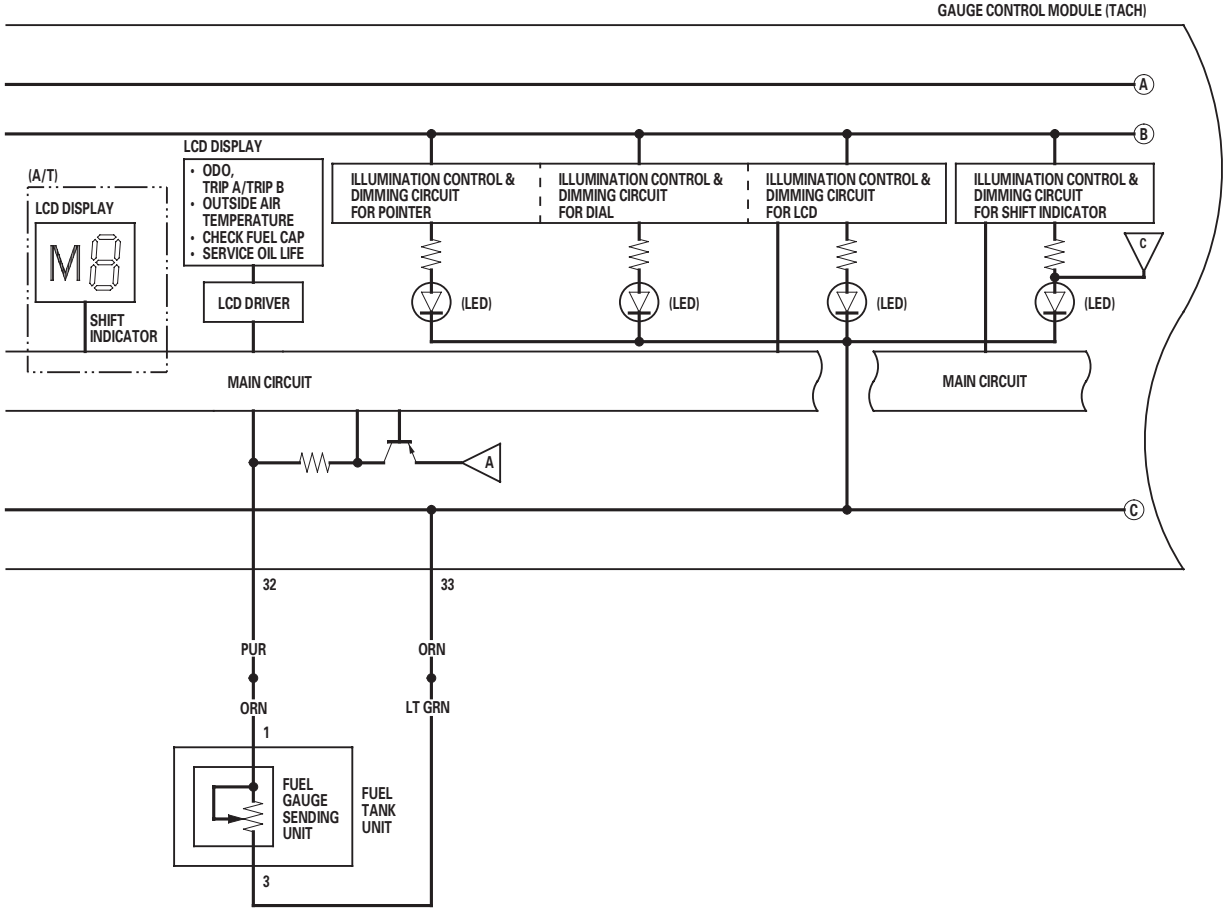
NOTE: If the vehicle speed exceeds 2 km/h (1.2 mph), the self-diagnostic function ends.

Circuit Diagram - Gauge Control Module (Tach)

Except TYPE S model

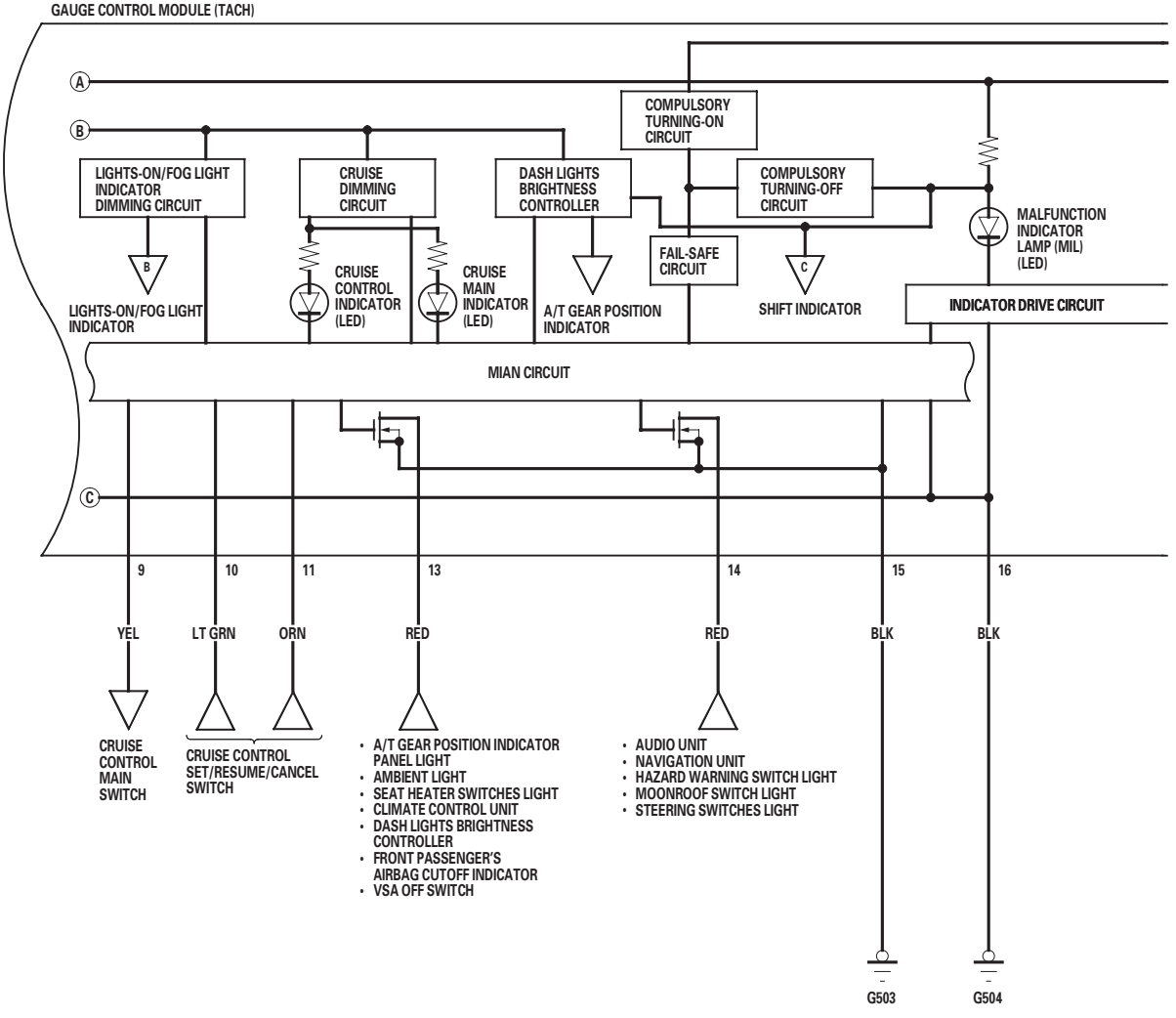


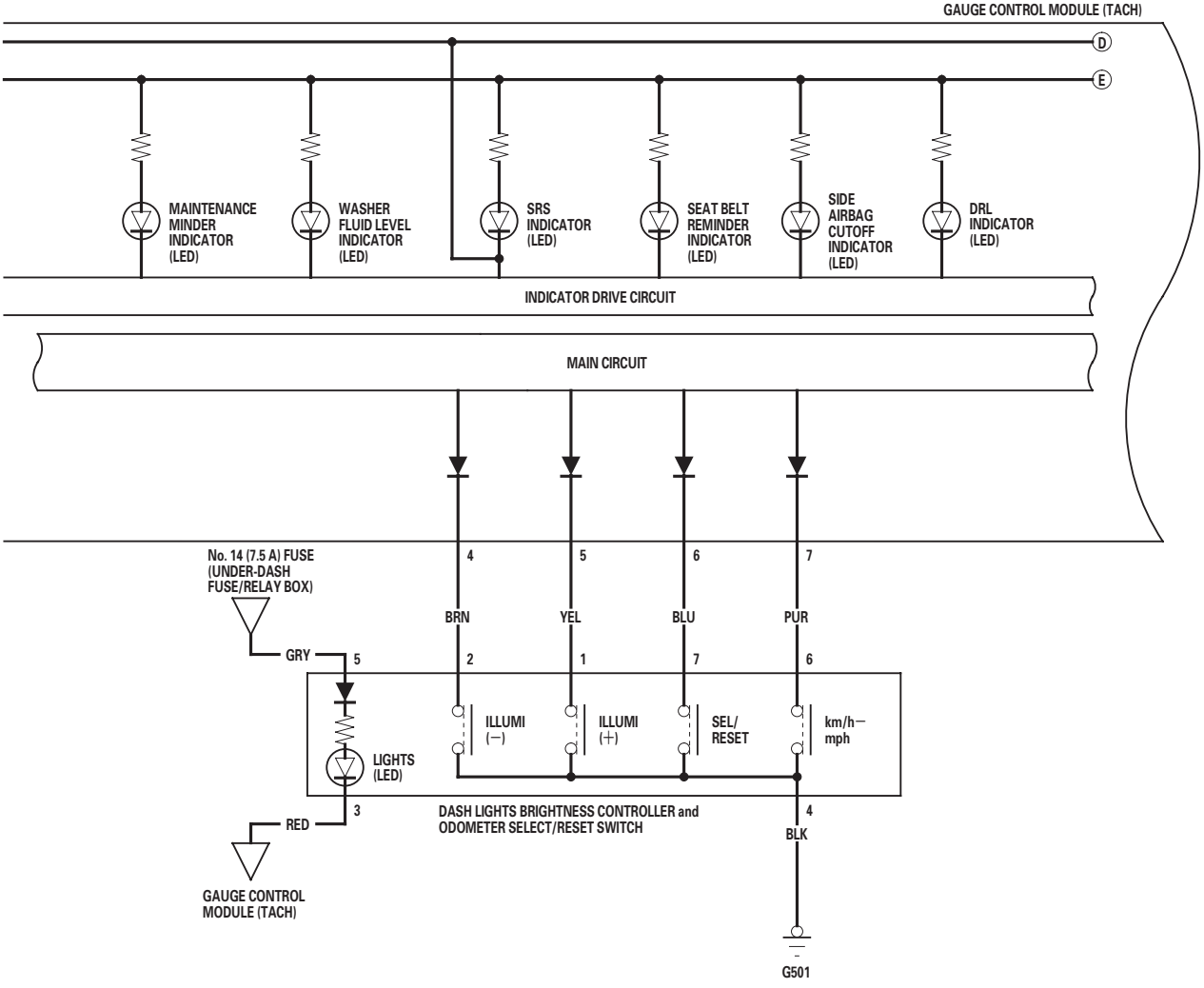
: CAN line
: Other communication line
*1: '06–07 models
*2: '08–09 models
*3: '09 model with navigation system



(cont'd)

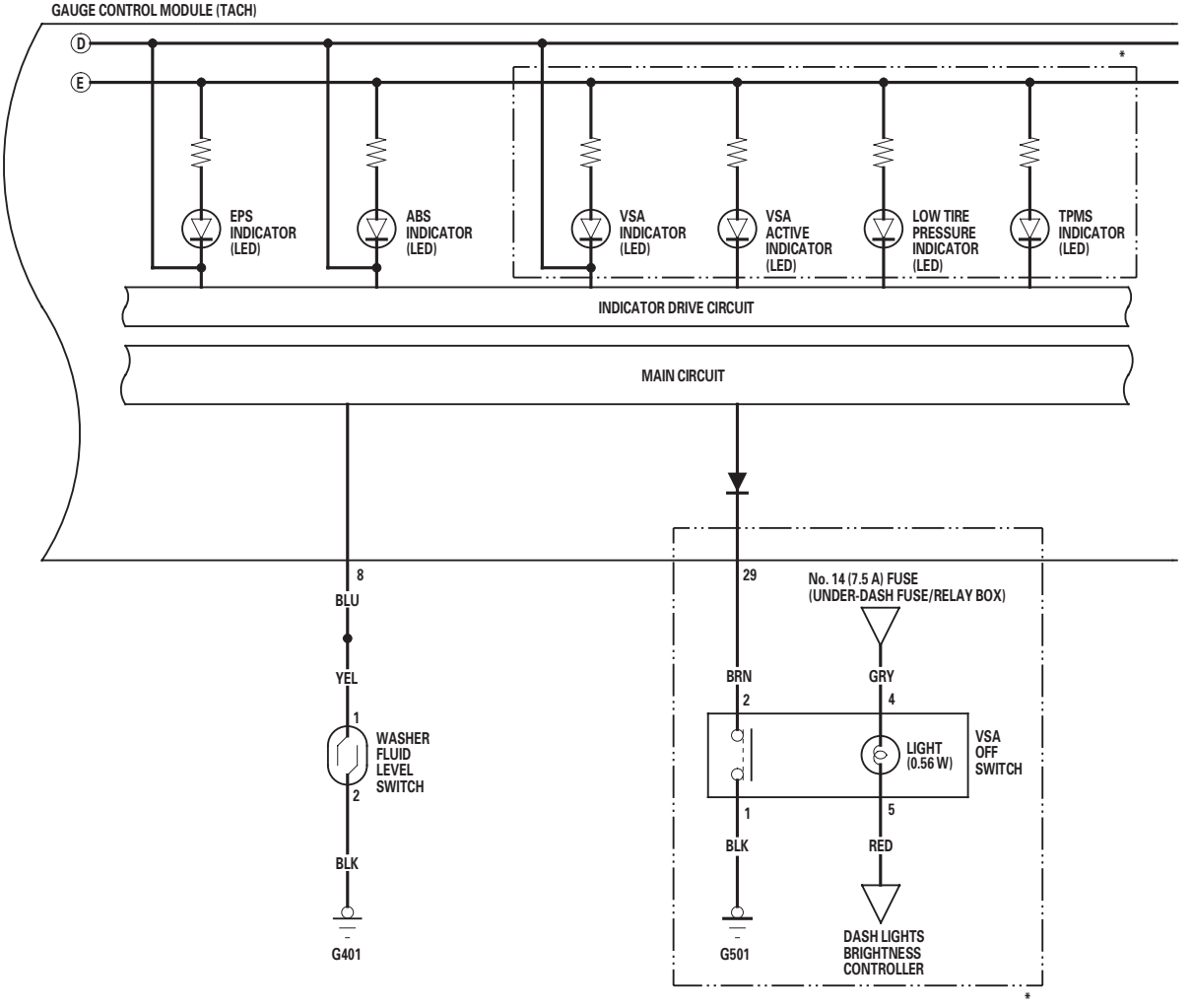
Circuit Diagram - Gauge Control Module (Tach) (cont'd)



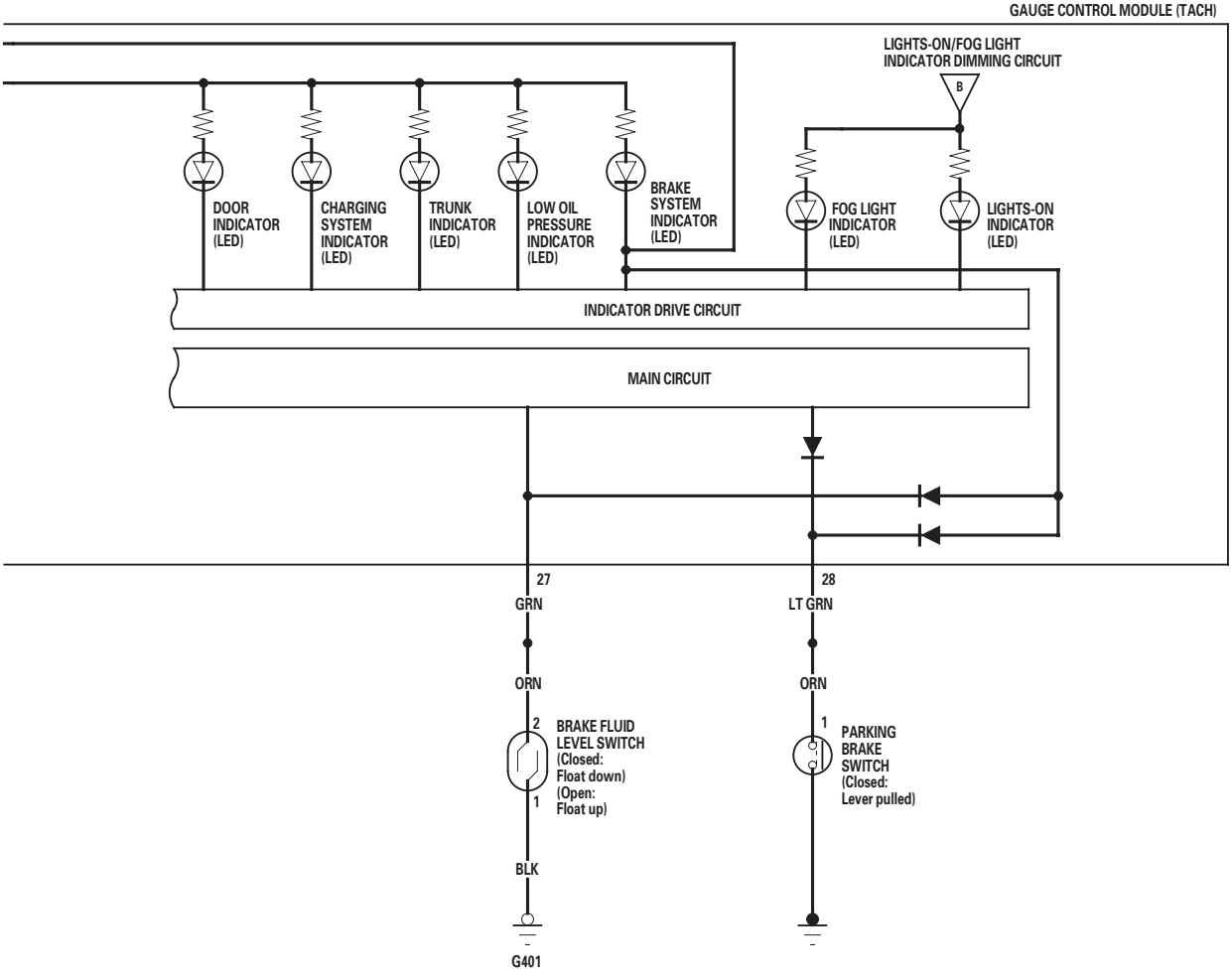

GAUGE CONTROL MODULE (TACH)
D
E
MAINTENANCE MINDER INDICATOR (LED)
WASHER FLUID LEVEL INDICATOR (LED)
SRS INDICATOR (LED)
SEAT BELT REMINDER INDICATOR (LED)
SIDE AIRBAG CUTOFF INDICATOR (LED)
DRL INDICATOR (LED)
INDICATOR DRIVE CIRCUIT
MAIN CIRCUIT
No. 14 (7.5 A) FUSE (UNDER-DASH FUSE/RELAY BOX)
GRY
5
LIGHTS (LED)
3
RED
GAUGE CONTROL MODULE (TACH)
4
5
6
7
BRN
YEL
BLU
PUR
2
1
7
6
ILLUMI (–)
ILLUMI (+)
SEL/ RESET
km/h– mph
DASH LIGHTS BRIGHTNESS CONTROLLER and ODOMETER SELECT/RESET SWITCH
4
BLK
G501

(cont'd)

Circuit Diagram - Gauge Control Module (Tach) (cont'd)

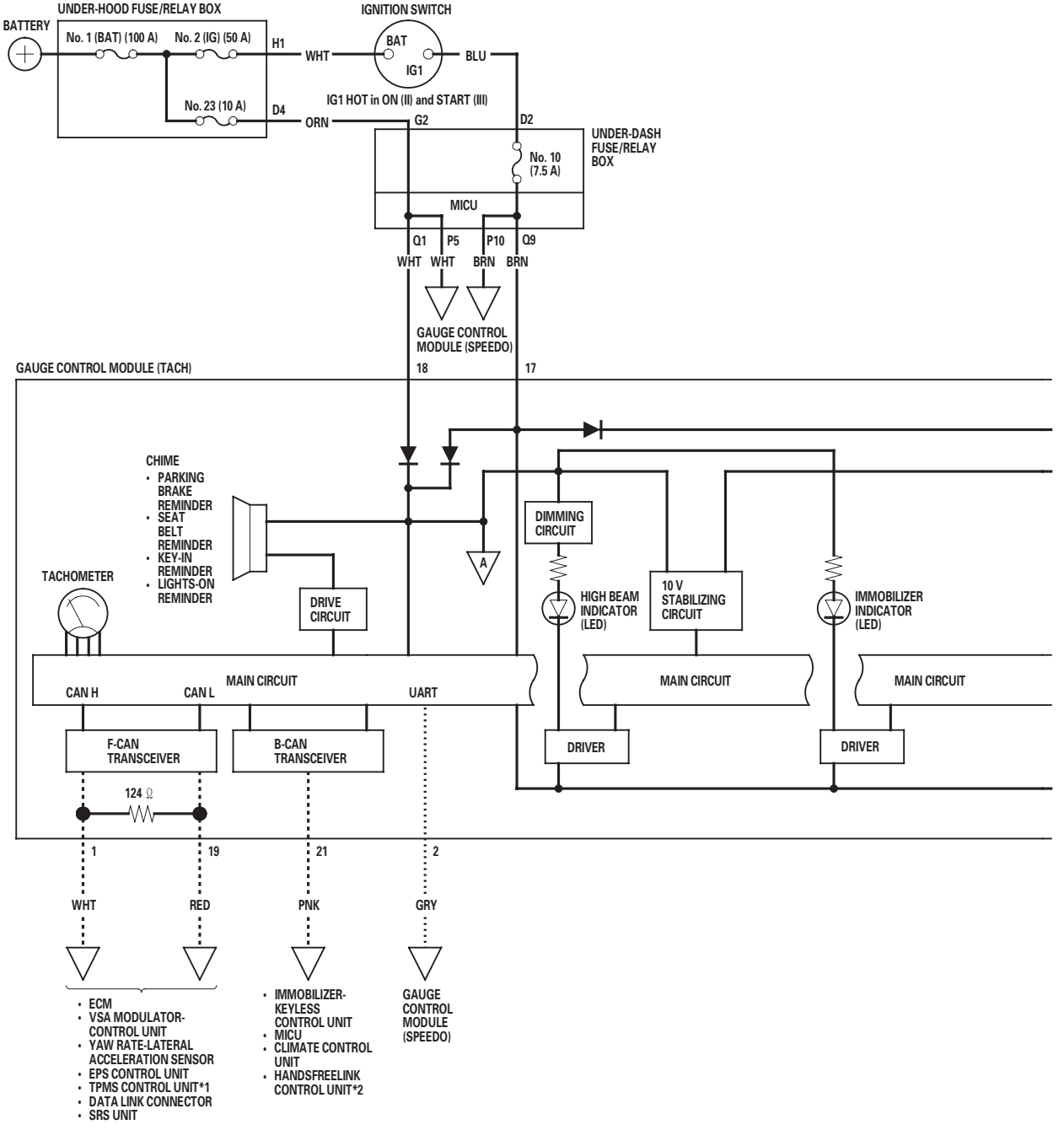


*: '08—09 models

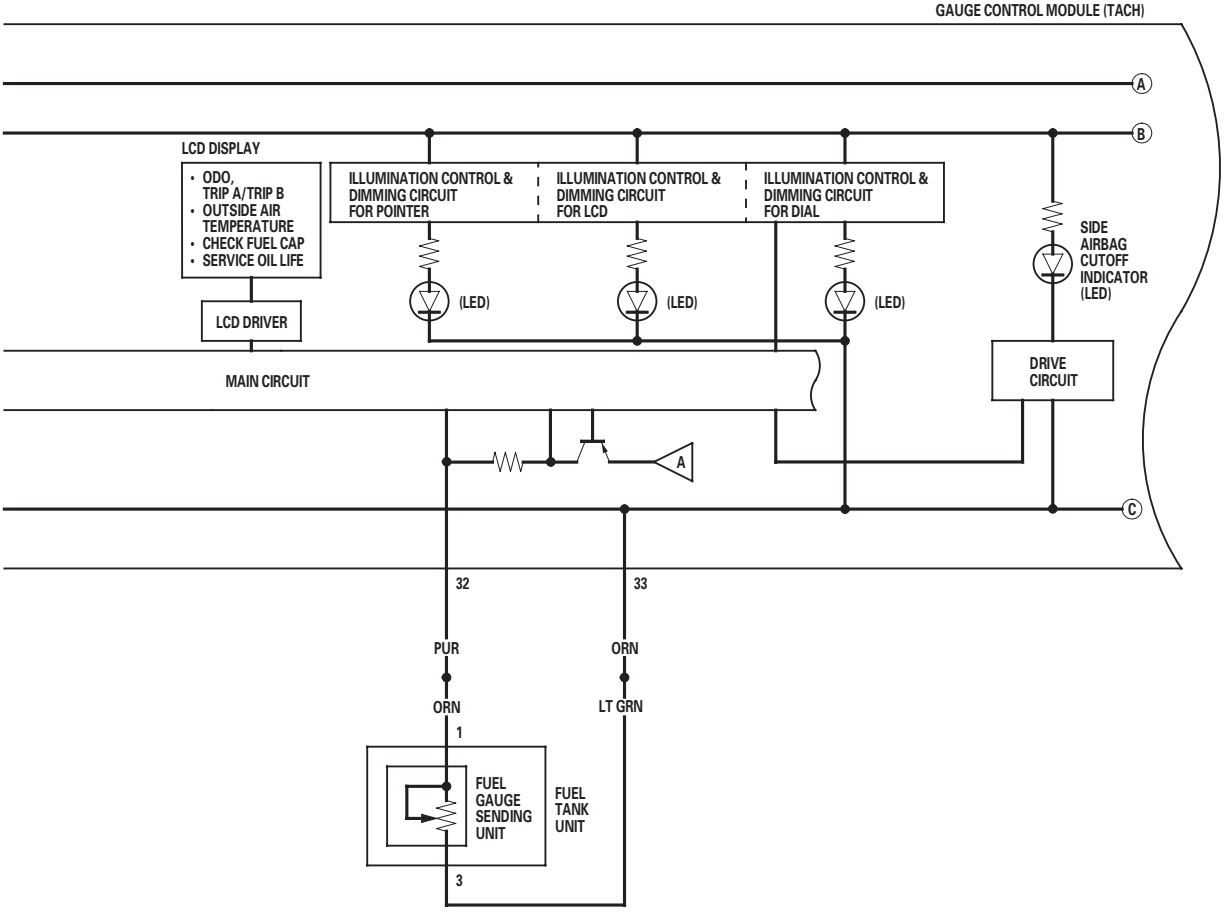

GAUGE CONTROL MODULE (TACH)
LIGHTS-ON/FOG LIGHT INDICATOR DIMMING CIRCUIT
B
DOOR INDICATOR (LED)
CHARGING SYSTEM INDICATOR (LED)
TRUNK INDICATOR (LED)
LOW OIL PRESSURE INDICATOR (LED)
BRAKE SYSTEM INDICATOR (LED)
FOG LIGHT INDICATOR (LED)
LIGHTS-ON INDICATOR (LED)
INDICATOR DRIVE CIRCUIT
MAIN CIRCUIT
27
GRN
ORN
2
1
BRAKE FLUID LEVEL SWITCH (Closed: Float down) (Open: Float up)
BLK
G401
28
LT GRN
ORN
1
PARKING BRAKE SWITCH (Closed: Lever pulled)

Circuit Diagram - Gauge Control Module (Tach) (cont'd)

TYPE S model

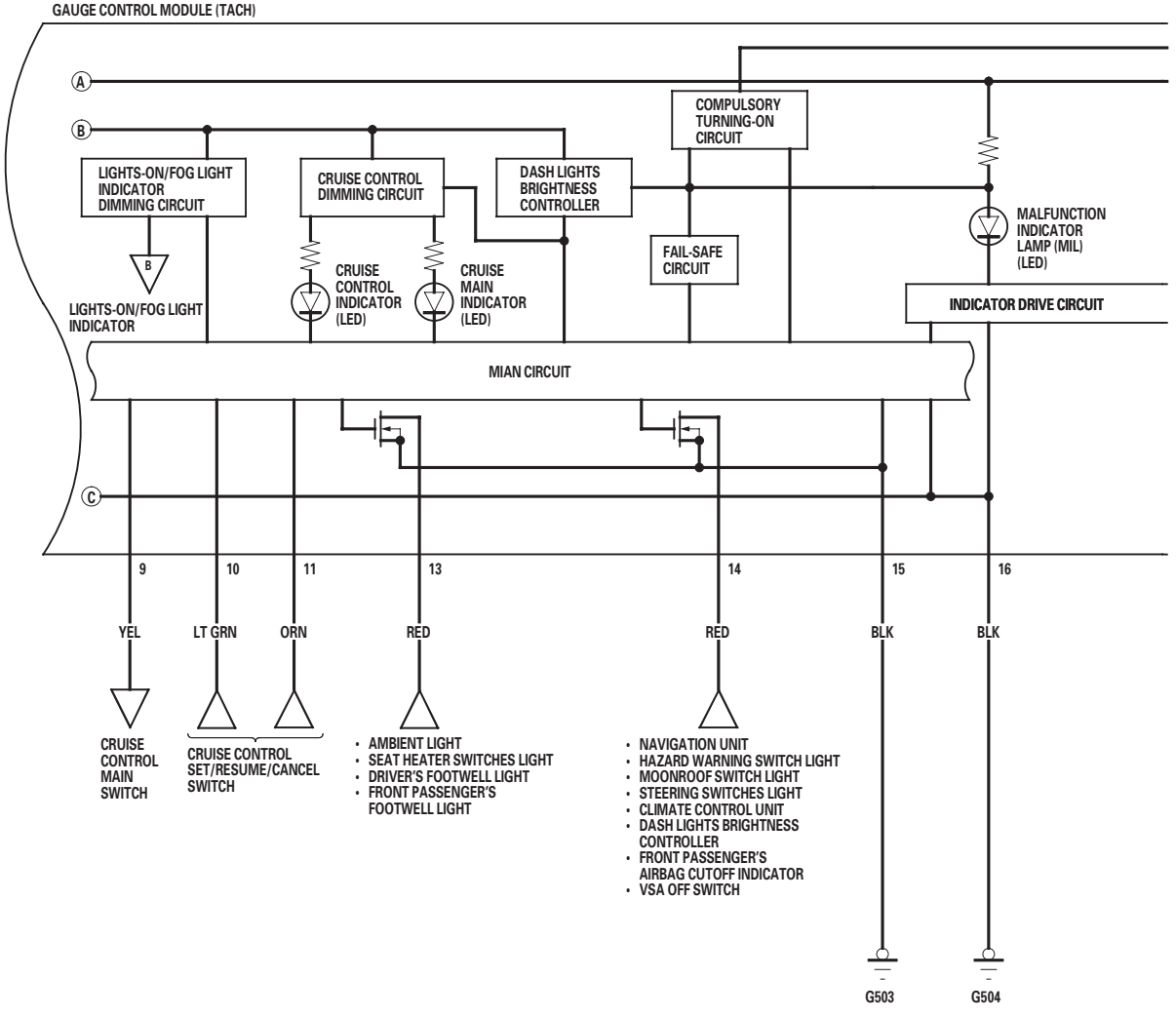


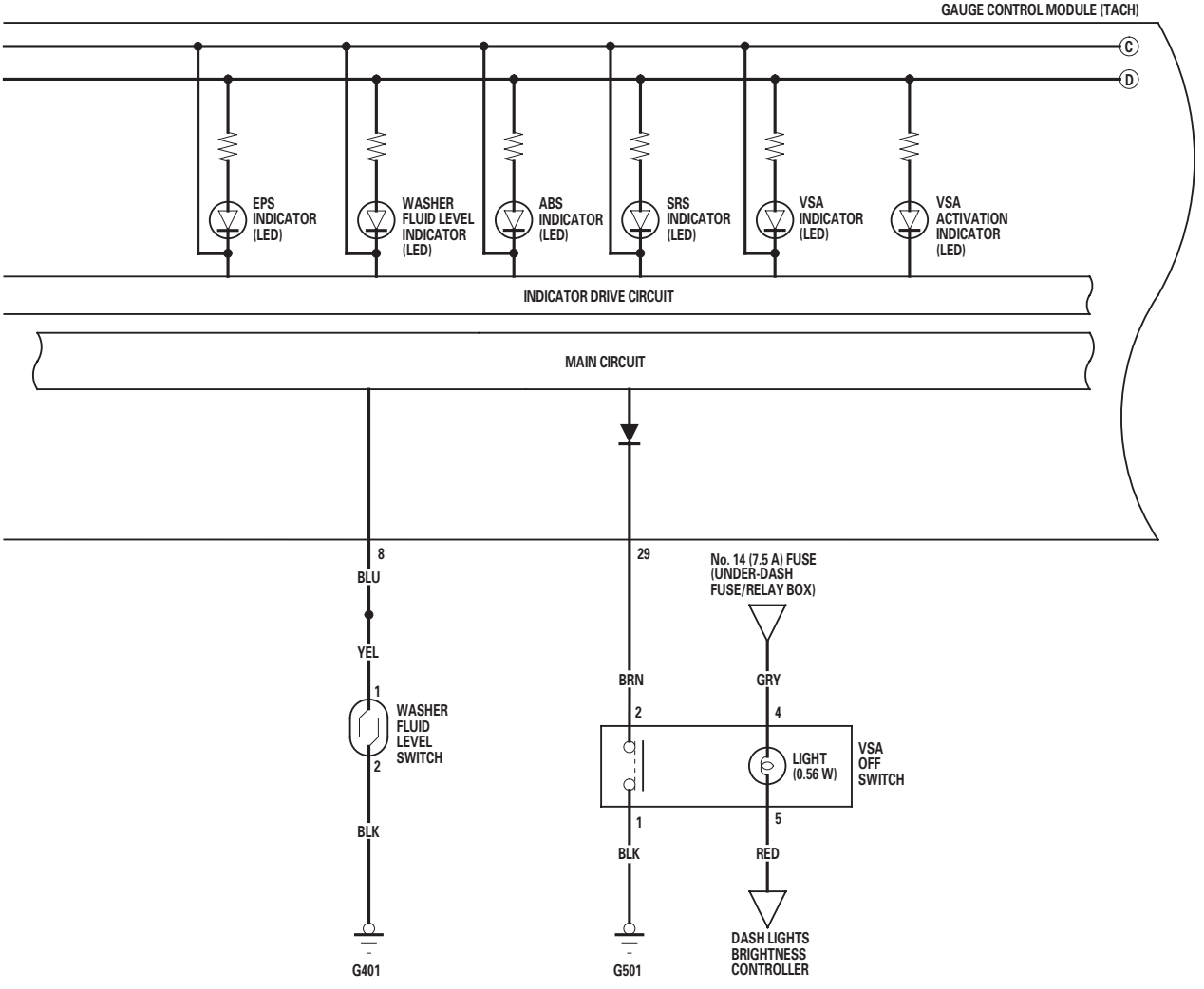
: CAN line
: Other communication line
*1: '08—09 models
*2: '09 model



(cont'd)

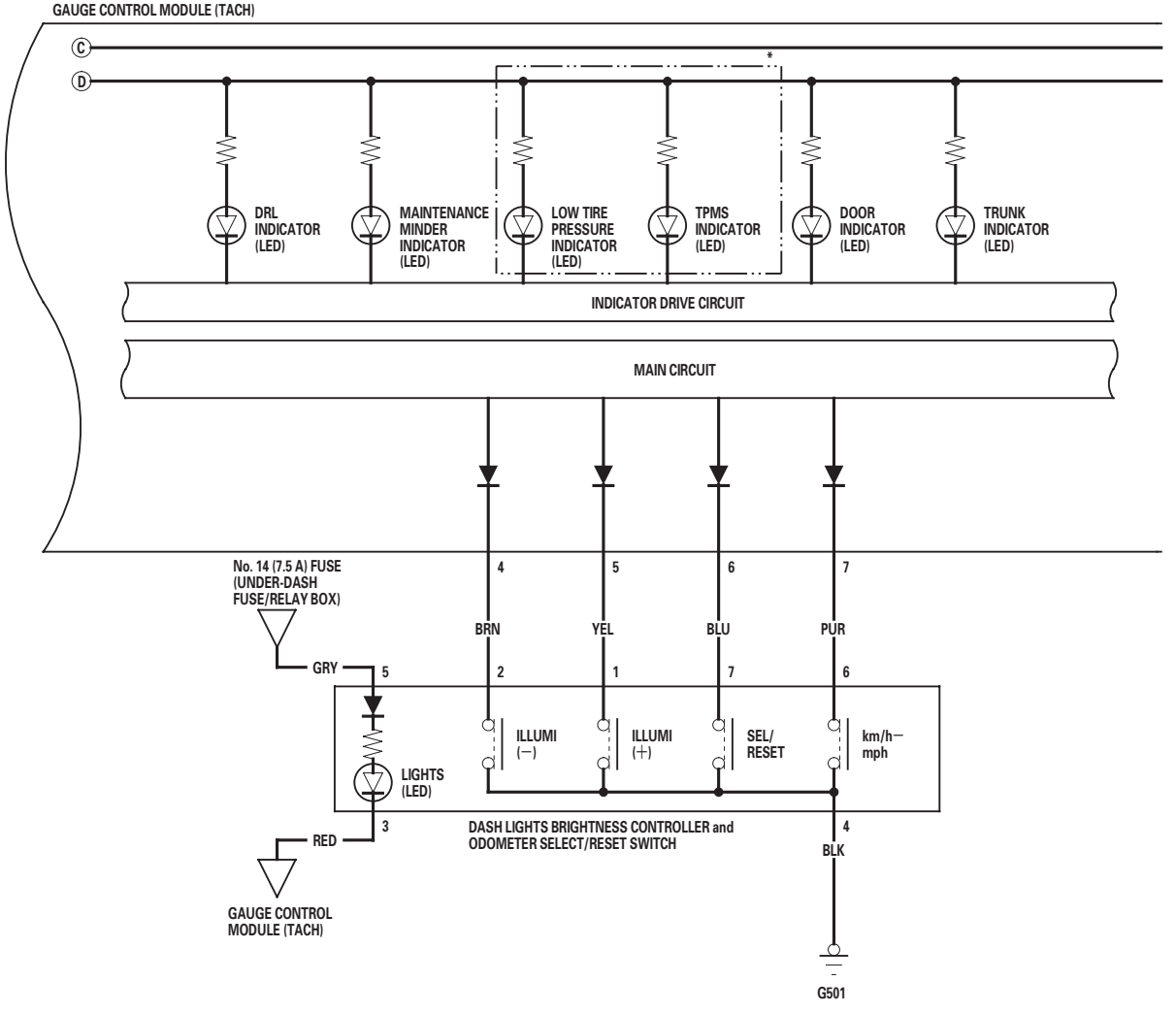
Circuit Diagram - Gauge Control Module (Tach) (cont'd)



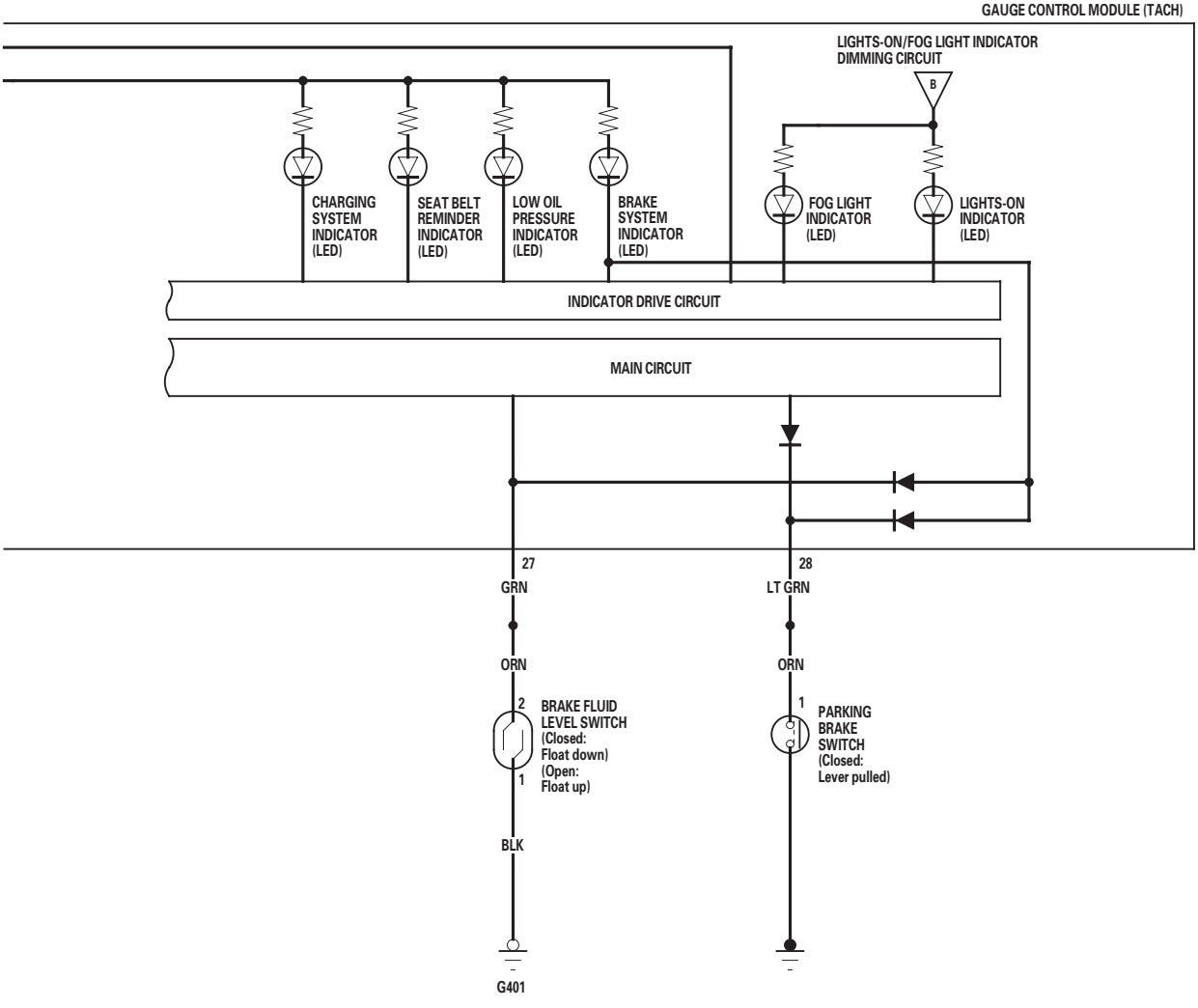

GAUGE CONTROL MODULE (TACH)
C
D
EPS INDICATOR (LED)
WASHER FLUID LEVEL INDICATOR (LED)
ABS INDICATOR (LED)
SRS INDICATOR (LED)
VSA INDICATOR (LED)
VSA ACTIVATION INDICATOR (LED)
INDICATOR DRIVE CIRCUIT
MAIN CIRCUIT
8
BLU
YEL
1
WASHER FLUID LEVEL SWITCH
2
BLK
G401
29
BRN
2
1
BLK
G501
No. 14 (7.5 A) FUSE (UNDER-DASH FUSE/RELAY BOX)
GRY
4
LIGHT (0.56 W)
VSA OFF SWITCH
5
RED
DASH LIGHTS BRIGHTNESS CONTROLLER

(cont'd)

Circuit Diagram - Gauge Control Module (Tach) (cont'd)

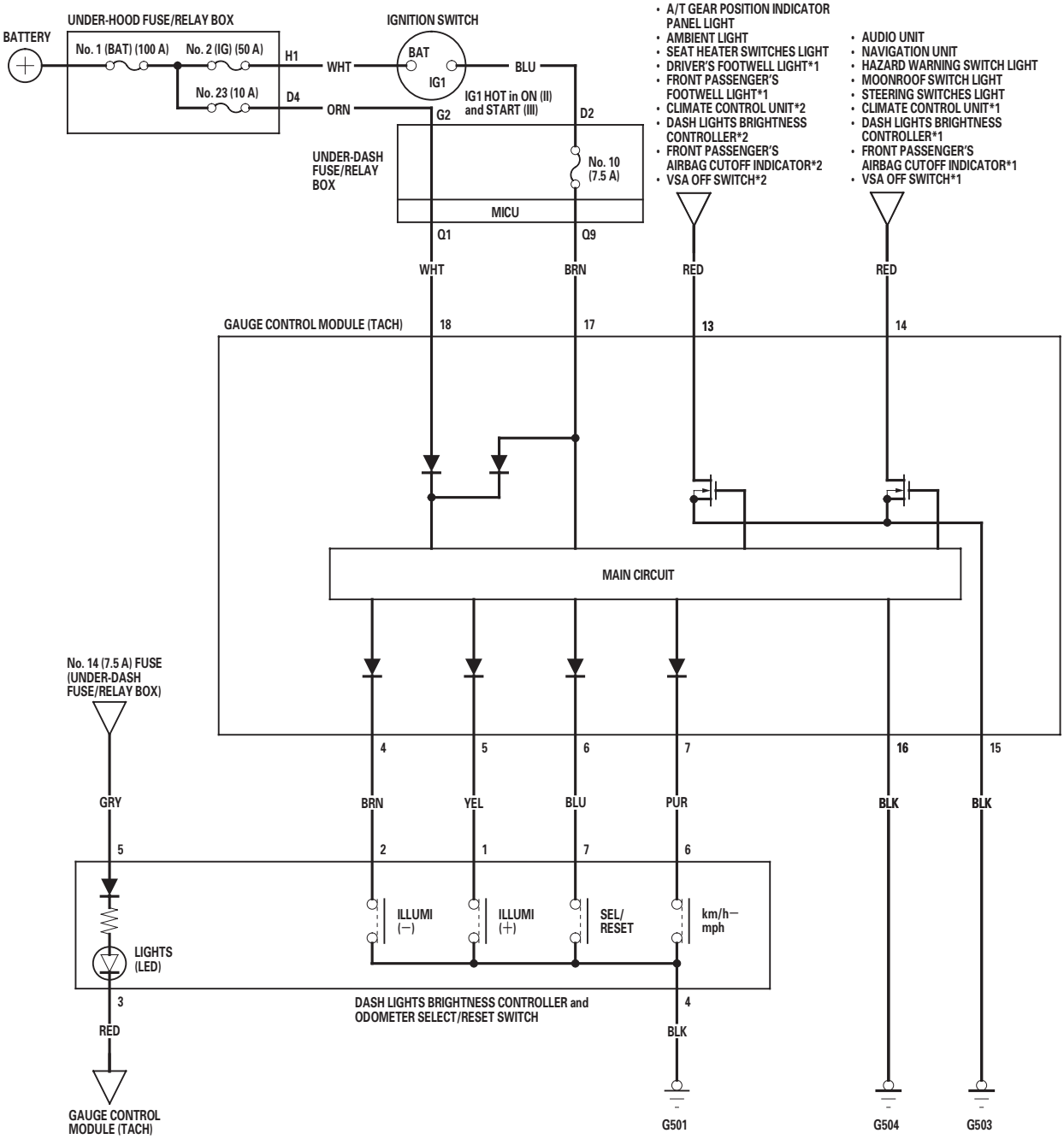


*: '08—09 models


GAUGE CONTROL MODULE (TACH)
LIGHTS-ON/FOG LIGHT INDICATOR DIMMING CIRCUIT
B
CHARGING SYSTEM INDICATOR (LED)
SEAT BELT REMINDER INDICATOR (LED)
LOW OIL PRESSURE INDICATOR (LED)
BRAKE SYSTEM INDICATOR (LED)
FOG LIGHT INDICATOR (LED)
LIGHTS-ON INDICATOR (LED)
INDICATOR DRIVE CIRCUIT
MAIN CIRCUIT
27
GRN
ORN
2
1
BRAKE FLUID LEVEL SWITCH (Closed: Float down) (Open: Float up)
BLK
G401
28
LT GRN
ORN
1
PARKING BRAKE SWITCH (Closed: Lever pulled)

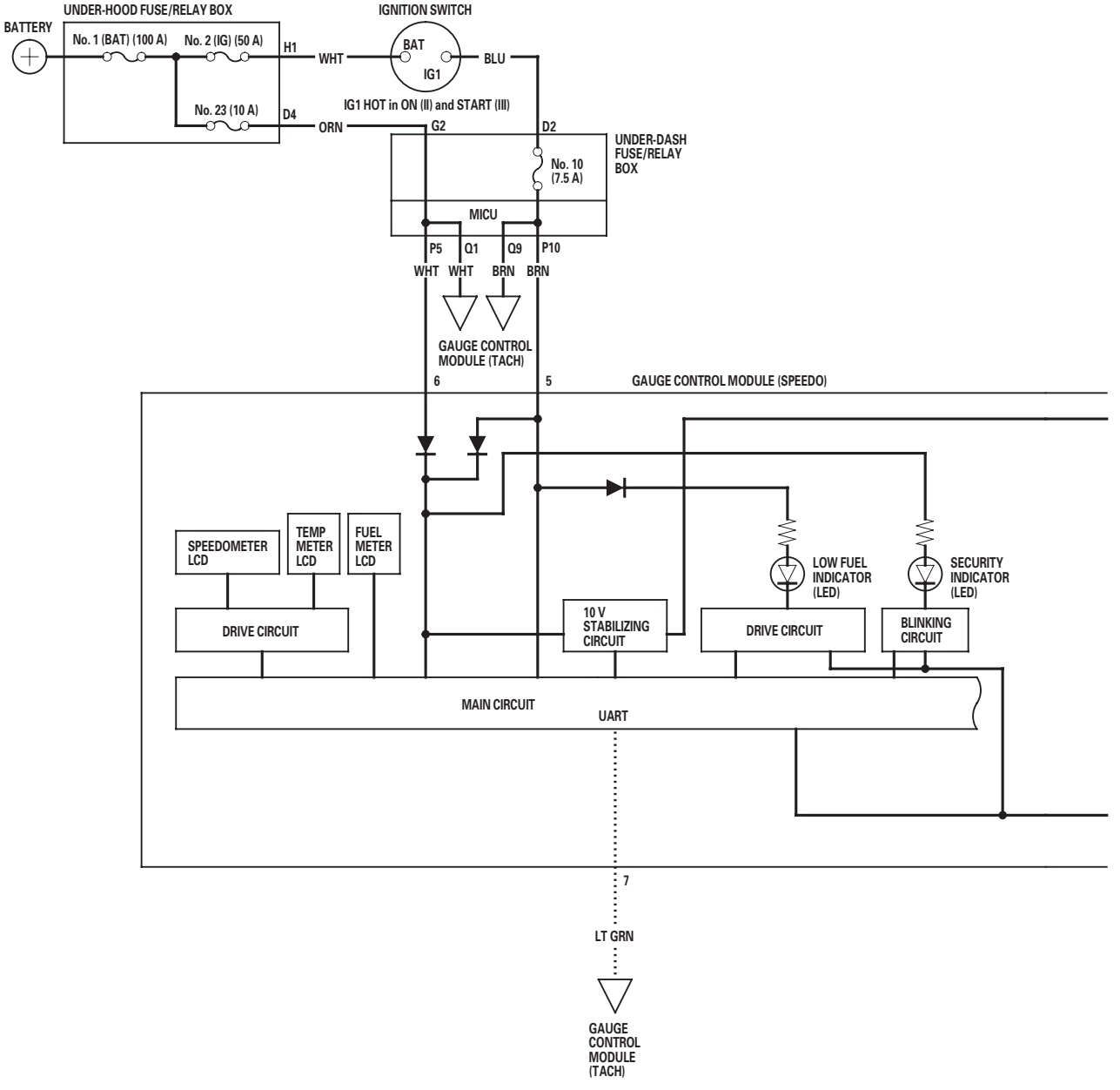
Circuit Diagram - Dash Lights Brightness Controller

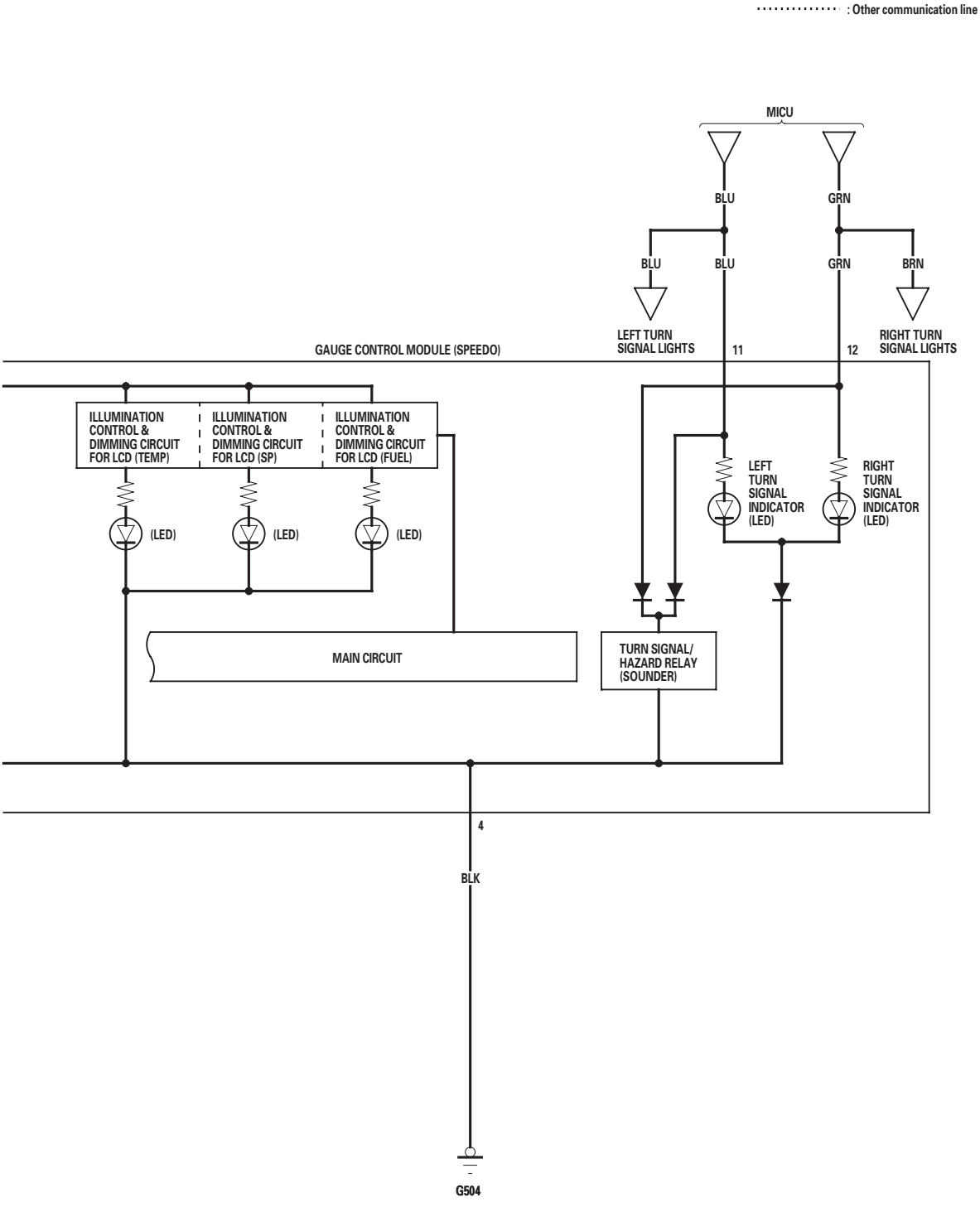
*1: TYPE S model
*2: Except TYPE S model



Circuit Diagram - Gauge Control Module (Speedo)

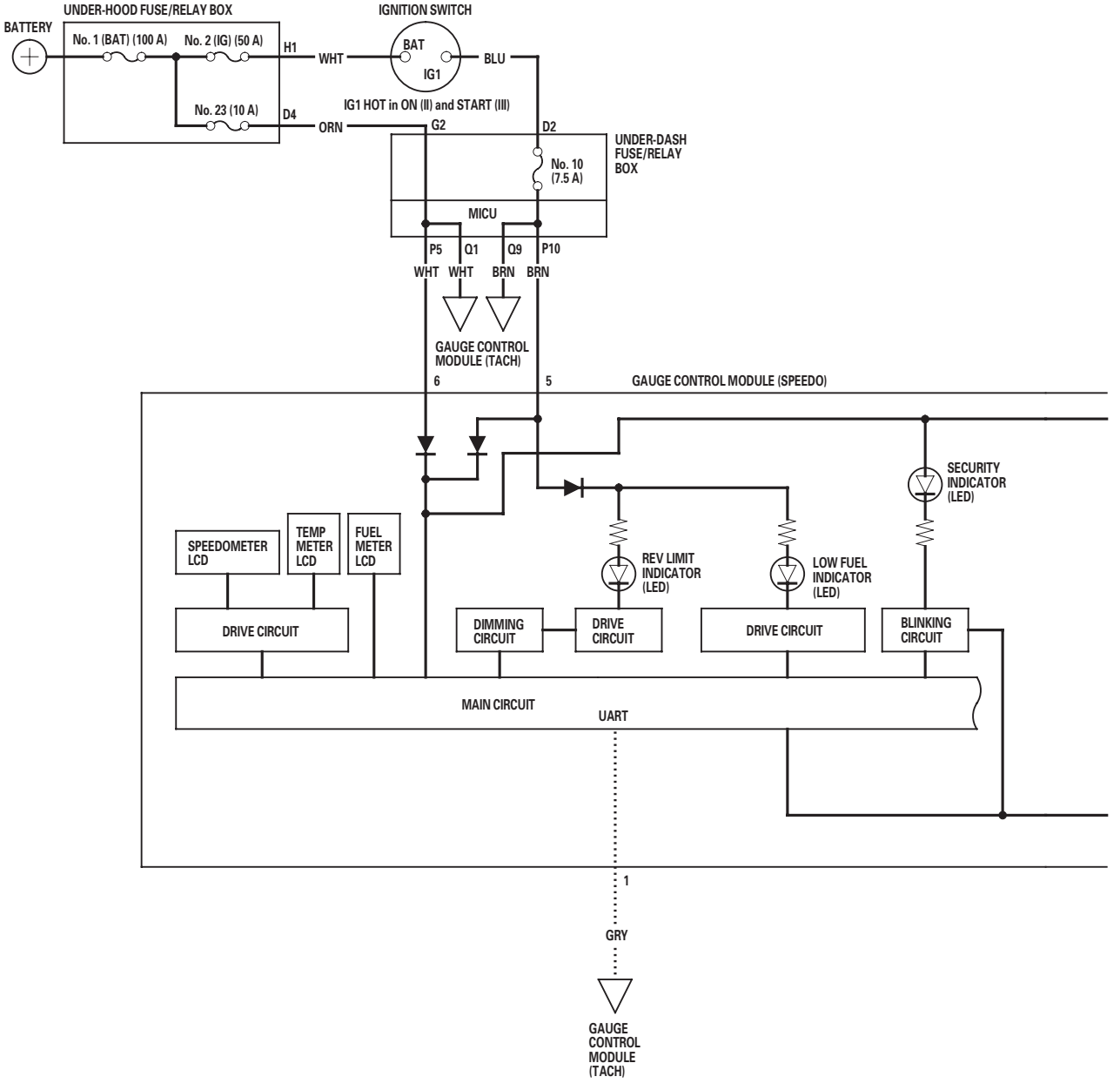
Except TYPE S model

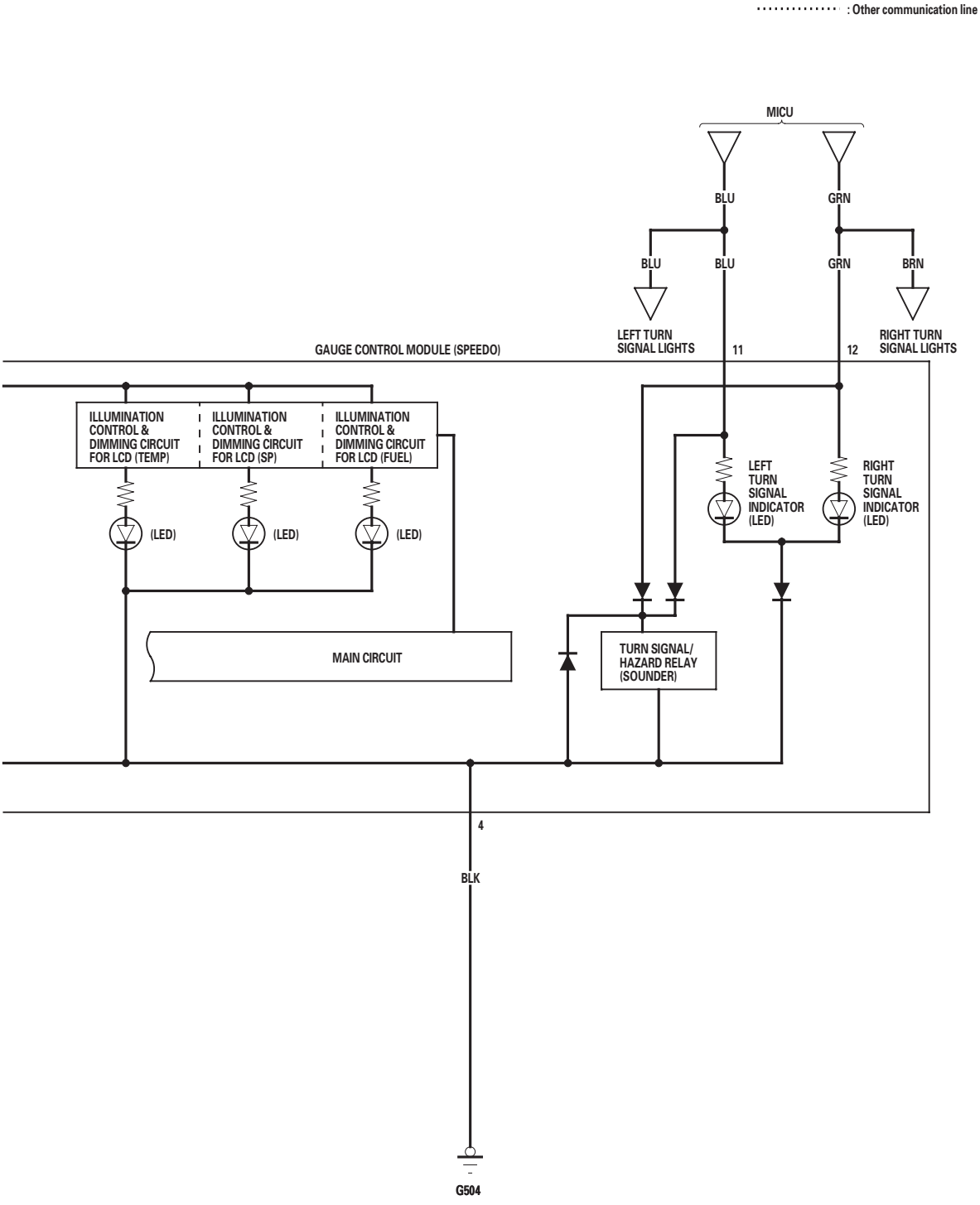



: Other communication line
MICU
BLU
GRN
BLU
BLU
GRN
BRN
LEFT TURN SIGNAL LIGHTS
RIGHT TURN SIGNAL LIGHTS
GAUGE CONTROL MODULE (SPEEDO)
11
12
ILLUMINATION CONTROL & DIMMING CIRCUIT FOR LCD (TEMP)
ILLUMINATION CONTROL & DIMMING CIRCUIT FOR LCD (SP)
ILLUMINATION CONTROL & DIMMING CIRCUIT FOR LCD (FUEL)
(LED)
(LED)
(LED)
LEFT TURN SIGNAL INDICATOR (LED)
RIGHT TURN SIGNAL INDICATOR (LED)
MAIN CIRCUIT
TURN SIGNAL/ HAZARD RELAY (SOUNDER)
4
BLK
G504

Circuit Diagram - Gauge Control Module (Speedo) (cont'd)

TYPE S model




: Other communication line
MICU
BLU
GRN
BLU
BLU
GRN
BRN
LEFT TURN SIGNAL LIGHTS
RIGHT TURN SIGNAL LIGHTS
GAUGE CONTROL MODULE (SPEEDO)
11
12
ILLUMINATION CONTROL & DIMMING CIRCUIT FOR LCD (TEMP)
ILLUMINATION CONTROL & DIMMING CIRCUIT FOR LCD (SP)
ILLUMINATION CONTROL & DIMMING CIRCUIT FOR LCD (FUEL)
(LED)
(LED)
(LED)
LEFT TURN SIGNAL INDICATOR (LED)
RIGHT TURN SIGNAL INDICATOR (LED)
MAIN CIRCUIT
TURN SIGNAL/ HAZARD RELAY (SOUNDER)
4
BLK
G504

DTC Troubleshooting

DTC B1152: Gauge Control Module (EEPROM) Error

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for at least 6 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1152 indicated?

   YES—Replace the gauge control module (tach) (see page 22-277). ■

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-67), and the charging system. ■

DTC B1155: Gauge Control Module Lost Communication with the MICU (Headlight Switch Message)

DTC B1156: Gauge Control Module Lost Communication with the MICU (Wiper Switch Message)

DTC B1159: Gauge Control Module Lost Communication with the MICU (DOORSW Message)

DTC B1188: Gauge Control Module Lost Communication with the MICU (RM Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for DTCs with the HDS.

   Are DTCs B1155, B1156, 1157, B1159, B1160, and/or B1188 indicated?

   YES—Go to step 4.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-67), and the charging system. ■
4. Check for DTCs with the HDS.

   Are DTCs B1155, B1156, 1157, B1159, B1160, and/or B1188 indicated at the same time?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Replace the gauge control module (tach) (see page 22-277). ■

DTC Troubleshooting (cont'd)

DTC B1157: Gauge Control Module Lost Communication with the MICU (MICU Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1157 indicated?

   YES—Go to step 4.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-67), and the charging system. ■
4. Check for DTCs with the HDS.

   Are DTCs B1157 and B1165 indicated at the same time?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Replace the gauge control module (tach) (see page 22-277). ■

DTC B1160: Gauge Control Module Lost Communication with the MICU (DRLOCKSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1160 indicated?

   YES—Go to step 4.

   NO—Intermittent failure. The gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-67), and the charging system. ■
4. Check for DTCs with the HDS.

   Are DTCs B1160 and B1905 indicated at the same time?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Replace the gauge control module (tach) (see page 22-277). ■

DTC B1168: Gauge Control Module Lost Communication with ECM/PCM (Engine Messages)

DTC B1169: Gauge Control Module Lost Communication with the PCM (A/T Messages)

DTC B1170: Gauge Control Module Lost Communication with the ABS/VSA modulator-Control Unit (ABS/VSA message)

DTC B1178: F-CAN Communication Line Error

DTC B1187: Gauge Control Module Lost Communication with the SRS Unit (SRS Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs using the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Start and run the engine for at least 5 seconds then turn the engine off.
4. Check for DTCs with the HDS.

   Are DTCs B1168, B1169, B1170, B1178, and/or B1187 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the F-CAN communication line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-67), and the charging system. ■
5. Check for DTCs in the ECM/PCM or ABS/VSA.

   Are any DTCs indicated?

   YES—Troubleshoot the ECM/PCM or ABS/VSA. ■

   NO—Go to step 6.
6. Do the Gauge Control Module (Tach) Input Test (see page 22-271).

   Are all inputs OK?

   YES—Go to step 7.

   NO—Repair the faulty input then recheck for DTCs. ■
7. Substitute a known-good gauge control module (tach).
8. Clear the DTCs with the HDS.
9. Turn the ignition switch to LOCK (0), and then back to ON (II).
10. Start and run the engine for at least 5 seconds then turn the engine off.
11. Check for DTCs with the HDS.

    Are DTCs B1168, B1169, B1170, B1178, and/or B1187 indicated?

    YES—Substitute a known-good ECM/PCM and retest. If the system/indication goes away, replace the original ECM/PCM. ■

    NO—The original gauge control module (tach) is faulty; replace the gauge control module (tach) (see page 22-277). ■

DTC Troubleshooting (cont'd)

DTC B1173: Gauge Control Module Lost Communication with the TPMS Control Unit (TPMS Message) ('08-09 models)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0) and then back to ON (II).
3. Check for the DTCs with the HDS.

   Is DTC B1173 indicated?

   YES—Go to step 4.

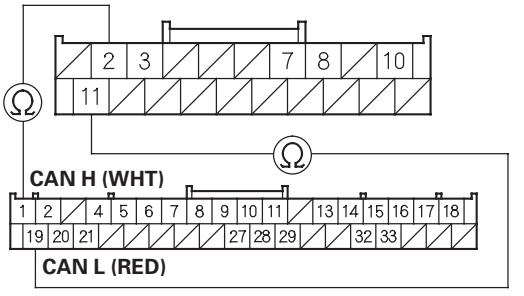
   NO—Intermittent failure, the F-CAN communication line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-67), and the charging system. ■
4. Check for DTCs in the TPMS.

   Are any DTCs indicated?

   YES—Troubleshoot the TPMS DTCs with the HDS. ■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the gauge control module (tach) 36P connector.
7. Disconnect the TPMS control unit 20P connector.
8. Check for continuity between gauge control module (tach) 36P connector terminals No. 1 and No. 19 and TPMS control unit 20P connector terminals No. 2 and No. 11 respectively.

TPMS CONTROL UNIT 20P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wire between the gauge control module and the TPMS control unit. ■

9. Check for poor connections, power, and ground to the TPMS control unit. If OK, substitute a known-good TPMS control unit.
10. Check for DTCs with the HDS.

    Is DTC B1173 indicated?

    YES—Replace the gauge control module (tach) (see page 22-277). ■

    NO—Replace the original TPMS control unit. ■

DTC B1175: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Open

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

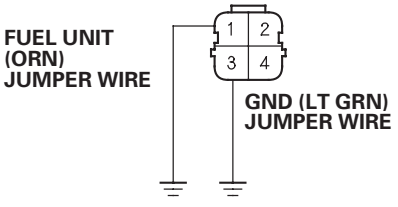
1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for 30 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1175 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the fuel level sensor circuit is OK at this time. Check for loose or poor connections. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the fuel tank unit 5P connector and the gauge control module (tach) 36P connector.
7. Connect fuel tank unit 4P connector terminals No. 1 and No. 3 to body ground with jumper wires.

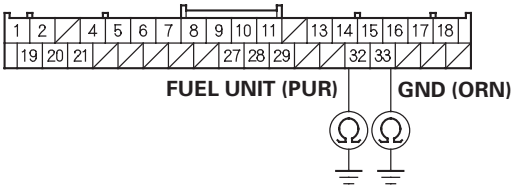
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

8. Check for continuity between gauge control module (tach) 36P connector terminals No. 32 and No. 33 and body ground individually.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wire between the gauge control module (tach) and the fuel tank unit. ■

9. Do the fuel gauge sending unit test (see page 11-340).

   Is the fuel gauge sending unit OK?

   YES—Replace the gauge control module (tach) (see page 22-277). ■

   NO—Replace the fuel tank unit (see page 11-339). ■

DTC Troubleshooting (cont'd)

DTC B1176: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Short

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for 30 seconds.
4. Check for DTCs with the HDS.

   Is DTC B1176 indicated?

   YES—Go to step 5.

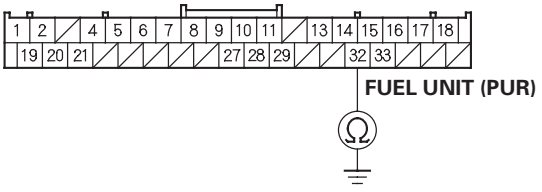
   NO—Intermittent failure, the fuel level sensor circuit is OK at this time. Check for loose or poor connections. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the fuel tank unit 4P connector.
7. Clear the DTCs with the HDS.
8. Turn the ignition switch to LOCK (0), and then back to ON (II).
9. Wait for 30 seconds.
10. Check for DTCs with the HDS.

    Is DTC B1176 indicated?

    YES—Go to step 11.

    NO—Replace the fuel gauge sending unit (see page 11-340). ■
11. Disconnect the gauge control module (tach) 36P connector.
12. Check for continuity between gauge control module (tach) 36P connector terminal No. 32 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between the gauge control module (tach) and the fuel tank unit. ■

NO—Replace the gauge control module (tach) (see page 22-277). ■

DTC B1177: Battery Voltage Abnormal ('06 model)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1177 indicated?

   YES—Go to step 8.

   NO—Go to step 4.
4. Clear the DTCs with the HDS.
5. Turn the ignition switch to LOCK (0), and then back to ON (II).
6. Crank the engine.
7. Check for DTCs with the HDS.

   Is DTC B1177 indicated?

   YES—Go to step 8.

   NO—Intermittent failure. The gauge control module (tach) and power supply voltage (IG1) that is supplied to the gauge control module (tach) are OK at this time. The battery may have been discharged, and recovered. ■
8. Check the battery (see page 22-67) and the charging system.

   Is the battery condition normal and the charging system OK?

   YES—Go to step 9.

   NO—The battery needs a recharge or replacement, or the charging system needs to repaired. ■
9. Turn the ignition switch to ON (II).
10. With the gauge control module (tach) 36P connector still connected, measure the voltage between gauge control module (tach) 36P connector terminal No. 17 and body ground.

    Is the voltage about 7.5 V?

    YES—Replace the gauge control module (tach) (see page 22-277). ■

    NO—Repair an open or high resistance in the BRN wire between the ignition switch and the gauge control module (tach). ■

DTC Troubleshooting (cont'd)

DTC B1183: Gauge Control Module Lost Communication with the EPS Control Unit (EPS Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1183 indicated?

   YES—Go to step 5.

   NO—Intermittent failure. The gauge control module (tach) is OK at this time. Check for loose or poor connections. ■
5. Check for DTCs with the HDS.

   Are DTCs B1168, B1169, B1178, B1183, B1184, B1185, and B1187 all indicated at the same time?

   YES—Troubleshoot DTC B1178. ■

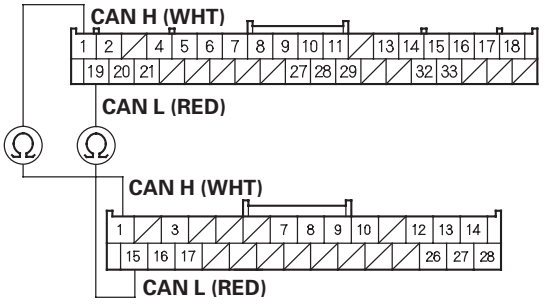
   NO—Go to step 6.
6. Check for EPS DTCs with the HDS.

   Are any DTCs indicated?

   YES—Troubleshoot the indicated DTC, then recheck. ■

   NO—Go to step 7.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the gauge control module (tach) 36P connector.
9. Disconnect the EPS control unit 28P connector (see page 17-84).
10. Check for continuity between gauge control module (tach) 36P connector terminals No. 1 and No. 19 and EPS control unit 28P connector terminals No. 1 and No. 15 individually.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals



EPS CONTROL UNIT 28P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good EPS control unit (see page 17-84) and recheck. If DTC B1183 is still indicated, replace the gauge control module (tach). ■

NO—Repair an open in the wire. ■

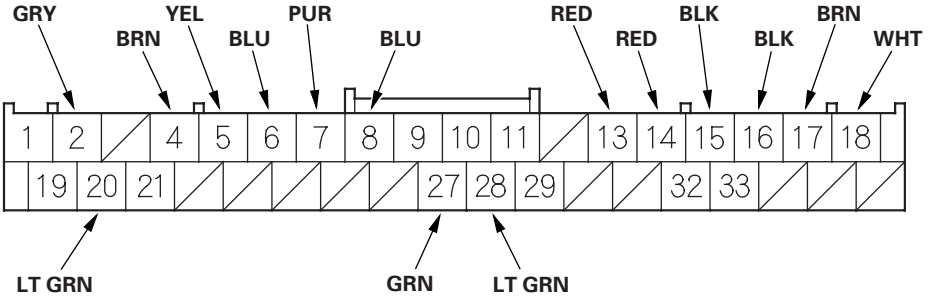
Gauge Control Module (Tach) Input Test

NOTE: Before testing, do the gauge control module self-diagnosis function, and make sure the B-CAN communication line and the UART line are OK.

1. Turn the ignition switch to LOCK (0).

2. Remove the gauge control module (tach) and disconnect the 36P connector from it (see page 22-277).

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.

   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 4.

(cont'd)

Gauge Control Module (Tach) Input Test (cont'd)

4. With the connector still disconnected, do these input tests at the following connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
20 [2]	LT GRN [GRY]	Disconnect the gauge control module (speedo) 12P connector	Check for continuity between terminal No. 20 [No. 2] and gauge control module (speedo) 12P connector terminal No. 7 [No. 1]: There should be continuity.	An open in the wire
			Check for continuity to ground: There should be no continuity.	A short to ground in the wire
13	RED	Combination light switch ON	Attach to ground: The illuminations of the seat heater switches and the ambient light should come on full bright.	• Faulty LEDs • An open in the wire
14	RED	Combination light switch ON	Attach to ground: The illuminations of the dash lights, the audio unit, the steering wheel switches, and the climate control unit lights should come on full bright.	• Faulty LEDs • An open in the wire

[ ] : TYPE S model

5. Reconnect the connector to the gauge control module (tach), and do these input tests at the following connector.

   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the gauge control module (tach) must be faulty; replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
15	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
16	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G504) • An open in the wire
17	BRN	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
18	WHT	Under all conditions	Measure the voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
4	BRN	Ignition switch ON (II), ILLUMI (—) button pressed	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty dash light brightness controller and odometer select/reset switch • An open in the wire
		Ignition switch ON (II), ILLUMI (—) button released	Measure the voltage to ground: There should be more than 5 V.	• Faulty dash light brightness controller and odometer select/reset switch • A short to ground in the wire

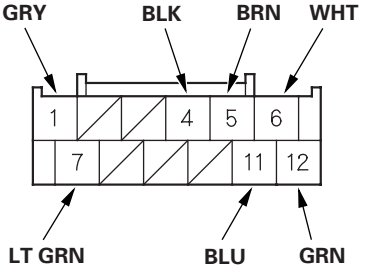
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
5	YEL	Ignition switch ON (II), ILLUMI (+) button pressed	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty dash light brightness controller and odometer select/reset switch • An open in the wire
		Ignition switch ON (II), ILLUMI (+) button released	Measure the voltage to ground: There should be more than 5 V.	• Faulty dash light brightness controller and odometer select/reset switch • A short to ground in the wire
6	BLU	Ignition switch ON (II), SELECT/RESET button pressed	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty dash light brightness controller and odometer select/reset switch • An open in the wire
		Ignition switch ON (II), SELECT/RESET button released	Measure the voltage to ground: There should be more than 5 V.	• Faulty dash light brightness controller and odometer select/reset switch • A short to ground in the wire
7	PUR	Ignition switch ON (II), km/h-mph button pressed	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G501) • Faulty dash light brightness controller and odometer select/reset switch • An open in the wire
		Ignition switch ON (II), km/h-mph button released	Measure the voltage to ground: There should be more than 5 V.	• Faulty dash light brightness controller and odometer select/reset switch • A short to ground in the wire
8	BLU	Ignition switch ON (II), washer fluid is half or more in the washer reservoir	Measure the voltage to ground: There should be more than 5 V.	• Faulty washer fluid level switch • A short to ground in the wire
		Ignition switch ON (II), washer fluid is empty in the washer reservoir	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty washer fluid level switch • An open in the wire
27	GRN	Ignition switch ON (II), brake fluid is full level in the reservoir	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G401) • Faulty brake fluid level switch • An open in the wire
		Ignition switch ON (II), brake fluid is lower level in the reservoir	Measure the voltage to ground: There should be more than 5 V.	• Faulty brake fluid level switch • A short to ground in the wire
28	LT GRN	Ignition switch ON (II), parking brake lever pulled	Measure the voltage to ground: There should be less than 1 V.	• Faulty parking brake switch • An open in the wire
		Ignition switch ON (II), parking brake lever released	Measure the voltage to ground: There should be more than 5 V.	• Faulty parking brake switch • A short to ground in the wire

Gauge Control Module (Speedo) Input Test

NOTE: Before testing, do the gauge control module self-diagnosis function, and make sure the B-CAN communication line and the UART line are OK.

1. Turn the ignition switch to LOCK (0).
2. Remove the gauge control module (speedo) and disconnect the 12P connector from it (see page 22-277).

GAUGE CONTROL MODULE (SPEEDO) 12P CONNECTOR



Wire side of female terminals

3. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals are OK, go to step 4.

4. With the connector still disconnected, do these input tests at the following connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
11	BLU	Ignition switch ON, turn signal switch in LEFT	Measure the voltage to ground: There should be battery voltage when the lights are flashing.	• Faulty MICU • Faulty combination light switch • An open in the wire
12	GRN	Ignition switch ON, turn signal switch in RIGHT	Measure the voltage to ground: There should be battery voltage when the lights are flashing.	• Faulty MICU • Faulty combination light switch • An open in the wire
7 [1]	LT GRN [GRY]	Disconnect the gauge control module (tach) 36P connector	Check for continuity between terminal No. 7 [No. 1] and gauge control module (tach) 36P connector terminal No. 20 [No. 2] : There should be continuity.	An open in the wire
			Check for continuity between terminal No. 7 [No. 1] and body ground (gauge control module (tach) 36P connector disconnected): There should be no continuity.	A short to ground in the wire

[ ] : TYPE S model

5. Reconnect the connector to the gauge control module (speedo), and do these input tests at the following connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, the gauge control module (speedo) must be faulty; replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
6	WHT	Under all conditions	Measure the voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
5	BRN	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
4	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G504) • An open in the wire

Rewriting the ODO Data and Transferring the Maintenance Minder Data to a New Gauge Control Module

NOTE:
- Obtain a new gauge control module before starting the rewriting process.
- Rewriting is not possible on a gauge control module that will not communicate with the HDS.
- Make sure that the HDS shows the correct VIN for the car you are working on.
- One you have started this procedure, you must complete it before removing the HDS from the DLC.
- Connect a battery jump box (not a Battery charger) to insure that correct battery voltage will be maintained.

1. Before replacing the gauge control module, connect the HDS.
2. Select GAUGES from the BODY ELECTRICAL menu display.
3. Select ''Gauge Control Module Replacement (ODO rewrite)'' from the ADJUSTMENT menu, and follow the instructions on the display to retrieve the ODO data and the Maintenance Minder information.
4. Replace the gauge control module.
5. Follow the instructions on the display to write the new ODO data and Maintenance Minder data to a new gauge control module. If the data transfer fails, refer to the instructions below to release the locked ODO data.

Release Locked odometer mileage to the original gauge control module.

If after you attempt to transfer mileage the odometer has dashes (———), garbled, or incorrect value displayed, do the following start over. The original gauge control module is going to be unlocked and restored to its original state.

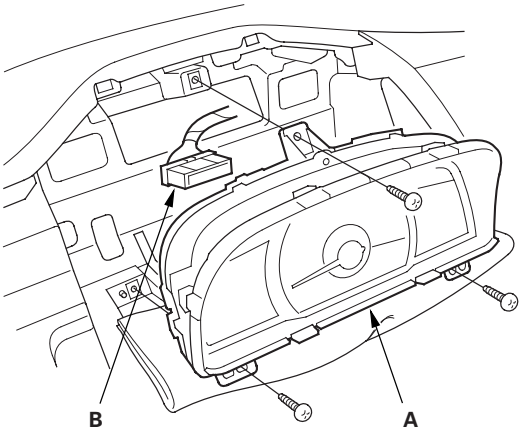
1. Confirm that you have the latest HDS version of software.
2. Make sure that the HDS shows the correct VIN for the car you are working on.
3. With the ignition switch to LOCK (0), reconnect the original gauge assembly.
4. Completely re-boot the HDS.
5. Clear any stored DTCs.
6. Navigation to Body. Electric/Gauges/Adjustment/Instrument Panel Replacement.
7. Select ''3. Releasing Locked ODO Data''.
8. Follow the prompts and the Odometer mileage will be restored.
9. Start over and make sure the screen prompts are followed.

Gauge Control Module Replacement

Tachometer

NOTE: Before replacing the gauge control module, do the ''Rewriting the ODO Data and Transferring the Maintenance Minder Data to a New Gauge Control Module'' (see page 22-276).

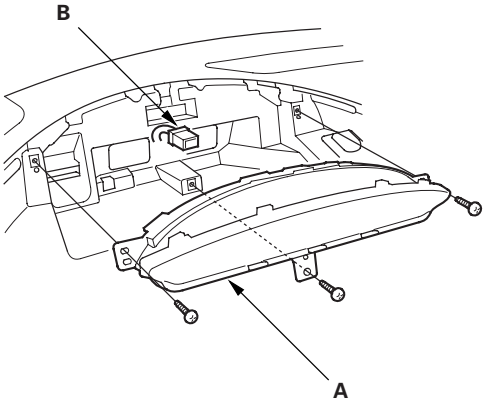
1. Remove the subdisplay visor assembly (see page 20-100).
2. Remove the three screws from the gauge control module (tach) (A).



3. Disconnect the 36P connector (B) from the gauge control module (tach).
4. Install the gauge control module (tach) in the reverse order of removal.

Speedometer

1. Remove the instrument panel (see page 20-98).
2. Remove the three screws from the gauge control module (speedo) (A).

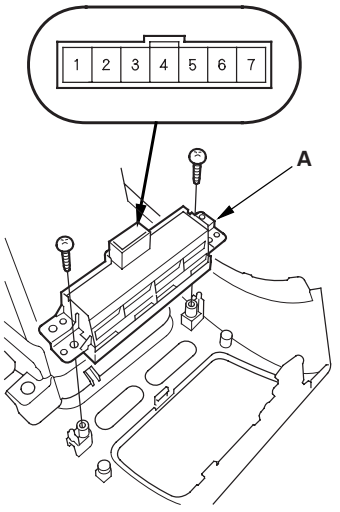


3. Disconnect the 12P connector (B) from the gauge control module (speedo).
4. Install the gauge control module (speedo) in the reverse order of removal.

Dash Lights Brightness Controller and Odometer Select/Reset Switch Test/ Replacement

1. Remove the subdisplay visor (see page 20-100) and disconnect the connectors.

2. Remove the two screws and the dash lights brightness controller and odometer select/reset switch (A).



3. Check for continuity between the terminals in each switch position according the table.

Position \ Terminal	1	2	4	6	7	3		5
SEL/RESET button pressed			○		○			
km/h-mph change button pressed			○	○		○	⊗	○
(+) button pressed	○		○					
(−) button pressed		○	○					

4. If the continuity is not as specified, replace the dash lights brightness controller and odometer select/ reset switch.

5. Install the dash lights brightness controller and odometer select/reset switch in the reverse order of removal.

Outside Air Temperature Indicator Calibration

Description

The outside temperature sensor is located behind the center of the front bumper. The gauge control module (tach) uses measurements from this sensor to display the outside air temperature.
Because of the location of the sensor, it may be affected by heat reflection from the road, engine and radiator heat or hot exhaust from surrounding traffic.
These conditions can heat soak the outside air temperature sensor and cause inaccurate readings.
Logic has been written into the gauge control module (tach) to help prevent abnormal or fluctuating outside air temperature indicator readings.

Outside Air Temperature Indicator Logic

Initial outside air temperature indication after the ignition switch is turned to ON (II).

- If the engine coolant temperature is 60 ℃ (140 ℉) or higher when the ignition switch is turned to ON (II), the outside air temperature indicated the last time the key was turned off will be displayed regardless of the current temperature measured by the outside air temperature sensor.
- If the engine coolant temperature is 59 ℃ (139 ℉) or lower when the ignition switch is turned to ON (II), the current temperature measured by the outside air temperature sensor will be indicated.

Update to the outside air temperature indicator while driving

If the temperature measured by the outside air temperature sensor is greater than the temperature on the outside air temperature indicator, the outside air temperature indicator will increase by 1 ℃ (1.8 ℉) per minute after the vehicle speed is greater than 30 km/h (19 mph) for more than 1 minute and 30 seconds. It will continue to increase until the current outside air temperature is indicated. So, the first change to the outside air temperature indicator is 1 minute and 30 seconds after the vehicle speed is greater than 30 km/h (19 mph). If the vehicle speed drops below 30 km/h (19 mph), the indicator will not update again until the vehicle speed is increased to 30 km/h (19 mph) or more for more than 1 minute and 30 seconds again.
If the outside air temperature is less than the indicated temperature, the temperature will decrease 1 ℃ every 2 seconds (1 ℉ every 1.1 seconds) until the current outside air temperature is indicated regardless of vehicle speed.

Troubleshooting

If the indicator displays ‘‘———’’ for more than 2 seconds after selecting the outside air temperature display mode, check the outside air temperature sensor (see page 21-68), or gauge control module self-diagnosis (see page 22-241).

(cont’d)

Outside Air Temperature Indicator Calibration (cont'd)

Calibration

The outside air temperature indicator's displayed temperature can be recalibrated ±3 ℃ (or ±5 ℉) to meet the client's expectations.

1. Turn the ignition switch to ON (II).
2. Select the outside air temperature display.
3. Press and hold the SEL/RESET button until the trip meter resets, then release it. Press, and continue to hold, the switch again, and the display will scroll through temperature settings from +3 ℃ to −3 ℃ (or +5 ℉ to −5 ℉) as shown.

4. When the desired correction value appears on the display, release the button, and the recalibrated outside air temperature will be displayed.

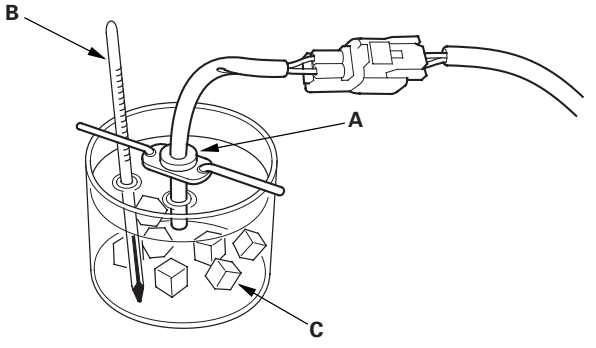
Example:
Incorrect value = 20 ℃ (68 ℉)

Desired correction value = +1 ℃ (+2 ℉)
Correct value = 21 ℃ (70 ℉)

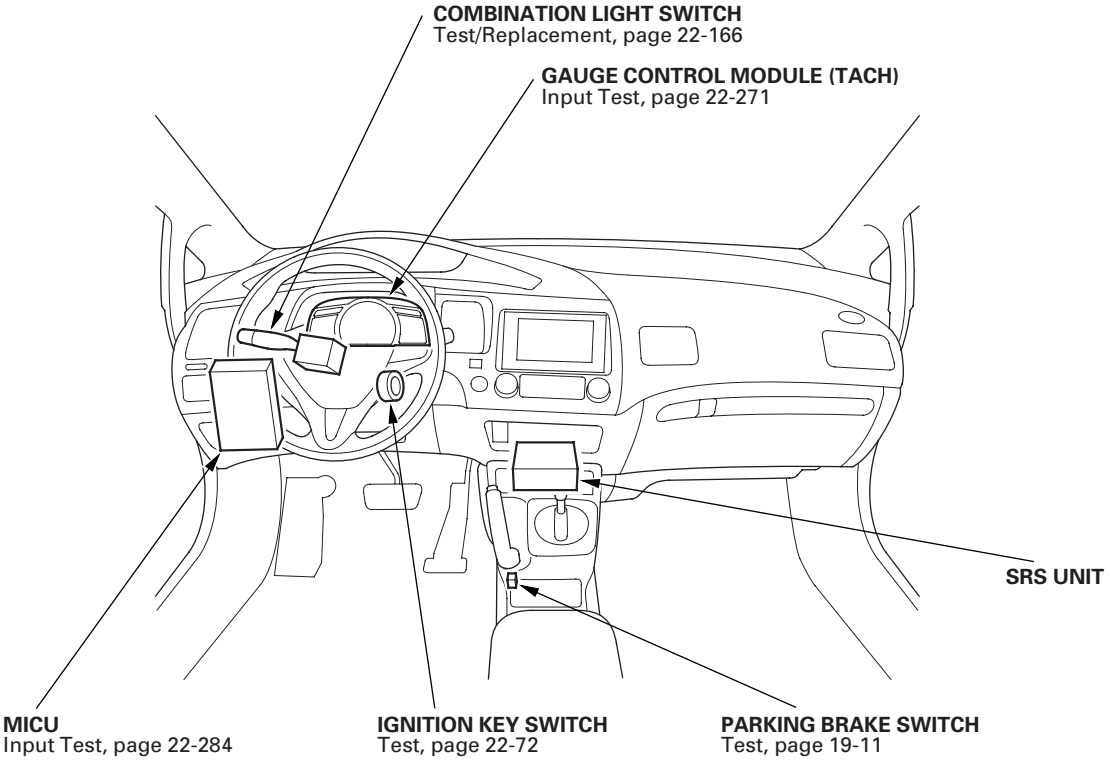
Desired correction value = −1 ℃ (−2 ℉)
Correct value = 19 ℃ (66 ℉)

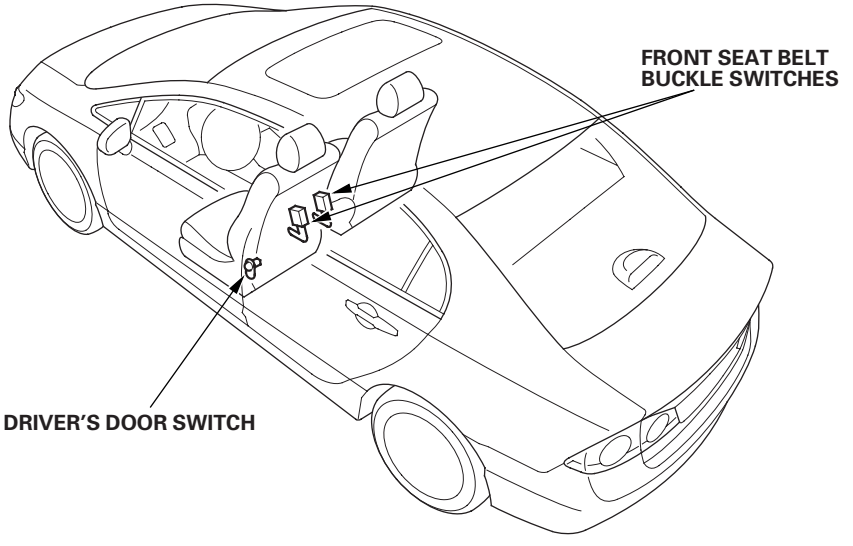
NOTE: To recalibration temperature is not the value the sensor sees. Therefore the temperature can only be adjusted ± degrees from the sensor.

NOTE: To recalibrate the display to the true temperature, remove the outside air temperature sensor (A), but leave it connected. Submerge the sensor and a thermometer (B) in a container of ice water (C). Select the calibration mode as described above, then recalibrate the display to the true temperature.

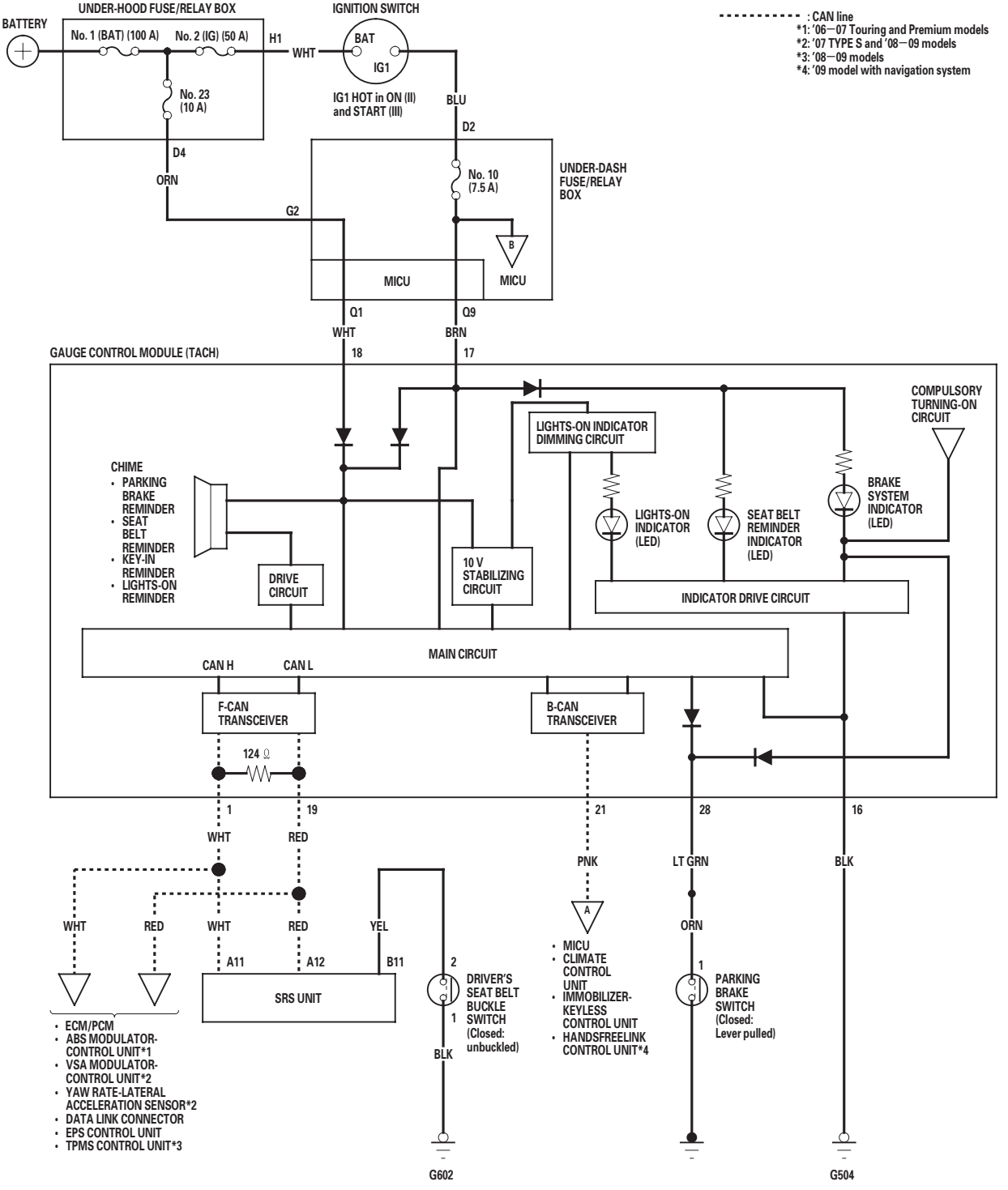


Component Location Index

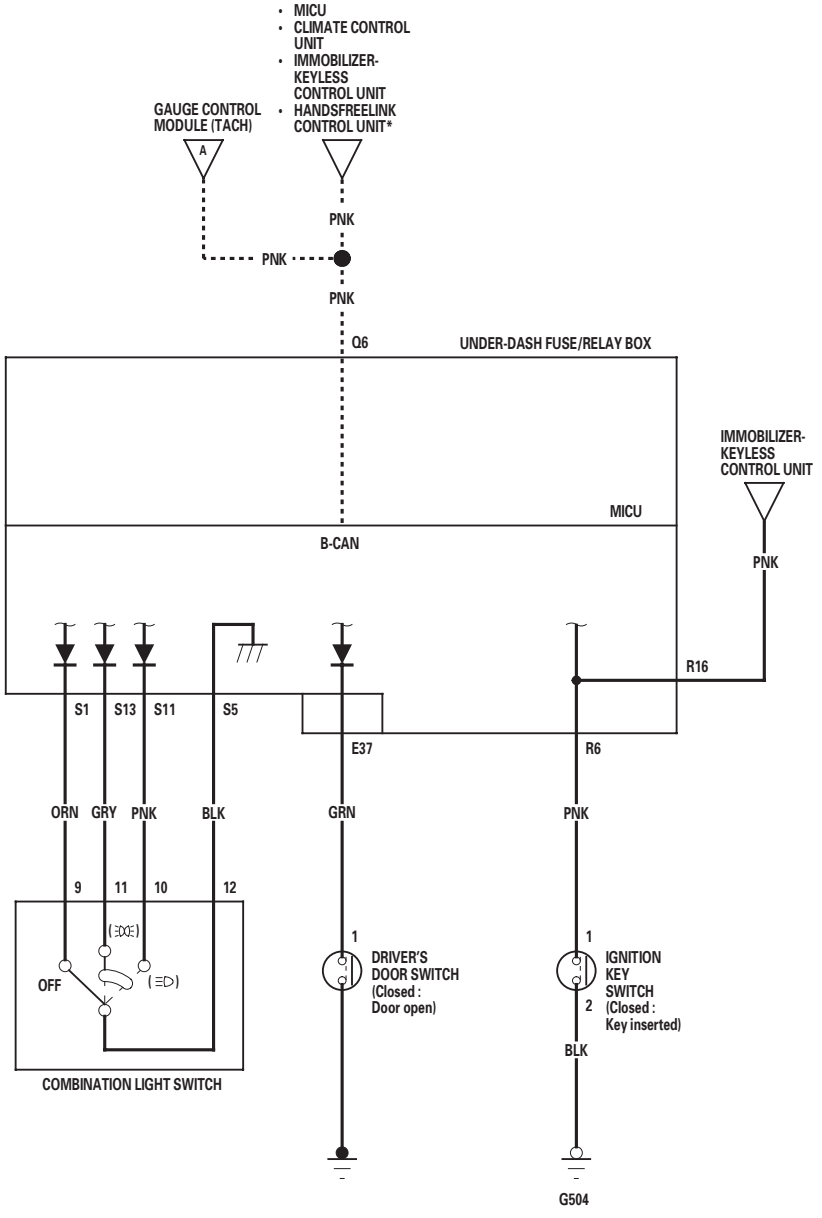




Circuit Diagram



: CAN line
*: '09 model with navigation system

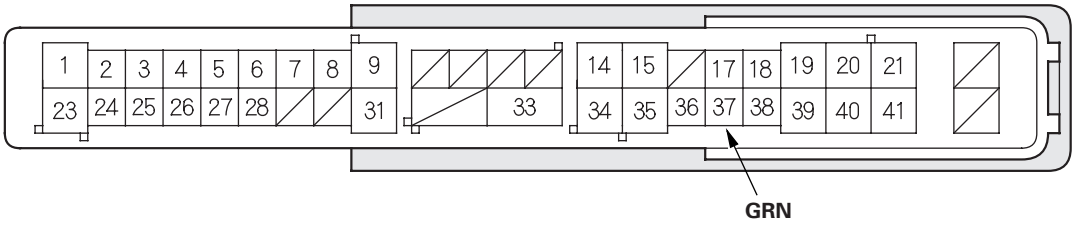


MICU Input Test

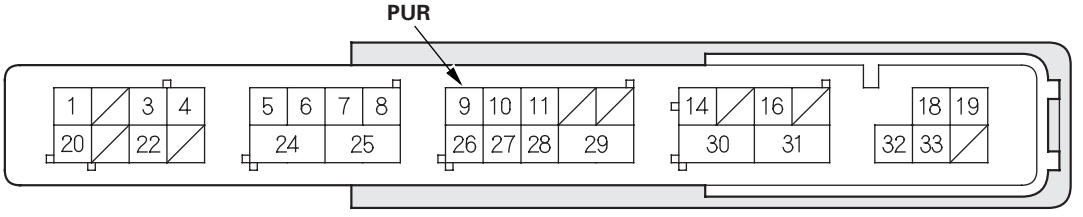
1. Before testing the multiplex control system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93).
2. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is blown, replace it and go to step 3.
3. Disconnect the under-dash fuse/relay box connectors E, F, R, and S.

   NOTE: All connector views are wire side of female terminals.

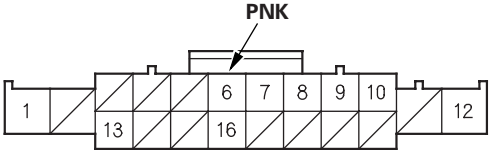
UNDER-DASH FUSE/RELAY BOX CONNECTOR E (42P)



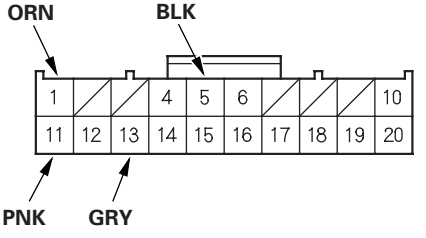
UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR R (20P)



UNDER-DASH FUSE/RELAY BOX CONNECTOR S (20P)



4. Inspect the connector and socket terminals to be sure they are all making good contact.

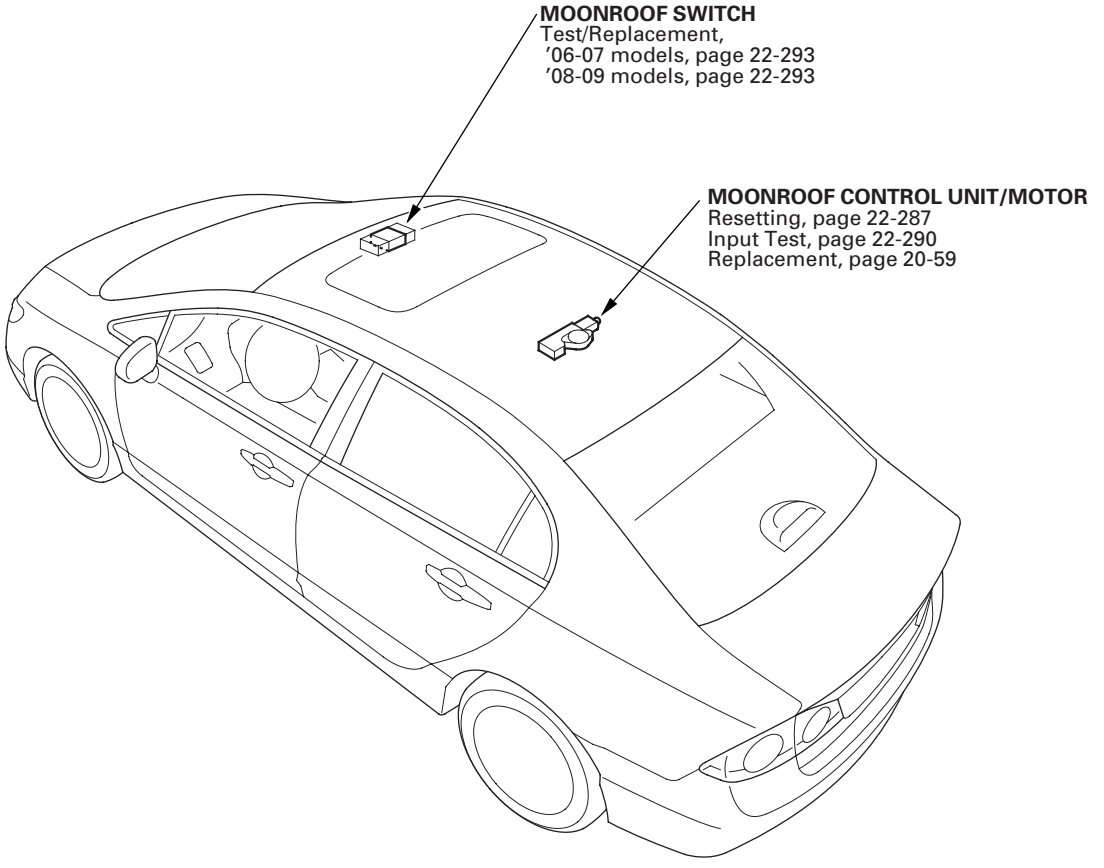
   - If the terminals are bent, loose or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 5.

5. Reconnect the connector to the under-dash fuse/relay box, and do these input tests at the following connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the MICU must be faulty; replace the under-dash fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
E37	GRN	Driver's door open	Measure the voltage to ground: There should be less than 0.5 V.	• Faulty driver's door switch • An open in the wire
		Driver's door closed	Measure the voltage to ground: There should be more than 5 V.	• Faulty driver's door switch • A short to ground in the wire
R6	PNK	Ignition key inserted into the ignition switch	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G504) • Faulty ignition key switch • An open in the wire
		Ignition switch OFF and ignition key removed from the ignition switch	Measure the voltage to ground: There should be more than 5 V.	• Faulty ignition key switch • A short to ground in the wire
S1 . S5	ORN . BLK	Combination light switch OFF	Measure the voltage between S1 and S5 terminals: There should be less than 0.5 V.	• Faulty combination light switch • An open in the wire
		Combination light switch in any other position than OFF	Measure the voltage between S1 and S5 terminals: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire
S11 . S5	PNK . BLK	Combination light switch (Headlight position) ON	Measure the voltage between S11 and S5 terminals: There should be less than 0.5 V.	• Faulty combination light switch • An open in the wire
		Combination light switch OFF	Measure the voltage between S11 and S5 terminals: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire
S13 . S5	GRY . BLK	Combination light switch (SMALL position) ON	Measure the voltage between S13 and S5 terminals: There should be less than 0.5 V.	• Faulty combination light switch • An open in the wire
		Combination light switch OFF	Measure the voltage between S13 and S5 terminals: There should be more than 5 V.	• Faulty combination light switch • A short to ground in the wire

Component Location Index



Resetting the Moonroof Control Unit

Resetting the moonroof is required when any of the following have occurred:

- The moonroof was moved manually while the battery was dead or disconnected.
- The moonroof motor was replaced with a new one.
- Any of components related to the moonroof were replaced.
  - Wind deflector
  - Moonroof glass
  - Moonroof seal
  - Moonroof glass bracket
  - Moonroof cables, etc.

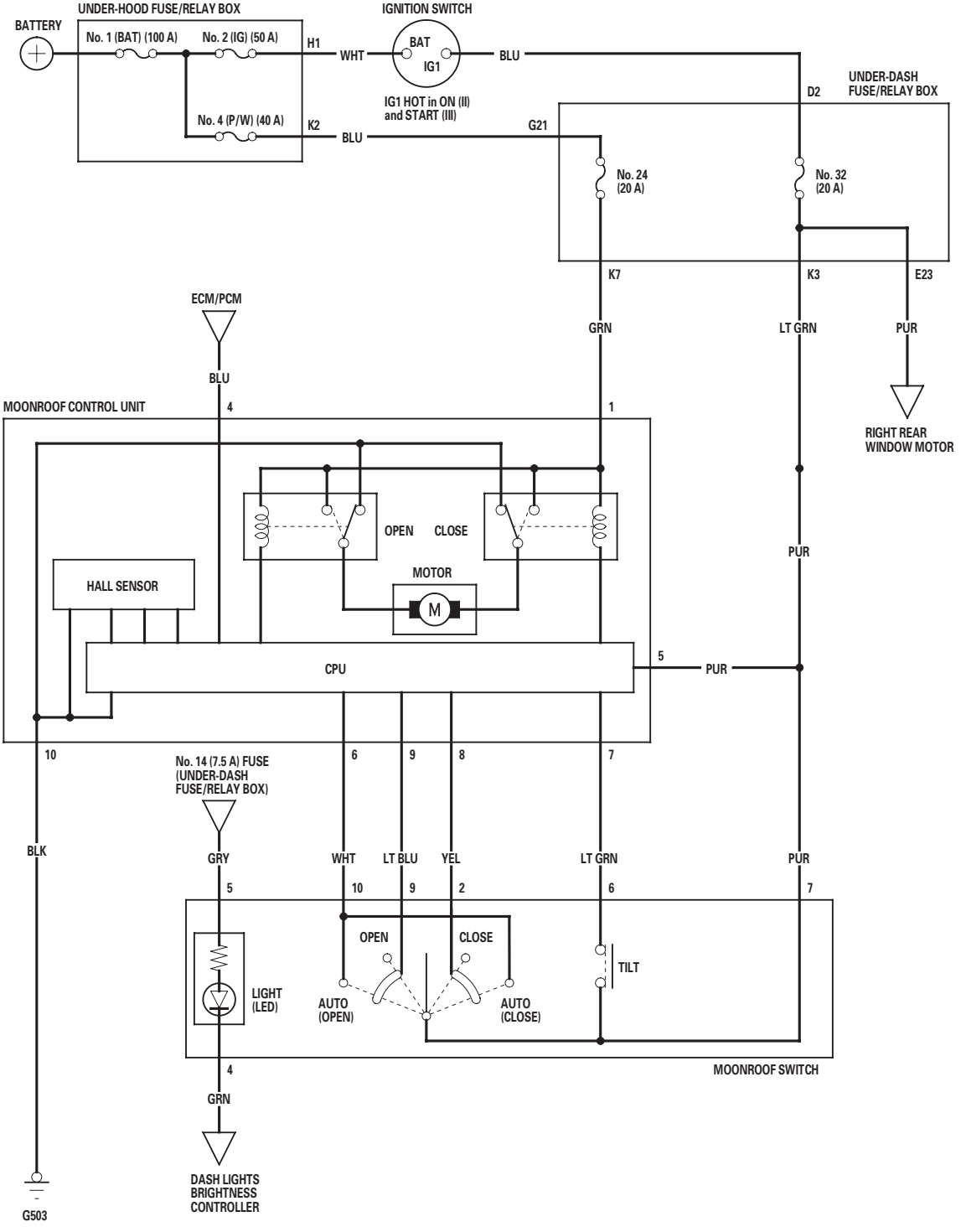
To reset the moonroof control unit, do these steps:

1. Close the driver's door, and keep it closed until the procedure is complete.
2. Turn the ignition switch to LOCK (0).
3. Press and hold the tilt switch, and turn the ignition switch to ON (II).
4. Release the tilt switch, and turn the ignition switch to LOCK (0).
5. Repeat steps 3 and 4 four times.
6. Press and hold the moonroof open switch for 3 additional seconds after the moonroof is fully opened.
7. Press and hold the moonroof close switch for 3 additional seconds after the moonroof is fully closed (tilted).
8. Confirm that the moonroof control unit is reset by using the moonroof AUTO OPEN and AUTO CLOSE function.

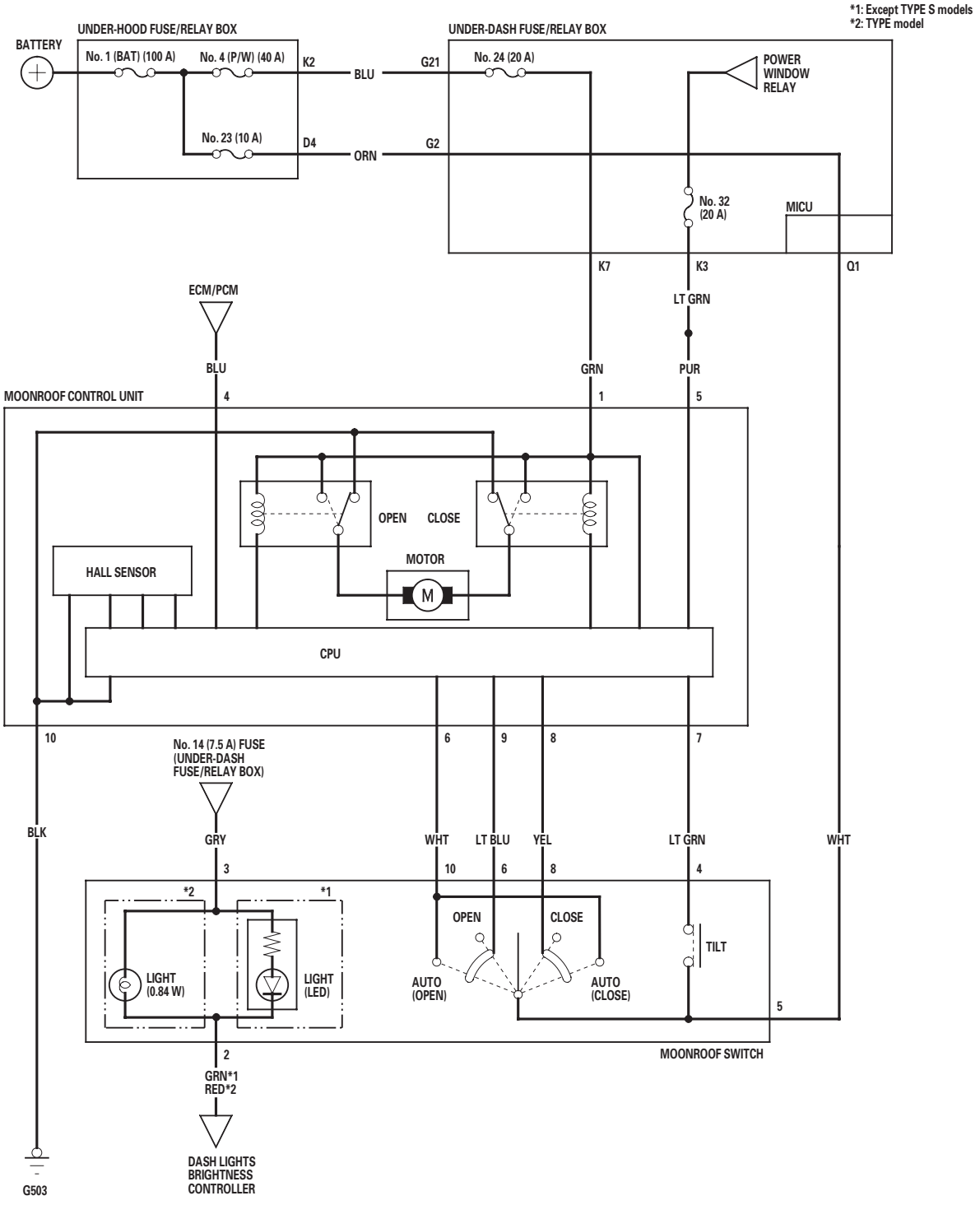
Moonroof

Circuit Diagram

'06-07 models



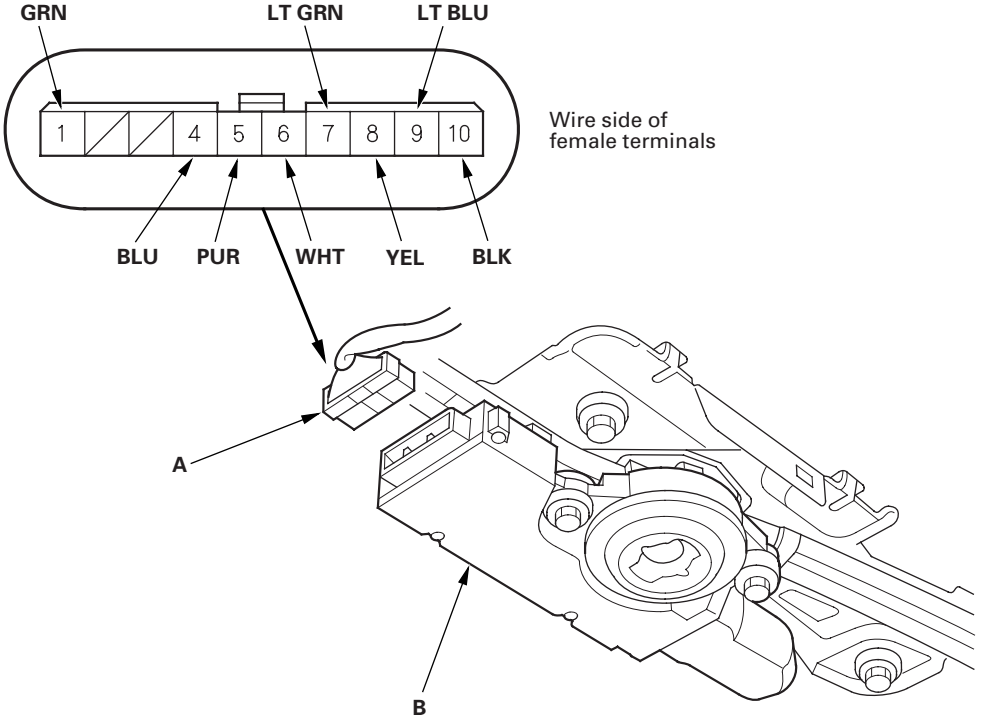
'08-09 models



Moonroof Control Unit Input Test

NOTE: If the moonroof works OK manually, but will not work in AUTO, or reverses frequently (obstacle detection), do the moonroof calibration (see page 22-287) before proceeding with the input test.

1. Turn the ignition switch to LOCK (0).
2. Remove the headliner (see page 20-84).
3. Disconnect the 10P connector (A) from the moonroof control unit (B).



4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.

5. Reconnect the connector to the moonroof control unit, and do these input tests at the following connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
1	GRN	Under all conditions	Measure the voltage to ground: There should be battery voltage.	• Blown No. 24 (20 A) fuse in the under-dash fuse/relay box • An open in the wire
5	PUR	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 32 (20 A) fuse in the under-dash fuse/relay box • An open in the wire
10	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G503) • An open in the wire
6	WHT	Moonroof switch in AUTO OPEN or AUTO CLOSE position	Measure the voltage to ground: There should be battery voltage.	• Faulty moonroof switch • Blown No. 32 (20 A) fuse in the under-dash fuse/relay box*1 • Blown No. 23 (10 A) fuse in the under-hood fuse/relay box*2 • Faulty under-dash fuse/relay box • An open in the wire
7	LT GRN	Moonroof switch in TILT position	Measure the voltage to ground: There should be battery voltage.	• Faulty moonroof switch • Blown No. 32 (20 A) fuse in the under-dash fuse/relay box*1 • Blown No. 23 (10 A) fuse in the under-hood fuse/relay box*2 • Faulty under-dash fuse/relay box • An open in the wire
8	YEL	Moonroof switch in CLOSE position	Measure the voltage to ground: There should be battery voltage.	• Faulty moonroof switch • Blown No. 32 (20 A) fuse in the under-dash fuse/relay box*1 • Blown No. 23 (10 A) fuse in the under-hood fuse/relay box*2 • Faulty under-dash fuse/relay box • An open in the wire
9	LT BLU	Moonroof switch in OPEN position	Measure the voltage to ground: There should be battery voltage.	• Faulty moonroof switch • Blown No. 32 (20 A) fuse in the under-dash fuse/relay box*1 • Blown No. 23 (10 A) fuse in the under-hood fuse/relay box*2 • Faulty under-dash fuse/relay box • An open in the wire

* 1: '06-07 models
* 2: '08-09 models

(cont'd)

Moonroof Control Unit Input Test (cont'd)

6. Check the ECM/PCM DTCs. If there is no DTC, jump the SCS line with the HDS, then disconnect ECM/PCM connector A (44P), and the moonroof control unit/motor 10P connector.

7. Do this input test at the following connector.

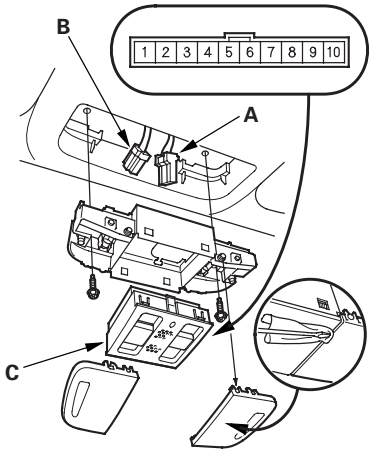
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, the control unit must be faulty; replace the moonroof control unit/motor.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
4	BLU	Under all conditions	Check for continuity between terminal No. 4 and ECM/PCM connector A (44P) terminal No. 29: There should be continuity.	An open in the wire
			Check for continuity between terminal No. 4 and body ground: There should be no continuity.	A short to ground in the wire

Moonroof Switch Test/Replacement

'06-07 models

1. Remove the front individual map lights (see page 22-196).
2. Disconnect the moonroof switch 10P connector (A) and map light switch 3P connector (B).



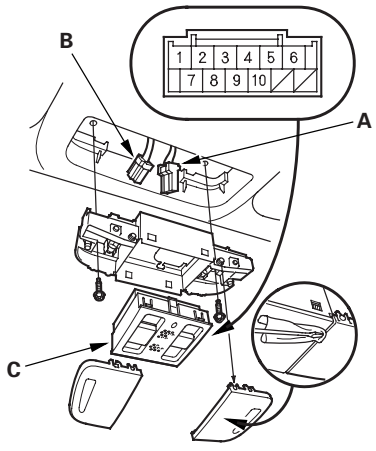
3. Remove the moonroof switch (C).
4. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal	7	2	6	9	10	4		5
OPEN	○			○				
CLOSE	○	○						
TILT	○		○			○	◁	○
CLOSE+AUTO	○	○			○			
OPEN+AUTO	○			○	○			

5. If the continuity is not as specified, replace the illumination bulb or the switch.
6. Install the moonroof switch and light in the reverse order of removal.

'08-09 models

1. Remove the front individual map lights (see page 22-196).
2. Disconnect the moonroof switch 12P connector (A) and map light switch 3P connector (B).



3. Remove the moonroof switch (C).
4. Check for continuity between the terminals in each switch position according to the table.

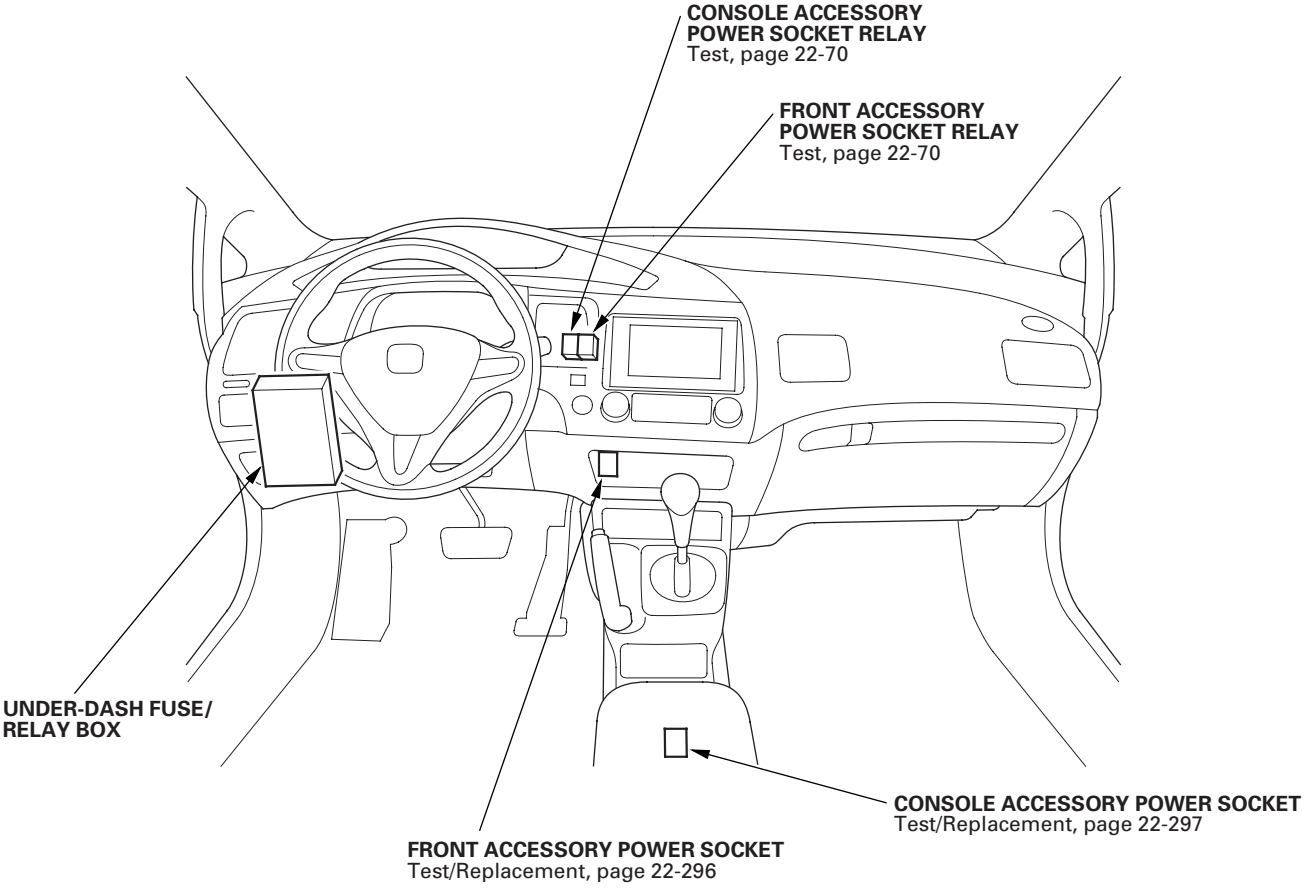
Position \ Terminal	5	8	4	6	10	2		3
OPEN	○			○				*1
CLOSE	○	○				○	◁	○
TILT	○		○					
CLOSE AUTO	○	○			○	○	◁	*2 ○
OPEN AUTO	○			○	○			

*1: Except Type S model
*2: Type S model

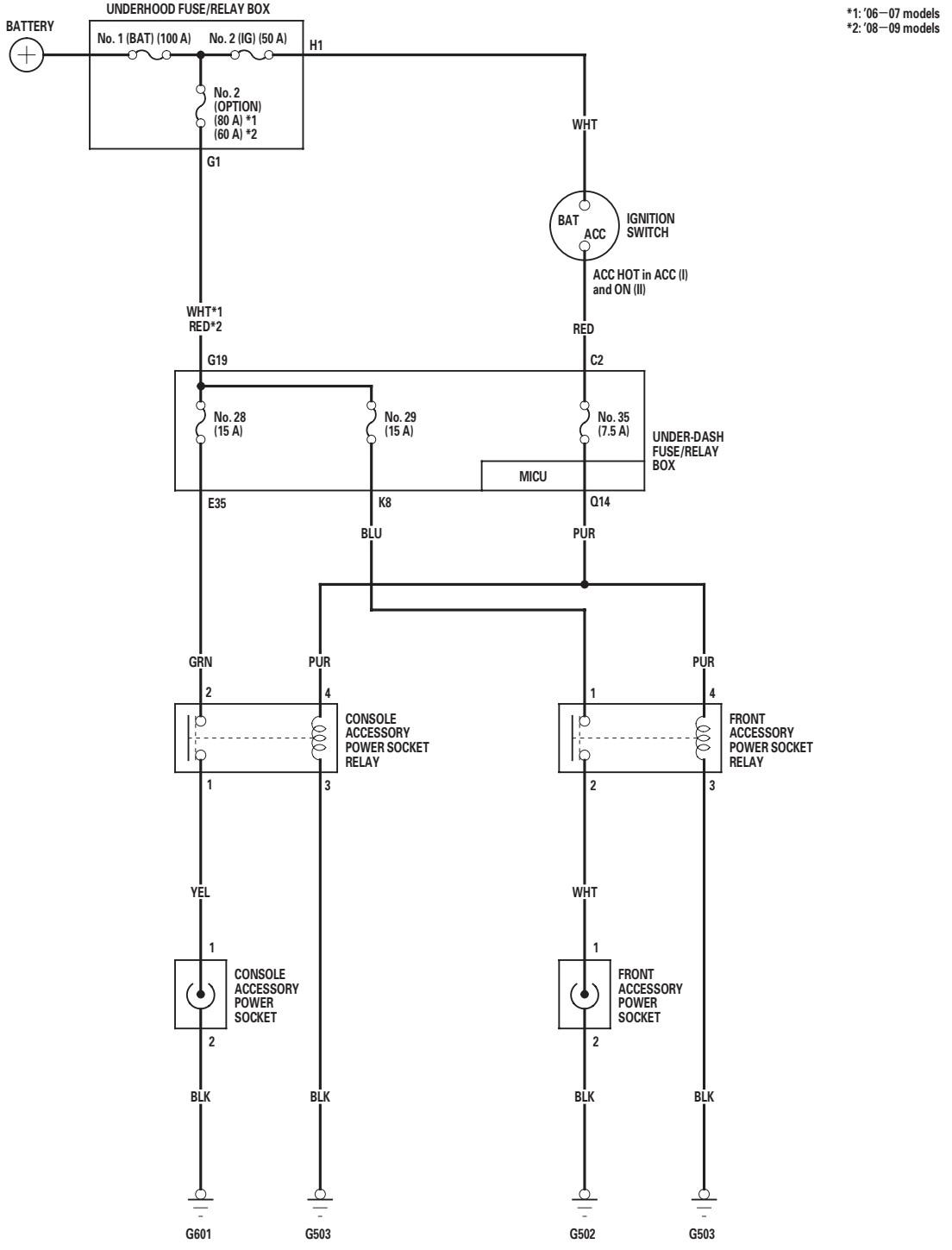
5. If the continuity is not as specified, replace the illumination bulb or the switch.
6. Install the moonroof switch and light in the reverse order of removal.

Accessory Power Sockets

Component Location Index



Circuit Diagram



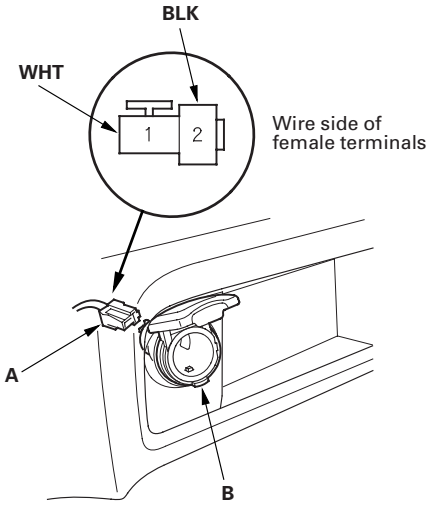
Front Accessory Power Socket Test/Replacement

NOTE: If both of the front and console accessory power sockets do not work, check the No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

1. Remove the center panel.

   - With audio:
     – '06-08 models (see page 23-80)
     – '09 model (see page 23-256)
   - With navigation:
     – '06-08 models (see page 23-155)
     – '09 model (see page 23-355)

2. Disconnect the 2P connector (A) from the front accessory power socket (B).



3. Inspect the connector terminals to be sure they are all making good contact.

   - If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.

4. Turn the ignition switch to ACC (I).

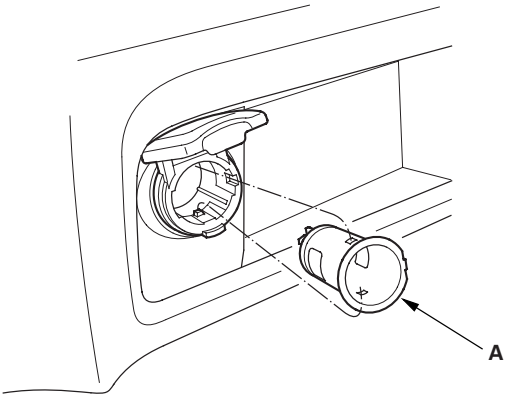
5. Measure the voltage between front accessory power socket 2P connector terminal No. 1 and body ground. There should be battery voltage.

   - If there is battery voltage, go to step 6.
   - If there is no voltage, check for:
     – Blown No. 29 (15 A) fuse in the under-dash fuse/relay box.
     – Faulty front accessory power socket relay.
     – Poor ground (G 503).
     – An open in the wire.

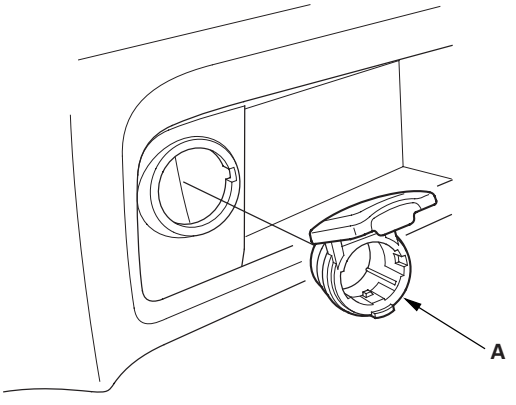
6. Check for continuity between front accessory power socket 2P connector terminal No. 2 and body ground. There should be continuity.

   - If there is continuity, replace the power socket; go to step 7.
   - If there is no continuity, check for:
     – Poor ground (G 502).
     – An open in the wire.

7. Remove the socket (A).



8. Remove the housing (A) from the panel.



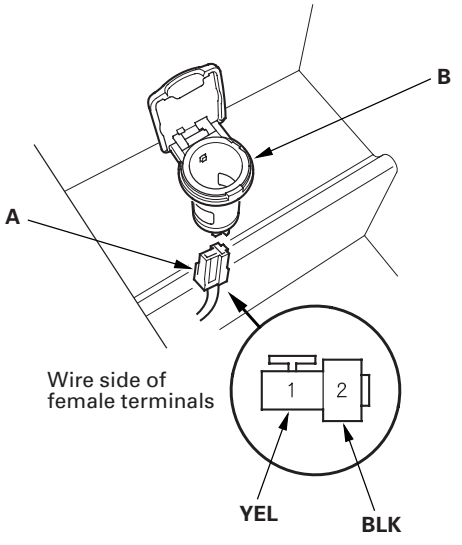
9. Install the front accessory power socket in the reverse order of removal.

Console Accessory Power Socket Test/Replacement

NOTE: If both of the front and console accessory power sockets do not work, check the No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

1. Remove the center console (see page 20-95).

2. Disconnect the 2P connector (A) from the console accessory power socket (B).



3. Inspect the connector terminals to be sure they are all making good contact.

   - If the terminals are bent, loose, or corroded, repair them as necessary and recheck the system.
   - If the terminals look OK, go to step 4.

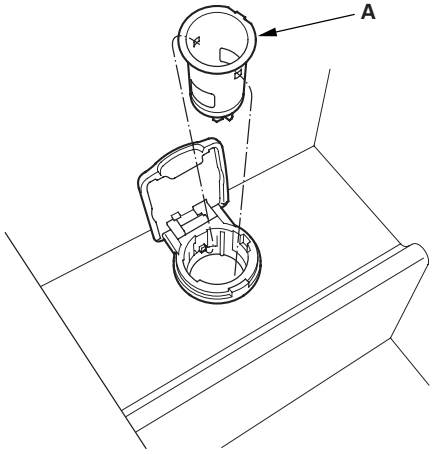
4. Turn the ignition switch to ACC (I), and measure the voltage between console accessory power socket 2P connector terminal No. 1 and body ground. There should be battery voltage.

   - If there is battery voltage, go to step 5.
   - If there is no voltage, check for:
     – Blown No. 28 (15 A) fuse in the under-dash fuse/relay box.
     – Faulty console accessory power socket relay.
     – Poor ground (G 503).
     – An open in the wire.

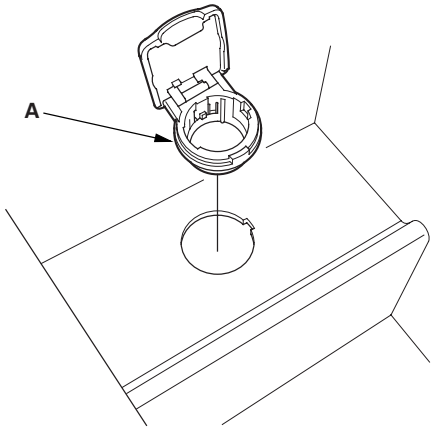
5. Check for continuity between console accessory power socket 2P connector terminal No. 2 and body ground. There should be continuity.

   - If there is continuity, replace the power socket; go to step 6.
   - If there is no continuity, check for:
     – Poor ground (G 601).
     – An open in the wire.

6. Remove the socket (A).

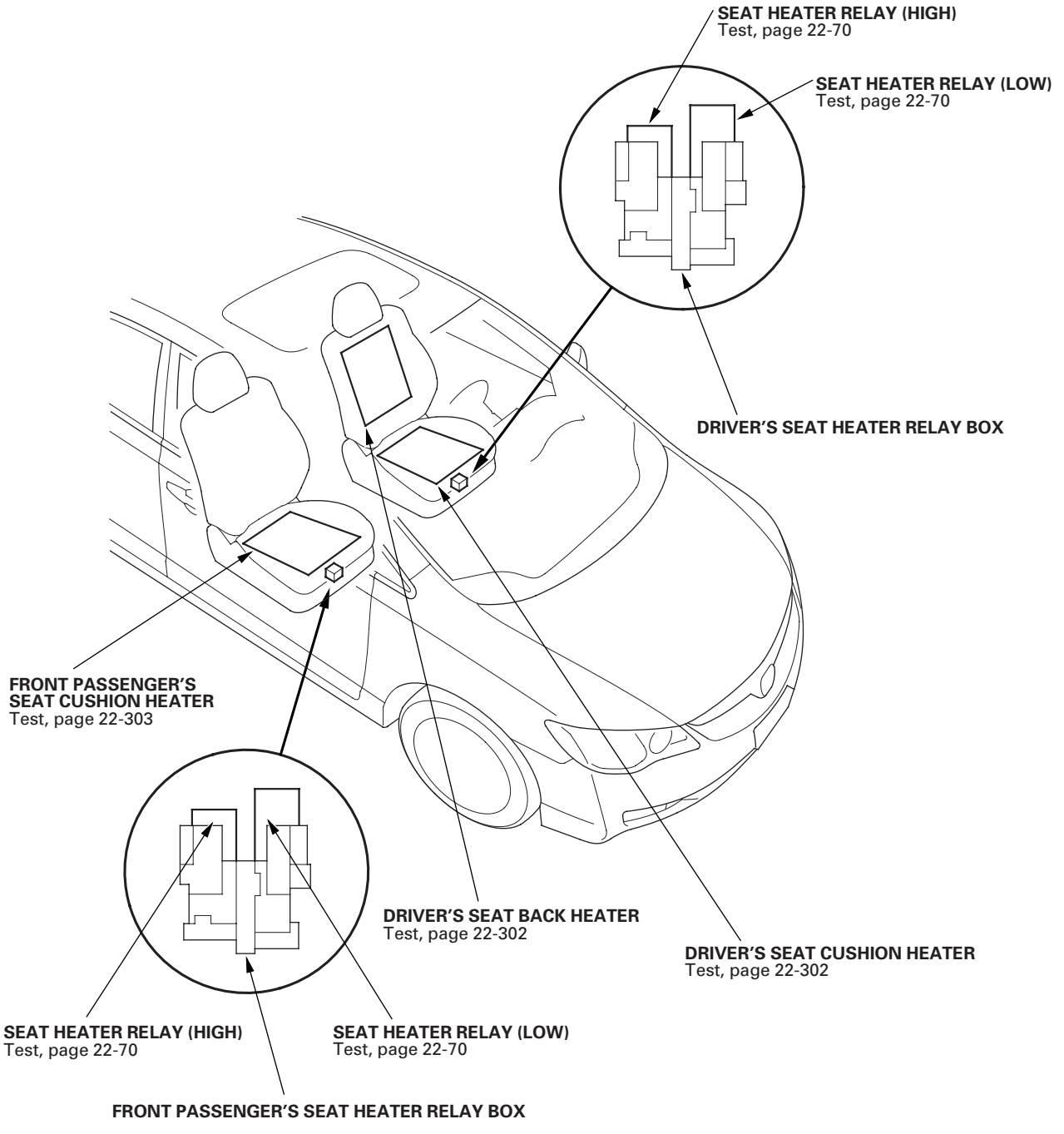


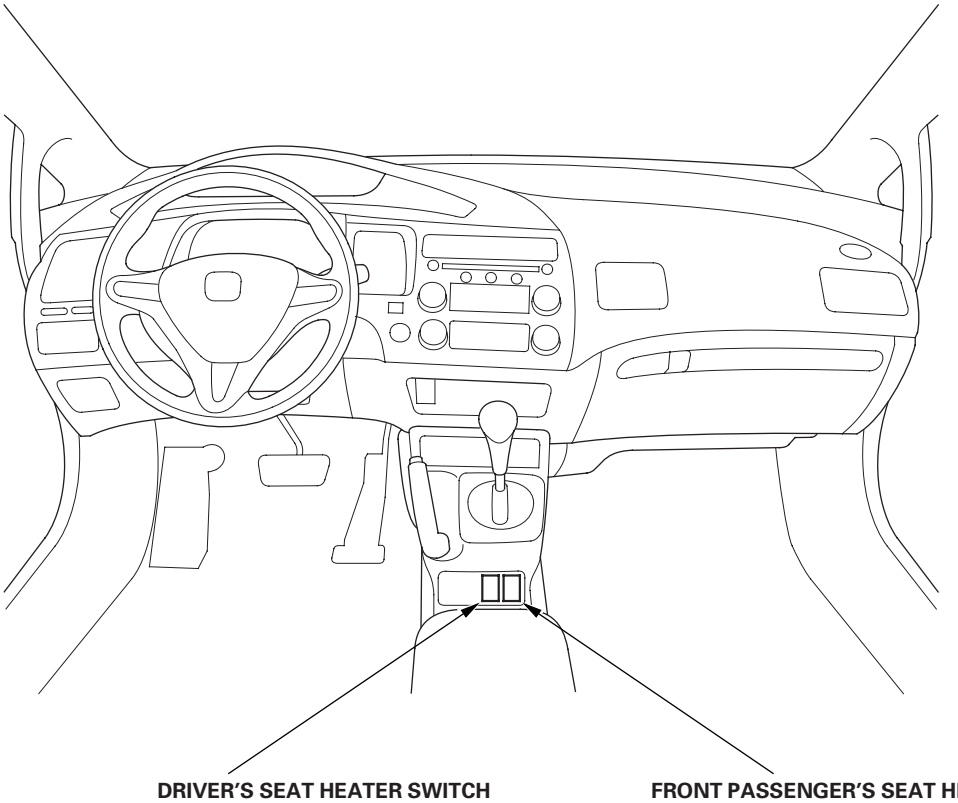
7. Remove the housing (A) from the panel.



8. Install the console accessory power socket in the reverse order of removal.

Component Location Index



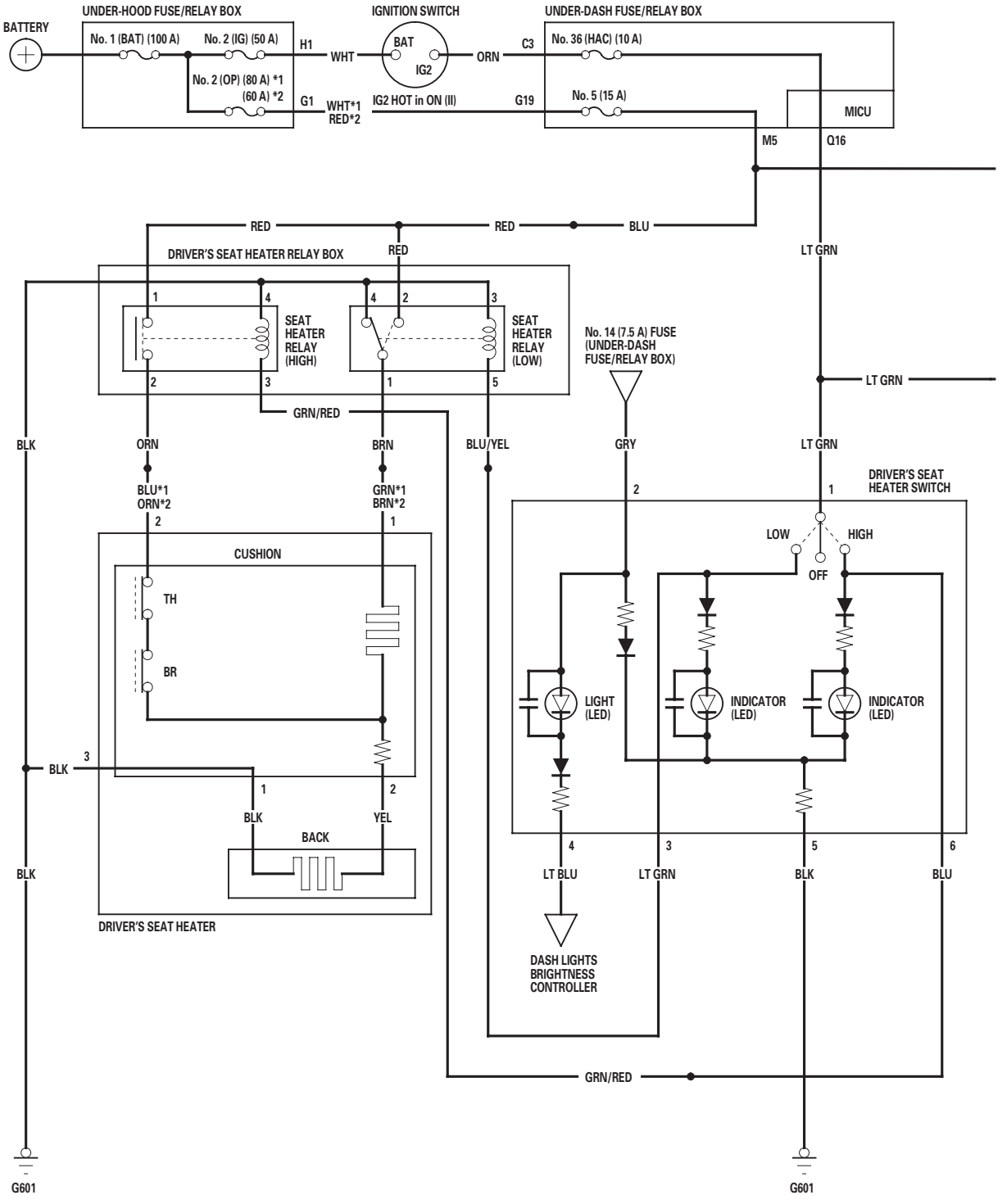


DRIVER'S SEAT HEATER SWITCH
Test/Replacement, page 22-302

FRONT PASSENGER'S SEAT HEATER SWITCH
Test/Replacement, page 22-302

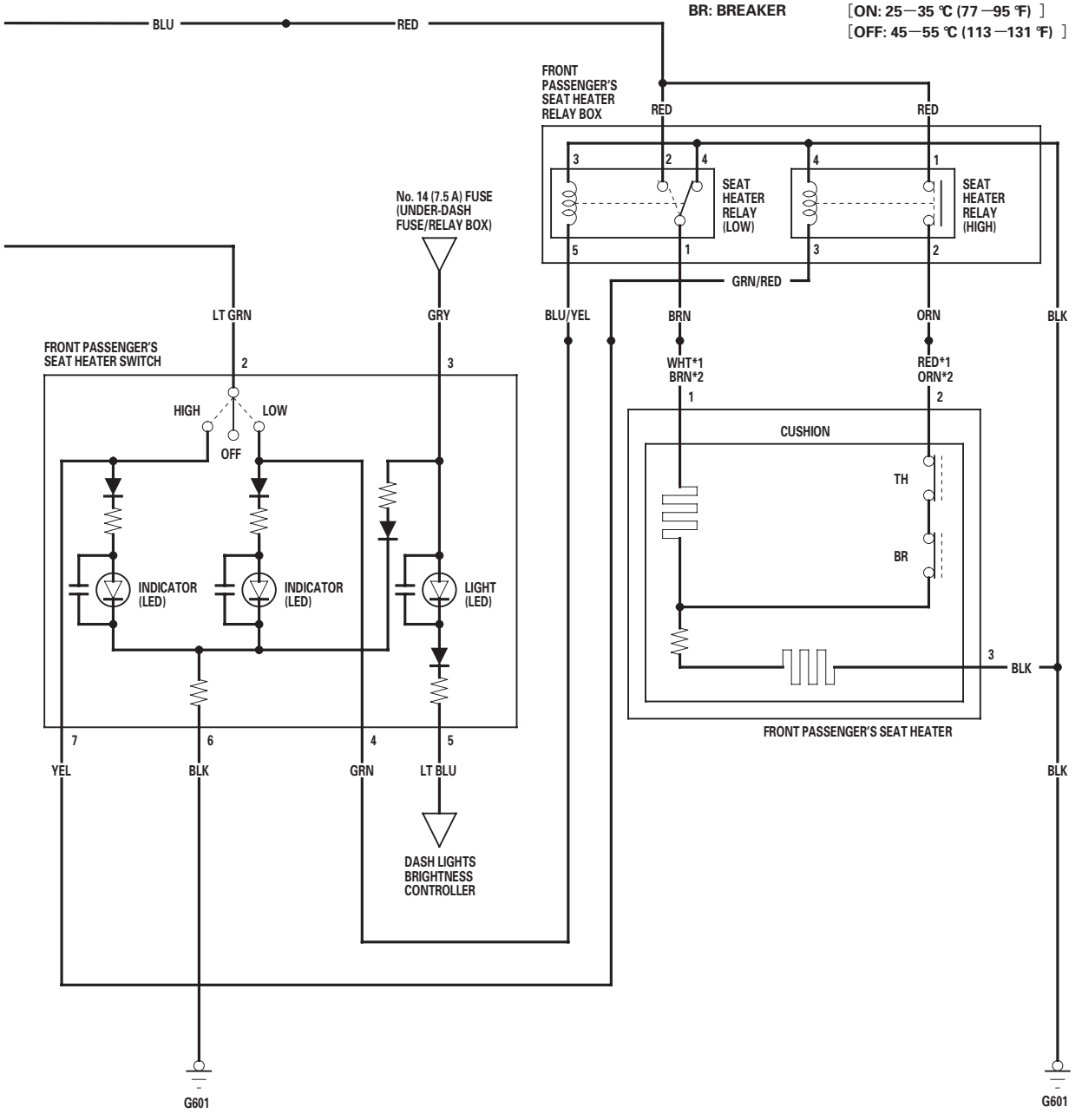
Seat Heaters

Circuit Diagram



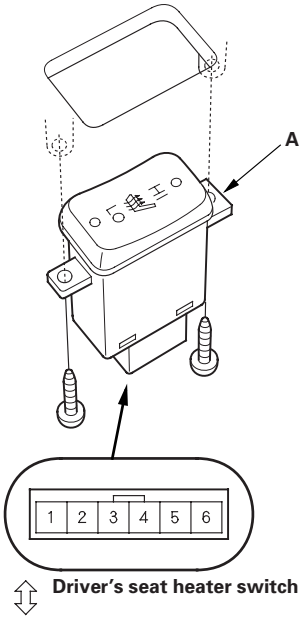
*1: '06—07 models
*2: '08—09 models

TH: THERMOSTAT [ON: 29—39 °C (84—102 °F)]
[OFF: 38—48 °C (100—118 °F)]
BR: BREAKER [ON: 25—35 °C (77—95 °F)]
[OFF: 45—55 °C (113—131 °F)]



Switch Test/Replacement

1. Remove the center console front panel (see page 20-92).
2. Disconnect the 6P (or 7P*) connector from the seat heater switch (A), then remove the switch.
   *: Front passenger's seat heater switch



3. Check for continuity between the terminals in each switch position according to the table.

Position		Terminal 1 [2]	2 [3]	3 [4]	4 [5]	5 [6]	6 [7]
ON	HIGH	○					○
	LOW	○		○			
OFF							

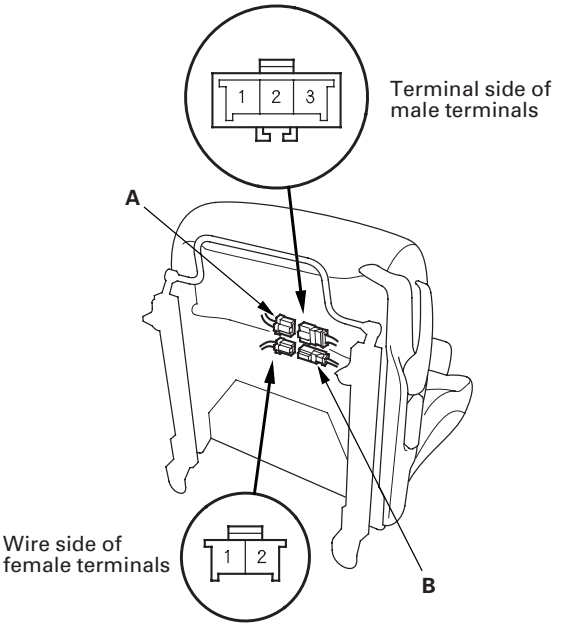
[ ] : **Front passenger's seat heater switch**

4. If the continuity is not as specified, replace the switch.
5. Install the seat heater switch in the reverse order of removal.

Seat Heater Test

Driver's

1. Remove the driver's seat (see page 20-118).
2. Disconnect the 3P connector (A) and 2P connector (B) from the seat heater.

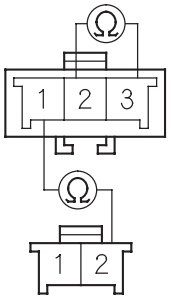


3. Check for continuity between seat-back heater 2P connector (female terminals) terminals No. 1 and No. 2. There should be continuity.

4. Reconnect the 2P connector.

5. Check for continuity between seat-cushion heater 3P connector (male terminals) terminal No. 1 and seat-back heater 2P connector (female terminals) terminal No. 2, and seat-cushion heater 3P connector (male terminals) terminals No. 2 and No. 3. There should be continuity.

SEAT-CUSHION HEATER 3P CONNECTOR
Terminal side of male terminals



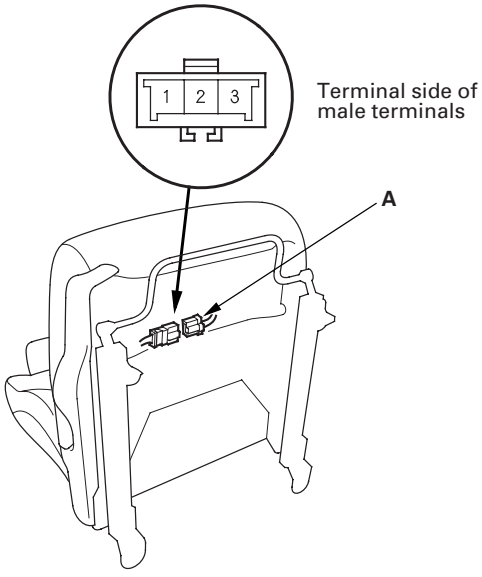
SEAT-BACK HEATER 2P CONNECTOR
Wire side of female terminals

6. If the continuity is not as specified, replace the appropriate seat heater.

Front Passenger's

1. Remove the front passenger's seat (see page 20-118).

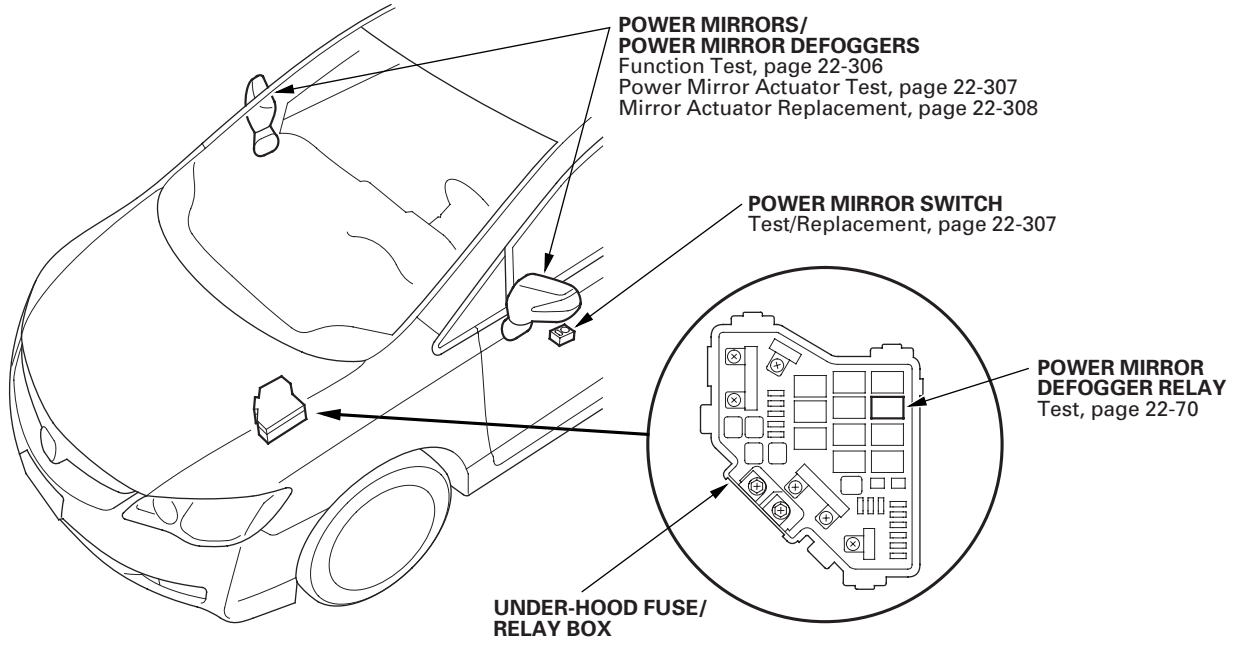
2. Disconnect the 3P connector (A) from the seat heater.

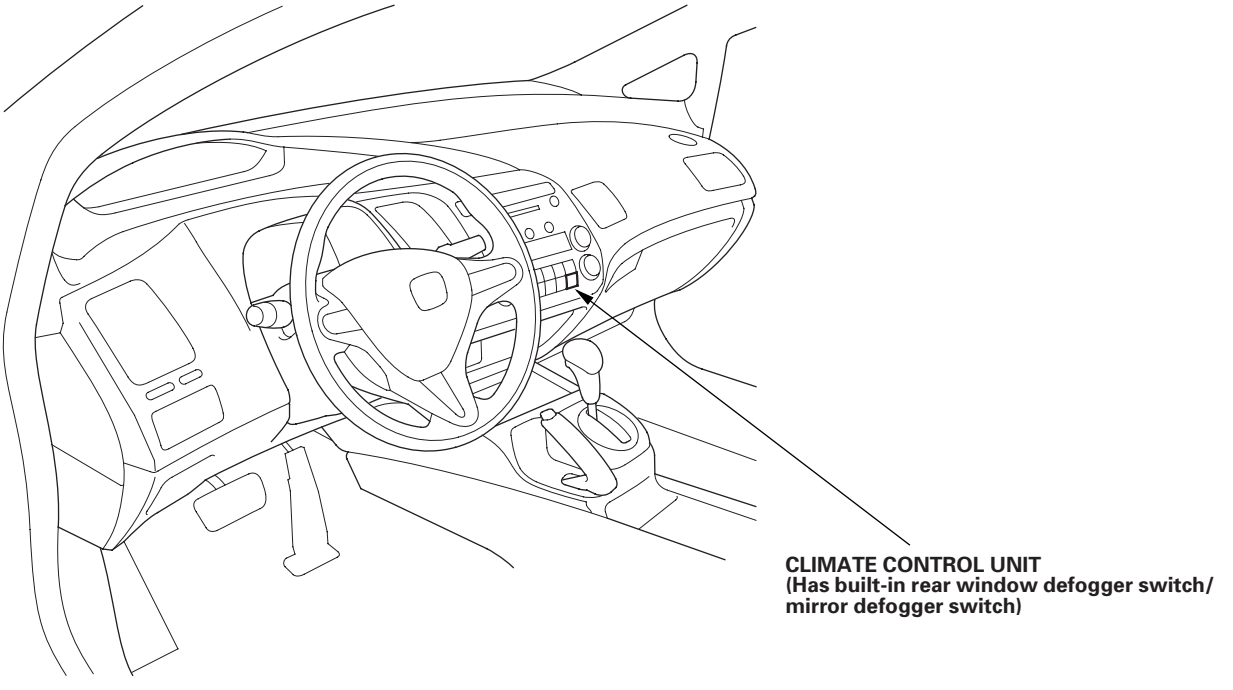


3. Check for continuity between seat-cushion heater 3P connector (male terminals) terminals No. 1 and No. 3, and seat-cushion heater 3P connector (male terminals) terminals No. 2 and No. 3. There should be continuity.

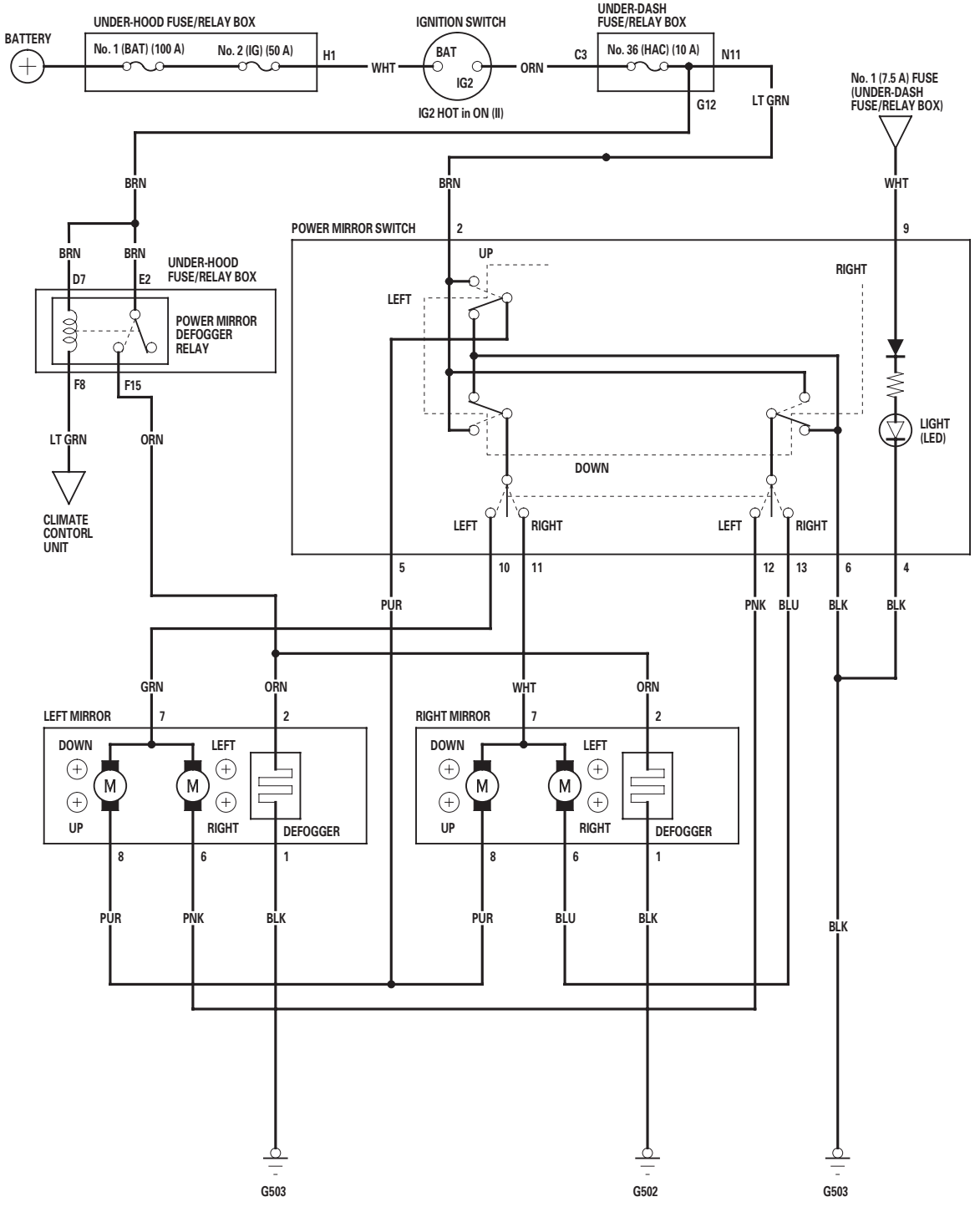
4. If the continuity is not as specified, replace the seat heater.

Component Location Index



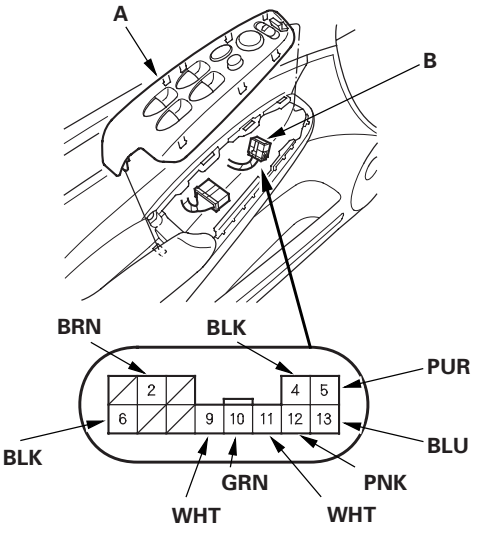


Circuit Diagram



Function Test

1. Remove the power window master switch (A).



Wire side of female terminals

2. Disconnect the 13P connector (B) from the power mirror switch.

3. Choose the appropriate test based on the symptom:

   - Both mirrors don't work, go to step 4.
   - Left mirror doesn't work, go to step 6.
   - Right mirror doesn't work, go to step 7.

Both mirrors

4. Measure the voltage between terminal No. 2 and body ground with the ignition switch turned to ON (II).
   There should be battery voltage.

   - If there is no voltage, check for:
     – Blown No. 36 (10 A) fuse in the under-dash fuse/relay box.
     – An open in the BRN wire.
   - If there is battery voltage, go to step 5.

5. Check for continuity between terminal No. 6 and body ground. There should be continuity.

   - If there is no continuity, check for:
     – An open in the BLK wire.
     – Poor ground (G 503).
   - If there is continuity, check both mirrors individually as described in the next steps.

Left mirror

6. Connect terminals No. 2 and No. 10, and terminals No. 5 (or No. 12) and No. 6 with jumper wires.
   The left mirror should tilt down (or swing left) with the ignition switch to ON (II).

   - If the left mirror does not tilt down (or does not swing left), check for an open in the PUR (or PNK) wire between the left mirror and the 13P connector.
     If the wire is OK, check the left mirror actuator.
   - If the mirror neither tilts down nor swings left, repair the GRN wire.
   - If the mirror works properly, check the mirror switch.

Right mirror

7. Connect terminals No. 2 and No. 11, and terminals No. 5 (or No. 13) and No. 6 with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch to ON (II).

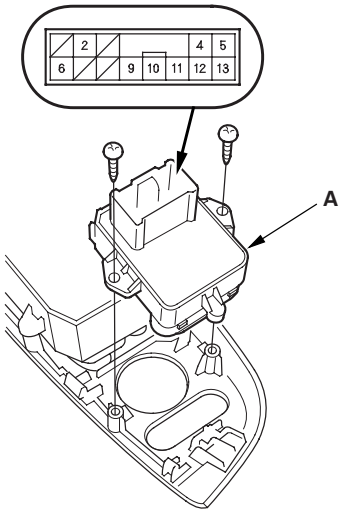
   - If the mirror does not tilt down (or does not swing left), check for an open in the PUR (or BLU) wire between the right mirror and the 13P connector.
     If the wire is OK, check the right mirror actuator.
   - If the mirror neither tilts down nor swings left, repair the WHT wire.
   - If the mirror works properly, check the mirror switch.

Defogger

8. Connect the power mirror defogger relay terminals No. 1 and No. 2 in the under-hood fuse/relay box with a jumper wire, and measure the voltage between mirror connectors terminal No. 1 and body ground. There should be battery voltage and both mirrors should warm up with the ignition switch to ON (II).
   - If there is no voltage or neither warms up, check for:
     – An open in the ORN wire.
     – Blown No. 36 (10 A) fuse in the under-dash fuse/relay box.
   - If only one fails to warm up, check:
     – Its defogger.
     – Poor ground (G 503).
   - If both warm up, check the defogger switch.

Power Mirror Switch Test/ Replacement

1. Remove the driver's door grip cover (see page 20-7).
2. Disconnect the 13P connector from the power mirror switch (A), then remove the two screws and power mirror switch.



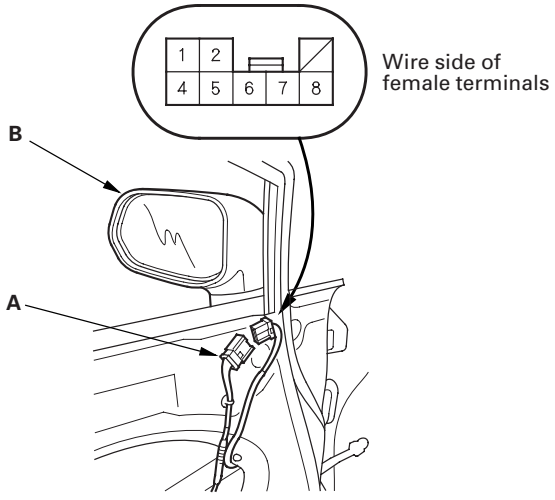
3. Check for continuity between the terminals in each switch position according to the table.

Position \ Terminal		2	5	6	10	11	12	13
L	UP	○	○	○	○			
	DOWN	○		○	○			
	LEFT	○		○	○		○	
	RIGHT	○		○	○		○	
R	UP	○	○	○		○		
	DOWN	○		○		○		
	LEFT	○		○		○		○
	RIGHT	○		○		○		○

4. If the continuity is not as specified, remove the screws and replace the switch.
5. Install the power mirror switch in the reverse order of removal.

Power Mirror Actuator Test

1. Remove the door panel (see page 20-7).
2. Disconnect the 8P connector (A) from the power mirror actuator (B).



3. Check actuator operation by connecting power and ground according to the table.

Position \ Terminal	8	7	6
TILT UP	⊕	⊖	
TILT DOWN	⊖	⊕	
SWING LEFT		⊕	⊖
SWING RIGHT		⊖	⊕

4. If the mirror fails to work properly, replace the mirror actuator.

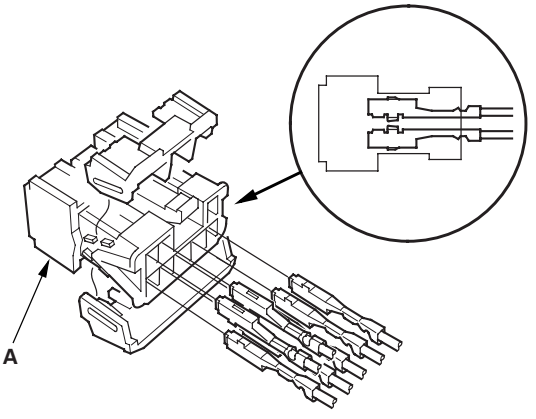
Defogger Test

5. Check for continuity between terminals No. 1 and No. 2 of the 8P connector. These should be continuity.
6. If the continuity is not as specified, check for:

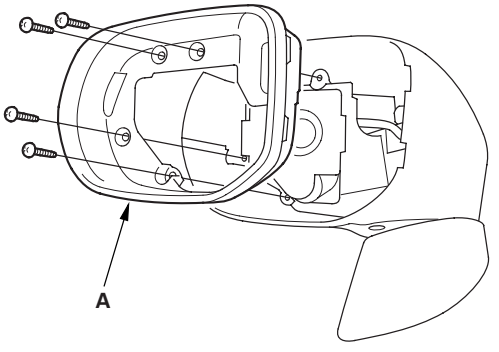
- An open in the wire.
- A faulty mirror holder.

Power Mirror Actuator Replacement

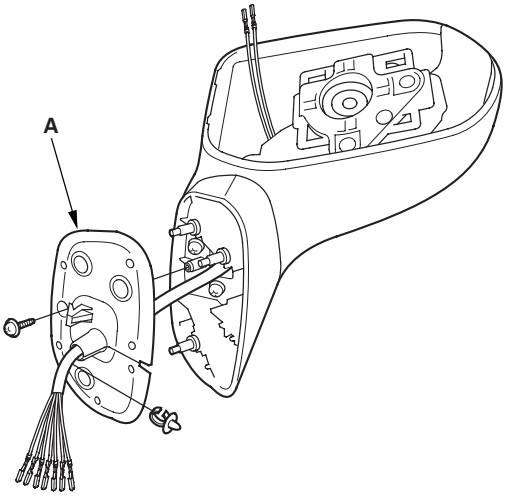
1. Remove the mirror holder (see page 20-34).
2. Remove the power mirror (see page 20-33).
3. Disconnect the 8P connector from the mirror.
4. Record the terminal locations and wire colors.
5. Disassemble the power mirror 8P connector (A), and remove all terminals from it.



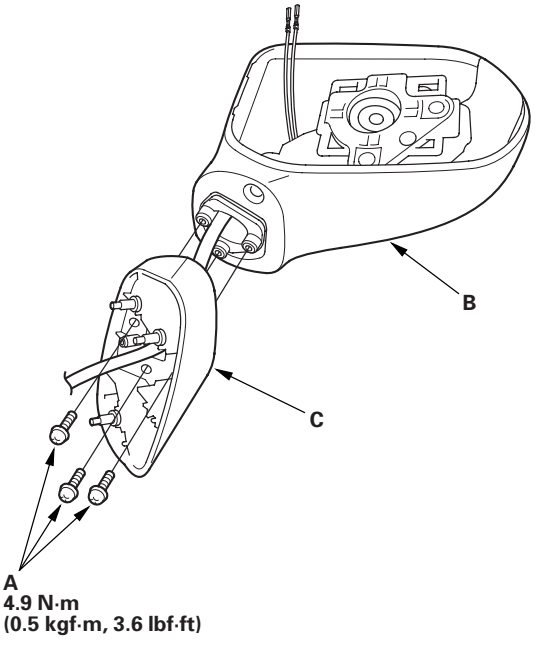
6. Remove the screws and the mirror visor (A).



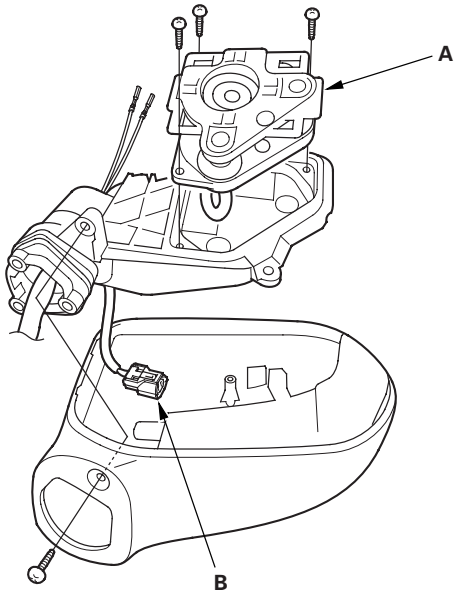
7. Remove the screw from the gasket (A).



8. Remove the three screws (A), and separate the mirror housing (B) from the bracket (C).

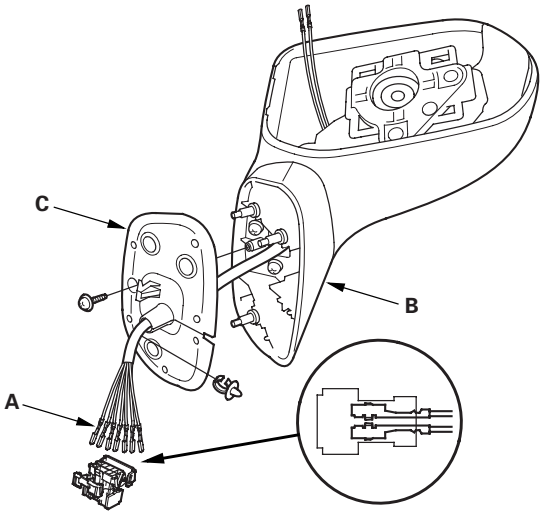


9. Remove the four screws, and the actuator (A).



10. Disconnect the 2P connector (B) from the side turn signal light.

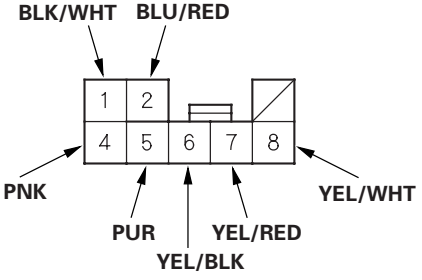
11. Route the wire harness (A) of the new actuator through the hole in the bracket (B) and gasket (C).



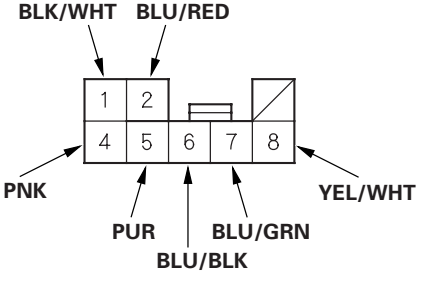
12. Install the power mirror actuator, bracket, harness clip, and gasket in the reverse order of removal.

13. Insert the new actuator terminals into the connector in the original arrangement.

Left:



Right:



14. Apply tape to seal the intersection of the wire harness and the gasket.

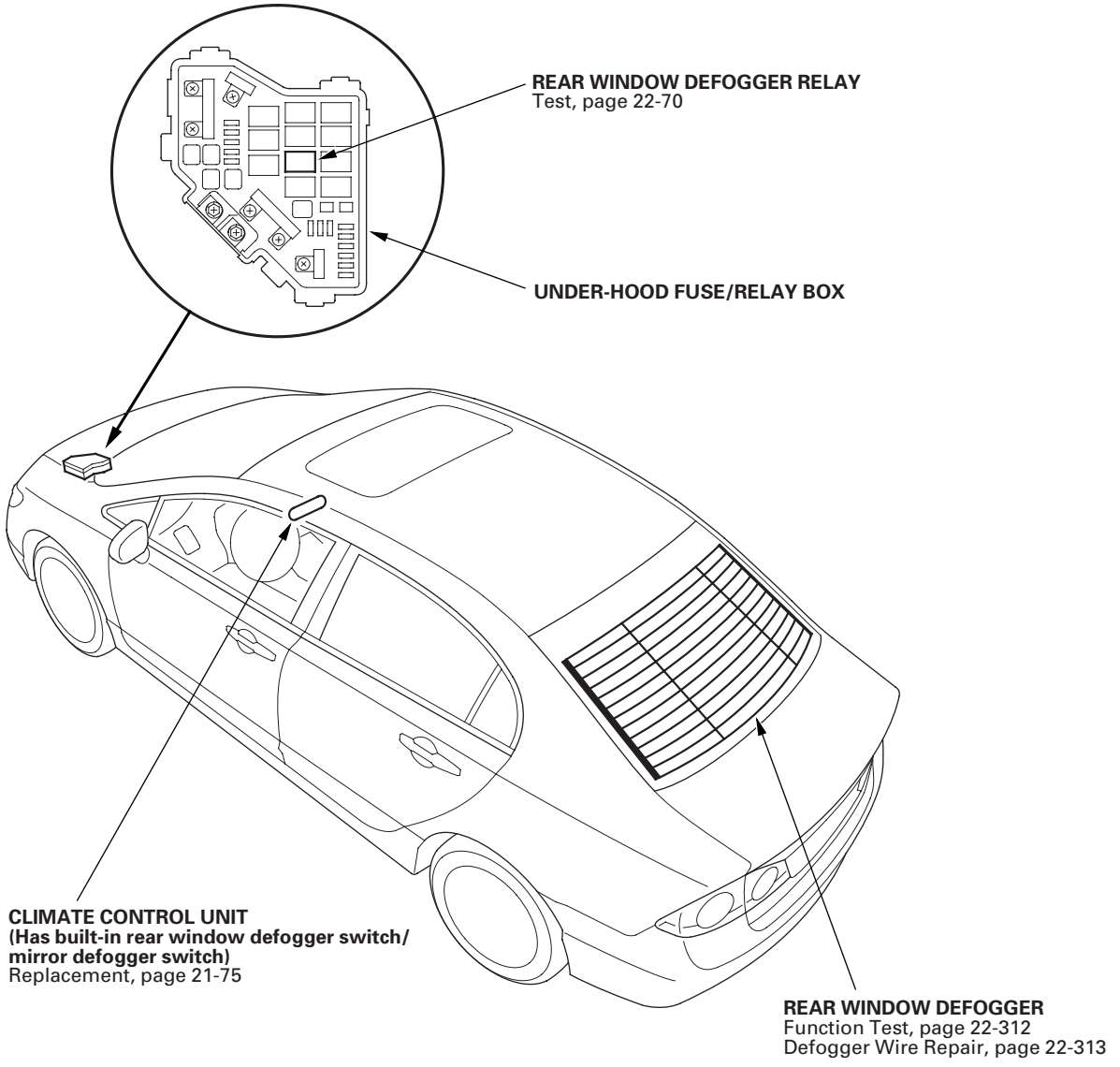
15. Reassemble in the reverse order of disassembly. Be careful not to break the mirror when reinstalling it to the actuator.

16. Reinstall the mirror assembly on the door.

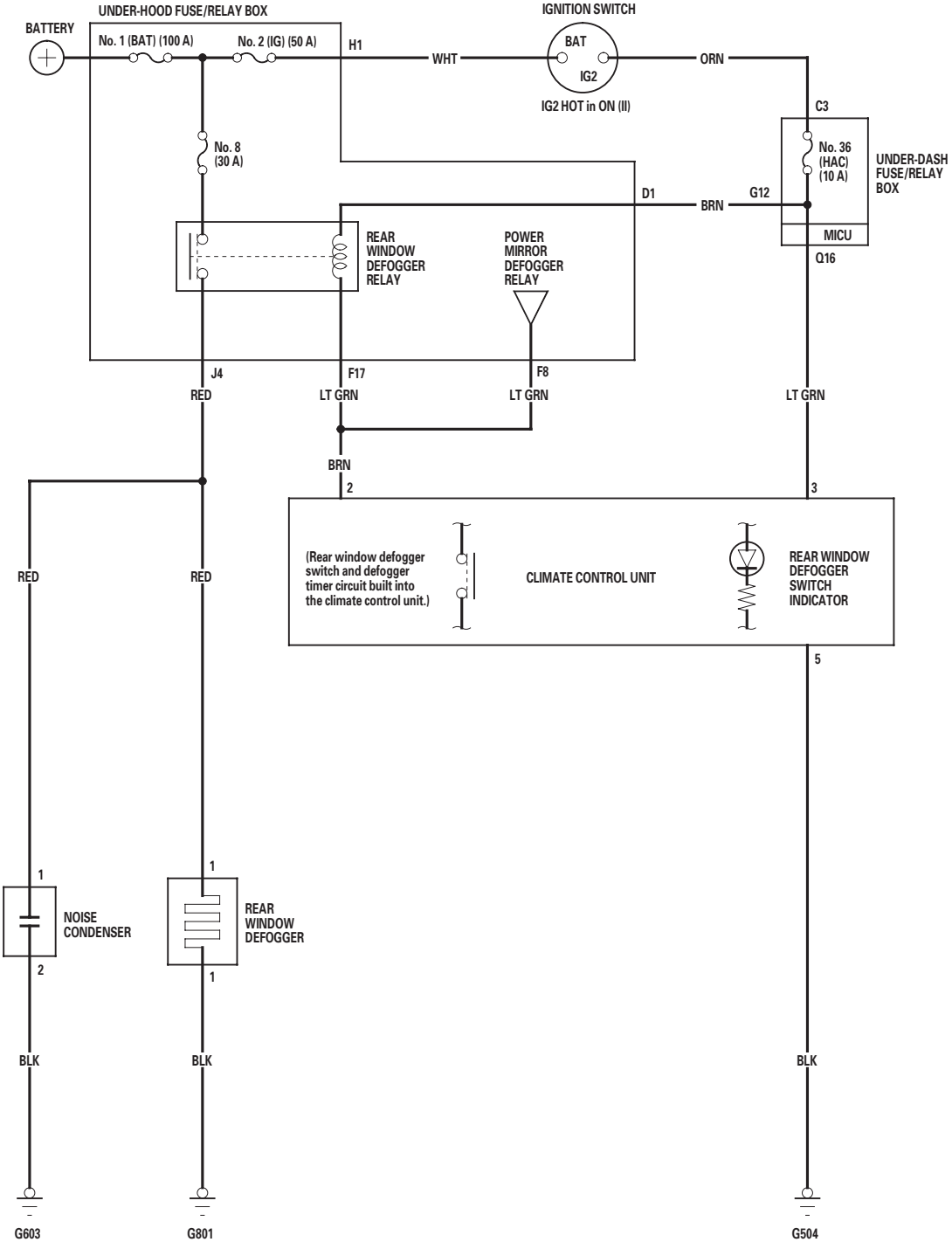
17. Operate the power mirror to ensure smooth operation.

Rear Window Defogger

Component Location Index



Circuit Diagram



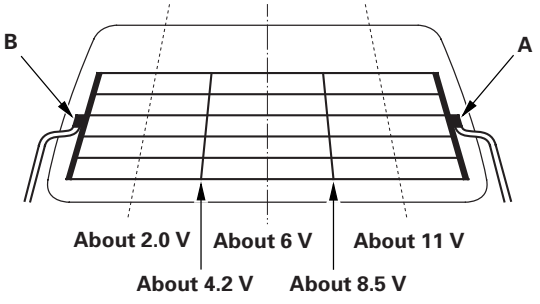
Rear Window Defogger

Function Test

NOTE:
- Be careful not to scratch or damage the defogger wires with the tester probe.
- Before testing, check the No. 8 (30 A) fuse in the under-hood fuse/relay box and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

1. Measure the voltage between the positive terminal (A) and body ground with the ignition switch turned to ON (II) and the defogger switch ON.
   There should be battery voltage.

   - If there is no voltage, check for:
     – Faulty rear window defogger relay.
     – Faulty climate control unit.
     – An open in the RED wire to the positive terminal.
   - If there is voltage, go to step 2.



2. Disconnect the negative terminal (B) from the rear window defogger.

3. Check for continuity between the negative terminal and body ground.

   If there is no continuity, check for an open in the wire or poor ground (G801). If there is continuity, go to step 4.

4. Reconnect the negative terminal to the rear window defogger.

5. Turn the ignition switch to ON (II) and the rear window defogger switch ON.

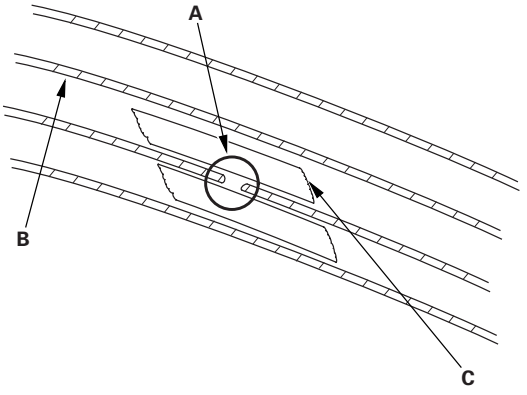
6. Touch the voltmeter positive probe to each point on each defogger wire, and the negative probe to the negative terminal.

   - If the voltage is as specified, the defogger wire up to that point is OK.
   - If the voltage is not as specified, repair the defogger wire.
     – If it is more than specified at one of the points, there is a break in the negative half of the wire.
     – If it is less than specified at one of the points, there is a break in the positive half of the wire.

Defogger Wire Repair

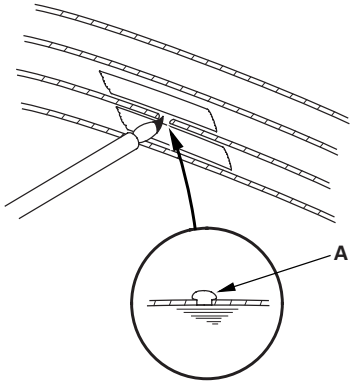
NOTE: To make an effective repair, the broken section must be no longer than 25 mm (1 in.).

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with isopropyl alcohol.



2. Carefully mask above and below the broken portion of the defogger wire (B) with cellophane tape (C).

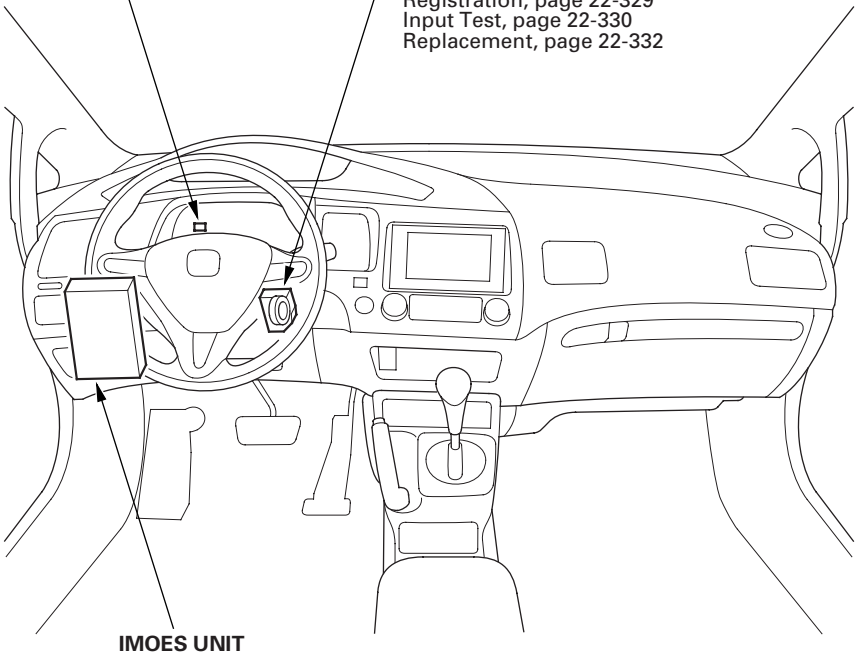
3. Using a small brush, apply a heavy coat of silver conductive paint (commercially available) (A) extending about 3.1 mm (1/8 in.) on both sides of the break. Allow 25 minutes to dry.

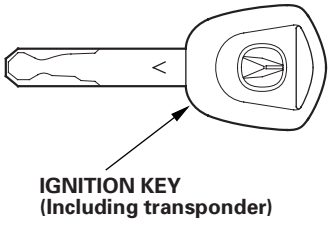


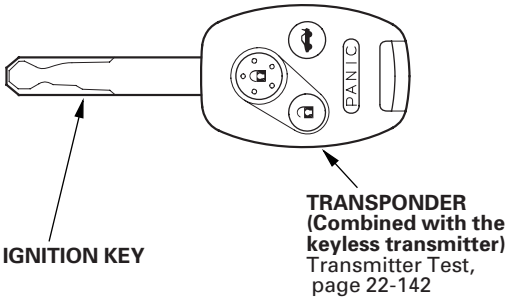
4. Do the function test to confirm that the wire is repaired (see page 22-312).

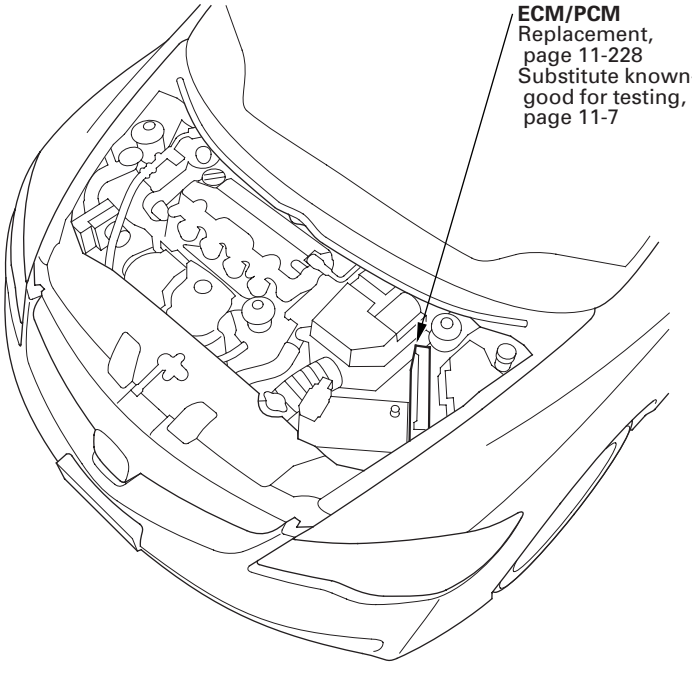
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

Component Location Index





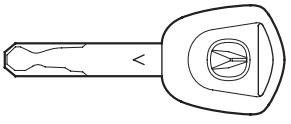




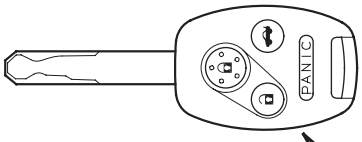
System Description

The vehicle is equipped with a type VI immobilizer system that will disable the vehicle unless a programmed ignition key is used.
This system consists of a transponder combined with a keyless transmitter, immobilizer-keyless control unit, the MICU (has built-in imoes unit), immobilizer indicator, and the ECM/PCM.
When the immobilizer key (programmed by the HDS) is inserted into the ignition switch and turned to ON (II), the immobilizer-keyless control unit sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer-keyless control unit which then sends a coded signal to the ECM/PCM and the MICU (imoes unit). The ECM/PCM and MICU (imoes unit) identify this code signal, then fuel power is supplied.

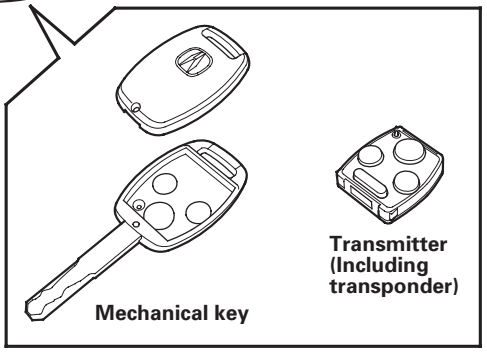
NOTE: The transmitter is automatically programmed to the vehicle when a transponder is programmed by the HDS.

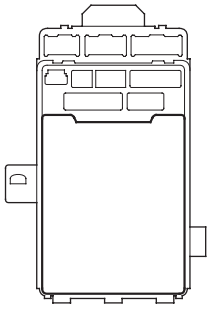


Mechanical key (Including transponder)

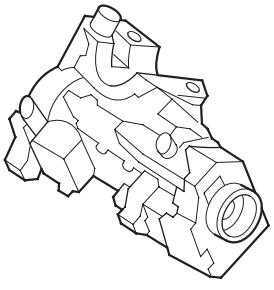


Immobilizer key

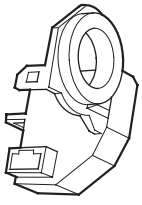




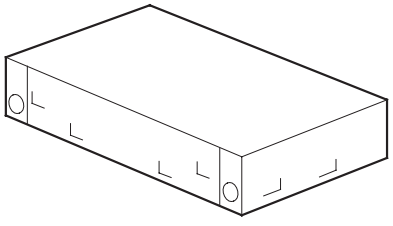
MICU (Imoes circuit)



Steering lock assembly



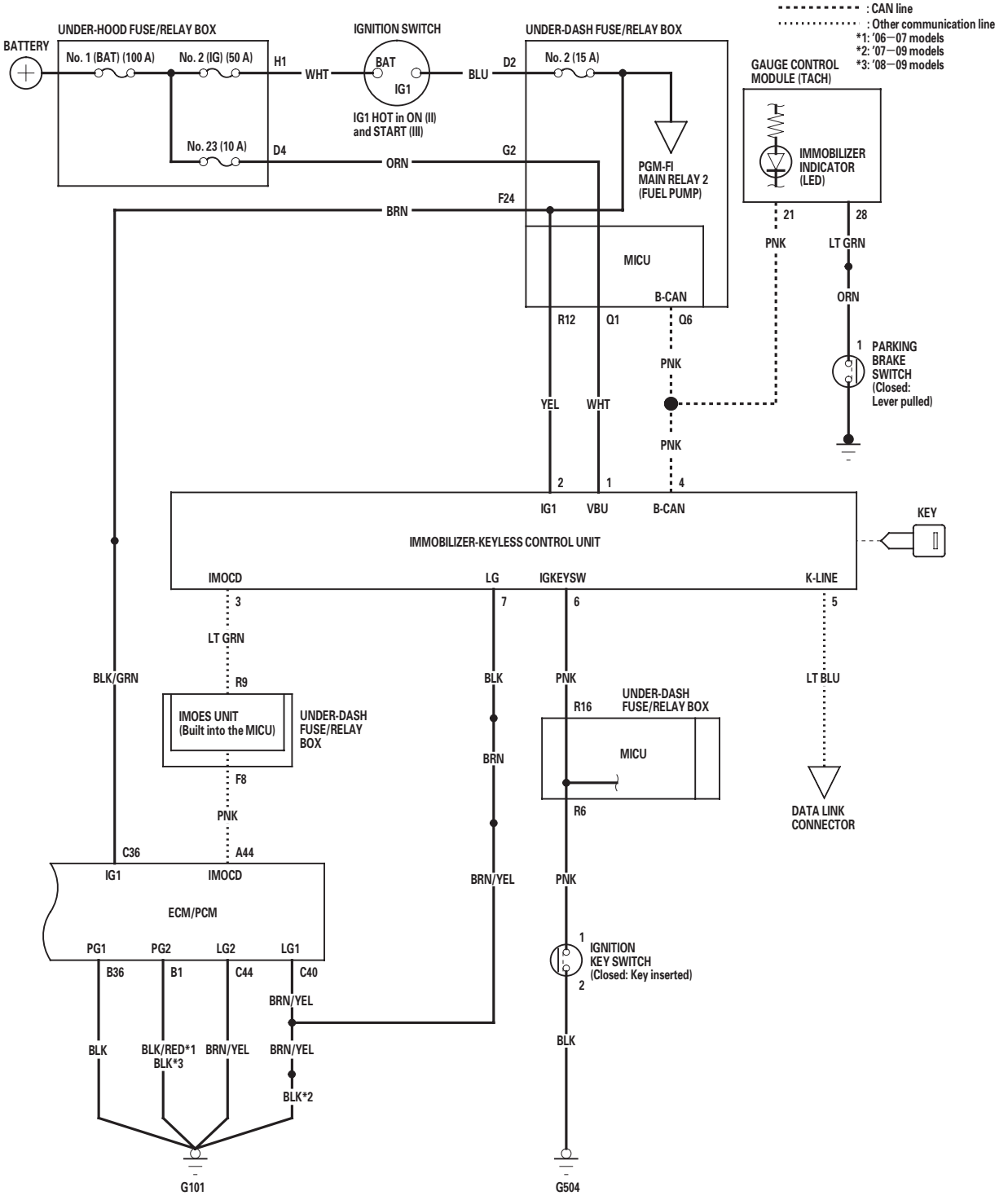
Immobilizer-keyless control unit



ECM/PCM

If the wrong key has been used or the code was not received or recognized by the unit, the indicator will come on for about 2 seconds, then it will blink until the ignition switch is turned to LOCK (0). When the ignition switch is turned to LOCK (0), the indicator will blink ten times to signal that the unit has reset correctly, then the indicator will go off.

Circuit Diagram



DTC Troubleshooting

DTC B1905: Immobilizer-Keyless Control Unit Lost Communication with MICU (DRLOCKSW Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1905 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the immobilizer-keyless control unit 7P connector, and the under-dash fuse/relay box connector Q (16P). ■
5. Check for DTCs with the HDS.

   Is DTC B1160 also indicated with DTC B1905?

   YES—Faulty MICU; replace the under-dash fuse/relay box (see page 22-66). ■

   NO—Replace the immobilizer-keyless control unit (see page 22-332). ■

DTC Troubleshooting (cont'd)

DTC B1906: Immobilizer-Keyless Control Unit Lost Communication with Gauge Control Module (A/T Message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for 6 seconds or more.
4. Check for DTCs with the HDS.

   Is DTC B1906 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the gauge control module (tach) 36P connector and at the immobilizer-keyless control unit 7P connector. ■
5. Turn the ignition switch to LOCK (0), and then back to ON (II).
6. Select the BODY ELECTRICAL menu, then enter the UNIT INFORMATION.
7. Check the condition of the gauge control module (tach) from the CONNECTED UNIT list.

   Is NOT AVAILABLE indicated?

   YES—Go to step 8.

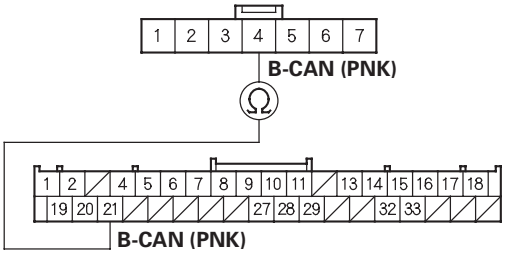
   NO—Replace the immobilizer-keyless control unit (see page 22-332). ■
8. Do the gauge control module (tach) input test (see page 22-271).

   Are all inputs OK?

   YES—Go to step 9.

   NO—Repair the faulty input, then recheck the DTCs. ■
9. Disconnect the immobilizer-keyless control unit 7P connector.
10. Disconnect the gauge control module (tach) 36P connector.
11. Check for continuity between immobilizer-keyless control unit 7P connector terminal No. 4 and gauge control module (tach) 36P connector terminal No. 21.

IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Replace the gauge control module (tach) (see page 22-277). ■

NO—Repair an open in the wire between the immobilizer-keyless control unit and the gauge control module (tach). ■

DTC B1925: Ignition Key Switch Signal Error

NOTE:
- If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN System Diagnosis Test Mode A (see page 22-93).
- If the vehicle is equipped with an ACURA ACCESSORY remote starter, this DTC is normal no further diagnosis is necessary.

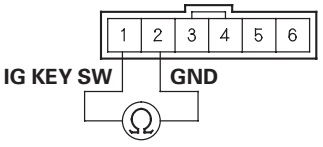
1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0) and remove the ignition key.
3. Insert the ignition key into the ignition switch, and turn the ignition switch to ON (II).
4. Check for DTCs with the HDS.

   Is DTC B1925 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the immobilizer-keyless control unit 7P connector, under-dash fuse/relay box 20P connector R, and at the ignition key switch 6P connector. ■
5. Turn the ignition switch to LOCK (0) and remove the ignition key.
6. Disconnect the ignition key switch 6P connector.
7. At the ignition key switch side, check for continuity between ignition key switch 6P connector terminals No. 1 and No. 2.

IGNITION KEY SWITCH 6P CONNECTOR



Terminal side of male terminals

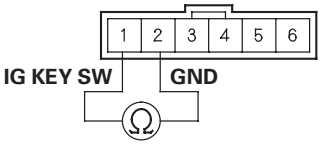
Is there continuity?

YES—Faulty ignition key switch or short to ground, replace the steering lock assembly (see page 17-14). ■

NO—Go to step 8.

8. Insert the ignition key into the ignition switch.
9. At the ignition key switch side, check for continuity between ignition key switch 6P connector terminals No. 1 and No. 2.

IGNITION KEY SWITCH 6P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 10.

NO—Faulty ignition key switch, replace the steering lock assembly (see page 17-14). ■

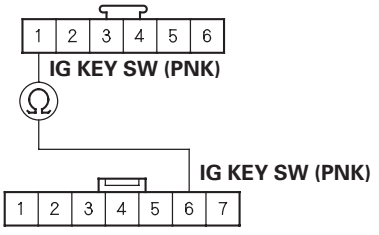
(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect the immobilizer-keyless control unit 7P connector.

11. Check for continuity between immobilizer-keyless control unit 7P connector terminal No. 6 and ignition key switch 6P connector terminal No. 1.

IGNITION KEY SWITCH 6P CONNECTOR
Wire side of female terminals



IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR
Wire side of female terminals

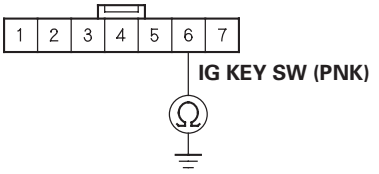
Is there continuity?

YES—Go to step 12.

NO—Repair an open in the wire and check under-dash fuse/relay box 20P connector R. ■

12. Check for continuity between immobilizer-keyless control unit 7P connector terminal No. 6 and body ground.

IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire or substitute a known-good under-dash fuse/relay box, and recheck. If the symptom/indication goes away, replace under-dash fuse/relay box. ■

NO—Replace the immobilizer-keyless control unit (see page 22-332). ■

Symptom Troubleshooting Information

Symptom Troubleshooting by the Immobilizer Indicator Lighting Pattern

Immobilizer system condition can be checked by the immobilizer indicator lighting pattern.

Normal operation
If the immobilizer code is identified, the immobilizer indicator comes on for 2 seconds, then goes off after turning the ignition switch to ON (II).
The immobilizer indicator does not come on when the ignition switch is turned to LOCK (0).

Immobilizer code is not identified
If the immobilizer code is not identified, the immobilizer indicator comes on for 2 seconds, then blinks after turning the ignition switch to ON (II).
The immobilizer indicator blinks ten times, then goes off when the ignition switch is turned to LOCK (0).

Immobilizer indicator does not come on
If the immobilizer indicator does not come on after turning the ignition switch to ON (II), there may be an open or short in the F-CAN lines between the ECM/PCM and the gauge control module (tach). Watch the malfunction indicator lamp (MIL). If the MIL stays on, go to the PGM-FI system troubleshooting (see page 11-203).

Immobilizer indicator does not go off
If the immobilizer indicator does not go off after turning the ignition switch to ON (II), do the gauge control module (tach) self-diagnostic function (see page 22-241). If the indicator drive circuit is OK, verify the SYSTEM CHECK with the HDS.

General Check before Troubleshooting

Before troubleshooting the immobilizer system, check the following general points and solve any if applicable.

- Battery is low; charge the battery fully, then troubleshoot the immobilizer system.
- Ignition key is not a genuine Honda part; use the Acura-approved key blank, register the key, then troubleshoot the immobilizer system.
- Key ring, or keys, or a key case is used; remove the key from it, and troubleshoot the immobilizer system with a key only.
- Aftermarket electrical part is attached; remove it, then troubleshoot the immobilizer system.

(cont'd)

Symptom Troubleshooting Information (cont'd)

How to Troubleshoot

NOTE: If the HDS does not communicate with the vehicle, troubleshoot the DLC circuit (see page 11-204).

1. Do the PGM-FI system DTCs check. If there are any DTCs, troubleshoot the indicated DTC.
2. Do the Body Electrical DTCs check. If there are any DTC, troubleshoot the indicated DTC.
3. Do the system check using the HDS. If there is a system check number, do the troubleshooting for the item indicated (see page 22-326).
4. Check the status log using the HDS. Troubleshoot the line with the highest counts (see page 22-328). If all the lines are ''0'' zero, the problem may not be caused by the immobilizer system, check for ignition or fuel problems.

   NOTE: Once repaired, clear the status log by removing the back up power fuse, or disconnecting the battery.

Symptom Troubleshooting of an open Power Supply and Ground Circuit

If a malfunction occurs in the immobilizer circuit for the VBU, IG1 and GND (LG) lines, identify the lines to check with this table.

Symptom / Line Error		Immobilizer Indicator	Engine Start	Key Registration	Tester Communication	Keyless Operation
Terminal No.	Cause of Malfunction					
1	VBU line open or short	Comes on, then goes off.	Possible	Possible	Possible	Impossible
2	IG1 line open or short	Blinking	Impossible	Impossible	Impossible	Possible
3	IMOCD line open or short	Blinking	Impossible	Possible	Impossible	Possible
4	B-CAN line open or short	Comes on, then goes off.	Possible	Possible	Immobilizer: Possible Keyless: Impossible	Impossible
5	K-LINE line open or short	Comes on, then goes off.	Possible	Impossible	Impossible	Possible
6	KEYSW line open	Comes on, then goes off.	Possible	Possible	Possible	Possible (in spite of the key is in the ignition switch)
	KEYSW line short to ground					Impossible
7	GND (LG) line open	Blinking	Impossible	Impossible	Impossible	Impossible

Symptom Troubleshooting

1. Troubleshoot the immobilizer system by the order of the priority shown:

Order of Priority	Symptom	Possible cause
1	Immobilizer indicator blinks.	Symptom troubleshooting (see page 22-324).
2	Engine does not start with the immobilizer key.	Symptom troubleshooting (see page 22-325).
3	Immobilizer indicator does not come on.	Check the MIL indication. • If the MIL comes on, go to the PGM-FI System MIL circuit troubleshooting (see page 11-203). • If the MIL does not come on, replace the gauge control module (tach).
4	Immobilizer indicator does not go off.	Symptom troubleshooting (see page 22-325).

Symptom Troubleshooting (cont'd)

Immobilizer indicator blinks

NOTE: Before troubleshooting, check the items listed in ''General Check before Troubleshooting''.

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS, then turn the ignition switch to ON (II).
3. Enter the IMMOBILIZER, then select the IMMOBILIZER SETUP.
4. Select the SYSTEM CHECK.

   Is the SYSTEM CHECK indicated?

   YES—Troubleshoot the immobilizer system according to the result of the SYSTEM CHECK (see page 22-326).■

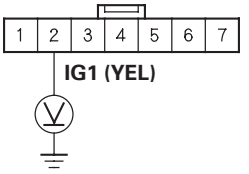
   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Enter the vehicle, and remove the ignition key from the ignition switch, then close the all doors.
7. Operate the keyless transmitter LOCK and UNLOCK several times in the vehicle.

   Do the door lock actuators work normally?

   YES—Go to step 8.

   NO—Check for a poor ground (G101) and/or an open in the wire between immobilizer-keyless control unit 7P connector terminal No. 7 and body ground (G101).■
8. Turn the ignition switch to ON (II).
9. Measure the voltage between immobilizer-keyless control unit 7P connector terminal No. 2 and body ground.

IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR



Wire side of female terminals

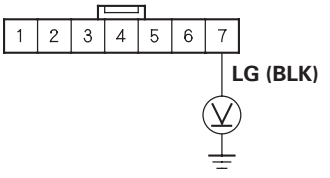
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the YEL wire between the under-dash fuse/relay box and the immobilizer-keyless control unit.■

10. Measure the voltage between immobilizer-keyless control unit 7P connector terminal No. 7 and body ground.

IMMOBILIZER-KEYLESS CONTROL UNIT 7P CONNECTOR



Wire side of female terminals

Is there 0.5 V or more?

YES—Repair poor connection or open between immobilizer-keyless control unit 7P connector terminal No. 7 and G101.■

NO—Replace the immobilizer-keyless control unit (see page 22-332).■

Engine does not start with the immobilizer key

NOTE: Before troubleshooting, check the items listed in ''General Check before Troubleshooting'' and ''How to Troubleshoot'' (see page 22-322).

1. Try to start the engine.

   Does the engine start?

   YES—Intermittent failure, the system is OK at this time. Check status log (see page 22-328). ■

   NO—Go to step 2.

2. Turn the ignition switch to LOCK (0).

3. Turn the ignition switch to ON (II), and check the immobilizer indicator.

   Does the indicator come on for 2 seconds, then go off?

   YES—Go to step 4.

   NO—Go to the immobilizer indicator blinks troubleshooting (see page 22-324). ■

4. Turn the ignition switch to START (III).

   Does the starter motor run?

   YES—Go to step 5.

   NO—Go to Starting System and check the starter motor (see page 4-6). ■

5. Try to start the engine with the immobilizer key.

   Does the engine start?

   YES—Go to step 6.

   NO—Go to the PGM-FI System Symptom Troubleshooting. ■

6. Wait for a few minutes with the engine running.

   Does the engine stop?

   YES—Go to the PGM-FI System Symptom Troubleshooting. ■

   NO—The system is OK at this time. ■

Immobilizer indicator does not go off

1. Turn the ignition switch to LOCK (0).

2. Connect the HDS to the data link connector.

3. Turn the ignition switch to ON (II).

4. Enter IMMOBILIZER, then select the IMMOBILIZER INFORMATION.

5. Do the SYSTEM CHECK with the HDS.

   Is N-1 OK indicated?

   YES—Replace the gauge control module (tach) (see page 22-277). ■

   NO—Substitute a known-good immobilizer-keyless control unit, then register it and recheck. If the symptom goes away, replace the original immobilizer-keyless control unit (see page 22-332). ■

System Check

1. Connect the HDS to the data link connector.
2. Turn the ignition switch to ON (II).
3. Monitor the SYSTEM CHECK in the IMMOBILIZER INFO with the HDS.
4. If the HDS displays NORMAL N-1, the immobilizer system is OK at this time, refer to the STATUS LOG. If the HDS displays any other messages, check as follows:

System Check No.	System Check	Possible Cause
A-1	The key is not registered	• This key is not registered in the immobilizer-keyless control unit. Try to register keys using the HDS. • No communication between the antenna and the immobilizer key because of interference from metal such as key chains/key rings/ other keys. • Low battery voltage.
A-2	Communication error between the key and immobilizer unit	• Intermittent interruption between transponder and immobilizer-keyless control unit. • The immobilizer key type is incorrect non-Acura key. • Key failure (transponder failure) • No communication between the antenna and the immobilizer key because of interference from metal such as key chains/key rings/ other keys. • Low battery voltage.
A-3	No communication between the key and immobilizer unit	• The ignition switch was turned to ON (II) with a non-immobilizer key. • The immobilizer key type is incorrect non-Acura key. • Key failure (transponder failure) • No communication between the antenna and the immobilizer key because of interference from metal such as key chains/key rings/ other keys. • Low battery voltage. • Immobilizer-keyless control unit failure
B-1	The ECM/PCM is not registered	• The ECM/PCM was not registered. Try to register the ECM/PCM using the HDS. • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless control unit and the ECM/PCM because of interference. • Open in the IG1 line
B-2	Error of communication format in ECM/ PCM	• The ECM/PCM was not registered. Try to register the ECM/PCM using the HDS. • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless control unit and the ECM/PCM because of interference.

System Check No.	System Check	Possible Cause
C-1	The imoes unit is not registered	• Imoes unit was not registered. • No communication between the imoes unit and the immobilizer-keyless control unit because of low battery voltage. • No communication between the imoes unit and the immobilizer-keyless control unit because of interference.
C-2	Error of communication format in imoes unit	• Imoes unit was not registered. • No communication between the imoes unit and the immobilizer-keyless control unit because of low battery voltage. • No communication between the imoes unit and the immobilizer-keyless control unit because of interference.
D-1	S-net line short	• Harness short from the ECM/PCM to the immobilizer-keyless control unit. (IMOCD (S-net) line short) • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless unit and the ECM/PCM because of interference. • Immobilizer-keyless control unit failure • ECM/PCM failure
D-2	No communication between imoes unit and immobilizer unit	• Blown fuse • Harness open from the imoes unit to the immobilizer-keyless control unit. (IMOCD (S-net) line open) • No communication between the imoes unit and the immobilizer-keyless control unit because of low battery voltage. • No communication between the imoes unit and the immobilizer-keyless control unit because of interference. • Immobilizer-keyless control unit failure • Imoes unit failure
D-3	No communication between ECM/PCM and immobilizer unit	• Blown fuse • Harness open from the ECM/PCM to the immobilizer-keyless control unit. • No communication between the ECM/PCM and the immobilizer-keyless control unit because of low battery voltage. • No communication between the immobilizer-keyless control unit and the ECM/PCM because of interference. • Immobilizer-keyless control unit failure • ECM/PCM failure
E-1	Initial registration of immobilizer unit is not completed	The immobilizer-keyless control unit is not registered. Try to register the immobilizer-keyless control unit using the HDS.
E-2		
E-3		
E-4		
E-5		
F-1	Special Mode	Turn the ignition switch to ON (II) and to LOCK (0) with the registered key.
F-2		
F-3		
F-4		
F-5		

Status Log

If you suspect there is a immobilizer system problem, check the status log in the HDS.

1. Connect the HDS to the data link connector.
2. Turn the ignition switch to ON (II).
3. On the HDS screen, at MAIN MENU, enter IMMOBILIZER, then select IMMOBILIZER SET-UP, select IMMOBILIZER INFORMATION, then select STATUS LOG.
4. Check the STATUS LOG count. Troubleshoot the status with the highest count first. If no counts are listed, the immobilizer system is OK. Continue with normal symptom troubleshooting.

Status Log No.	Detected Item	Probable Cause
A-1	KEY CODE MISMATCH (Code format normal, but code data is mismatch)	• The key was not registered • Interference from metal such as key chains • Low battery voltage
A-2	KEY CODE MISMATCH (Code format failure)	• Ignition switch was turned to ON (II) with another type of immobilizer key or aftermarket key • Interference from metal such as key chains • Low battery voltage
A-3	KEY CODE MISMATCH (No key code or non-immobilizer key)	• Ignition switch was turned to ON (II) with another type of immobilizer key or aftermarket key • Interference from metal such as key chains • Low battery voltage • Key failure • Immobilizer-keyless control unit failure
B-1	ECM/PCM CODE MISMATCH (Code format normal, but code data is mismatch)	• ECM/PCM was not registered correctly • Low battery voltage • Poor or loose terminal connections at the immobilizer-keyless control unit • Communication line electrical noise
B-2	ECM/PCM MISMATCH (Code format failure)	• ECM/PCM was not registered correctly • Low battery voltage • Poor or loose terminal connections at the immobilizer-keyless control unit • Communication line electrical noise
C-1	IMOES UNIT mismatch (Code format normal, but data is mismatch)	• Imoes unit was not registered • The communication was not good between imoes unit and immobilizer unit by battery voltage low • The communication was not good between imoes unit and immobilizer unit by influence of some noise
C-2	IMOES UNIT mismatch (Code format failure)	• Imoes unit was not registered correctly • The communication was not good between imoes unit and immobilizer unit by battery voltage low • The communication was not good between imoes unit and immobilizer unit by influence of some noise
D-1	SECURITY-NET LINE PROBLEM IMOCD (S-NET) (Short to ground)	• Low battery voltage • Poor or loose terminal connections at the immobilizer-keyless control unit and the ECM/PCM • Communication line electrical noise
D-2	SECURITY-NET LINE PROBLEM (No communication)	• Blown fuse • Harness open from imoes unit to immobilizer unit • The communication was not good between imoes unit and immobilizer unit by battery voltage low • The communication was not good between imoes unit and immobilizer unit by influence of some noise • Imoes unit failure • Immobilizer unit failure
D-3	SECURITY-NET LINE PROBLEM IMOCD (S-NET) (Open line or ECM/PCM failure)	• Open or short in the harness from the ECM/PCM to the immobilizer-keyless control unit • Low battery voltage • Poor or loose terminal connections at the immobilizer-keyless control unit and the ECM/PCM • Communication line electrical noise

Immobilizer Key Registration

NOTE:
- The HDS is required for registration of the immobilizer keys.
- Programming the immobilizer also programs the keyless transmitter.
- Check for aftermarket electrical equipment that can cause problems with transponder operation.
- The immobilizer-keyless control unit can store up to six immobilizer keys.

Add one new key/Keyless transmitter

1. Have a registered key, a new immobilizer key, and the first password from the iN system.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch to ON (II).
4. Select IMMOBILIZER from the SYSTEM SELECT menu.
5. Select Add and Delete keys, then Add 1 key.
6. Do the registration according to the instructions on the HDS screen.
7. Check if the engine can be started with the newly registered key.
8. When prompted by the HDS, do the keyless transmitter programming.

Add and Delete keys/Keyless transmitters, Then select Delete or Add keys

1. Have all registered keys, all new keys, and the first password from the iN system.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch to ON (II).
4. Select IMMOBILIZER from the SYSTEM SELECT menu.
5. Select Add and Delete Keys, or Delete or Add Multiple Keys.
6. Do the registration according to the instructions on the HDS screen.
7. Check if the engine can be started with all the registered keys.
8. When prompted by the HDS, do the keyless transmitter programming.

All keys are lost

1. Prepare all new keys and have the immobilizer ECM/PCM code.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch to ON (II).
4. Select IMMOBILIZER from the SYSTEM SELECT menu.
5. Select Add and Delete keys, then ALL KEYS LOST.
6. Do the registration according to the instructions on the HDS screen.
7. Check if the engine can with started by all the registered keys.
8. When prompted by the HDS, do the keyless transmitter programming.

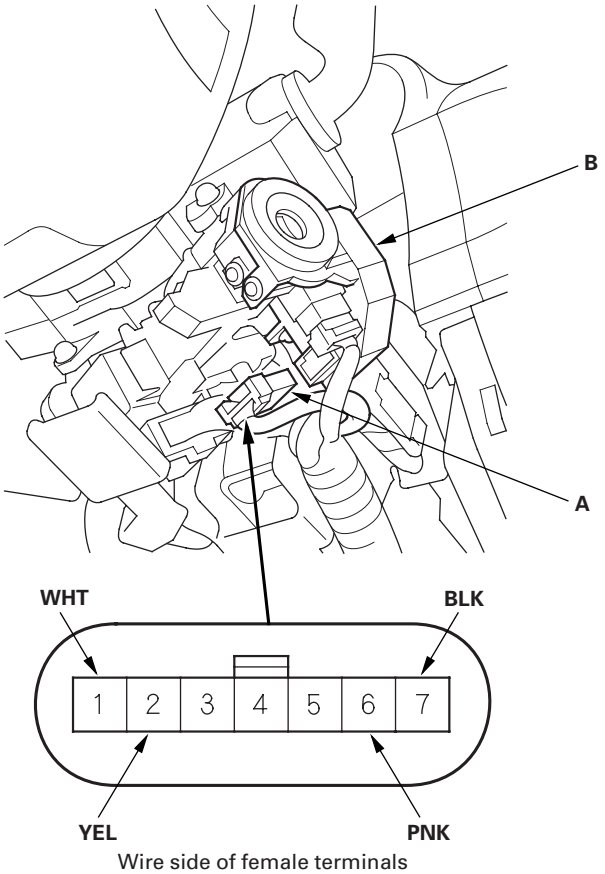
Programming immobilizer-keyless control unit

1. Have all registered keys and the ECM/PCM code.
2. Connect the HDS to the data link connector.
3. Turn the ignition switch to ON (II).
4. Select IMMOBILIZER from the SYSTEM SELECT menu.
5. Select REPLACE IMMOBILIZER/KEYLESS CONTROL UNIT REPLACE.
6. Do the registration according to the instructions on the HDS screen.
7. Check that the engine can be started with all registered keys.
8. When prompted by the HDS, do the keyless transmitter programming.

Immobilizer-keyless Control Unit Input Test

NOTE: Before testing the immobilizer system, troubleshoot the system using B-CAN System Diagnosis Test Mode A (see page 22-93) and check the No. 10 (7.5 A) and No. 38 (30 A) fuses in the under-dash fuse/relay box.

1. Remove the driver's dashboard lower cover (see page 20-102).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the 7P connector (A) from the immobilizer-keyless control unit (B).



Wire side of female terminals

4. Inspect the connector and socket terminals to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.

5. With the connector still disconnected, do these input tests at the following connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
1	ORN	Under all conditions	Measure the voltage between immobilizer-keyless control unit 7P connector terminals No. 1 and body ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
2	YEL	Ignition switch ON (II)	Measure the voltage to ground: There should be battery voltage.	• Blown No. 2 (15 A) fuse in the under-dash fuse/relay box • An open in the wire

6. Reconnect the connector to the immobilizer-keyless control unit, and do these input tests at the following connector.

   • If any test indicates a problem, find and correct the cause, then recheck the system.
   • If all the input tests prove OK, the immobilizer-keyless control unit must be faulty; replace it.

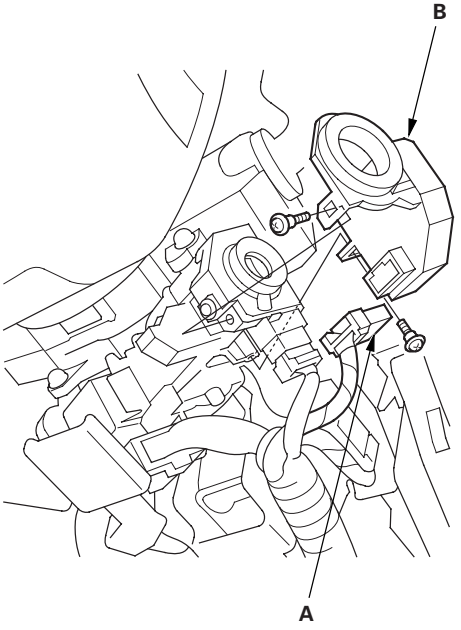
Cavity	Wire	Test condition	Test: Desired result	Possible cause if desired result is not obtained
7	BLK	Under all conditions	Measure the voltage to ground: There should be less than 0.5 V.	• Poor ground (G101) • An open in the wire
6	PNK	Ignition key inserted into the ignition switch	Measure the voltage to ground: There should be less than 1 V.	• Poor ground (G504) • Faulty ignition key switch • An open in the wire

Immobilizer-keyless Control Unit Replacement

1. Remove the driver's dashboard lower cover (see page 20-102).

2. Remove the steering column covers (see page 17-9).

3. Disconnect the 7P connector (A) from the immobilizer-keyless control unit (B).

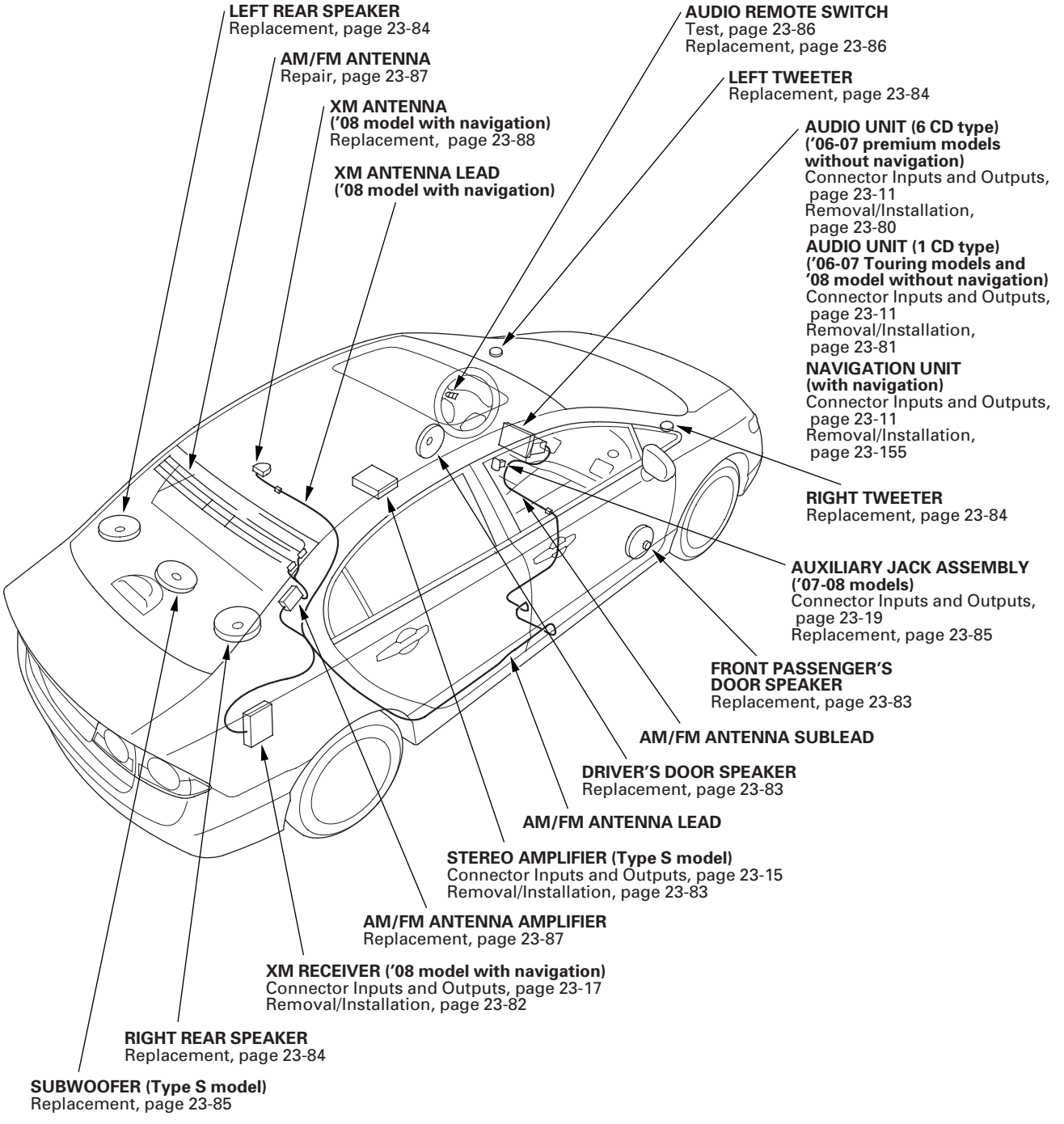


4. Remove the two screws and the immobilizer-keyless control unit.

5. Install the immobilizer-keyless control unit in the reverse order of removal.

6. After replacement, register the immobilizer-keyless control unit (see page 22-329), and make sure the immobilizer system works properly.

Component Location Index



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Poor AM or FM radio reception or interference (with navigation)	Symptom Troubleshooting (see page 23-29)	AM/FM antenna lead and/or sublead short or open in the wire
Poor AM or FM radio reception or interference (without navigation)	Symptom Troubleshooting (see page 23-32)	AM/FM antenna lead and/or sublead short or open in the wire
Audio unit power switch will not turn on (No information display and no sound) (with navigation)	Symptom Troubleshooting (see page 23-35)	
Audio unit power switch will not turn on (No information display and no sound) (without navigation)	Symptom Troubleshooting (see page 23-36)	
Audio unit power switch will not turn off (with navigation)	Symptom Troubleshooting (see page 23-38)	
Audio unit power switch will not turn off (without navigation)	Symptom Troubleshooting (see page 23-39)	
No sound is heard from the speaker(s) (display is normal) (with navigation)	Symptom Troubleshooting (see page 23-39)	
No sound is heard from the speaker(s) (display is normal) (without navigation)	Symptom Troubleshooting (see page 23-48)	
Auxiliary input sound is low or cannot be heard	Symptom Troubleshooting (see page 23-50)	
Audio system sound is weak or distorted (display is normal)	Symptom Troubleshooting (see page 23-53)	
Radio preset memory is lost	Symptom Troubleshooting (see page 23-54)	Internal error
Volume does not change	Symptom Troubleshooting (see page 23-54)	
Volume does not increase with speed (with navigation)	Symptom Troubleshooting (see page 23-55)	
Volume does not increase with speed (without navigation)	Symptom Troubleshooting (see page 23-56)	
Volume is too high or too low when driving at freeway speeds	Symptom Troubleshooting (see page 23-57)	
Radio tuner does not change stations	Symptom Troubleshooting (see page 23-57)	

Symptom	Diagnostic procedure	Also check for
Navigation unit button illumination does not work (with navigation)	Symptom Troubleshooting (see page 23-58)	
Audio unit button illumination does not work (without navigation)	Symptom Troubleshooting (see page 23-59)	
Display does not dim or brighten with dimmer (without navigation)	Symptom Troubleshooting (see page 23-60)	
Audio disc does not load	Symptom Troubleshooting (see page 23-61)	
Audio disc does not eject	Symptom Troubleshooting (see page 23-61)	
Audio disc does not play	Symptom Troubleshooting (see page 23-62)	
Audio disc skips	Symptom Troubleshooting (see page 23-62)	
Audio remote switch does not work properly (with navigation)	Symptom Troubleshooting (see page 23-63)	
Audio remote switch does not work properly (without navigation)	Symptom Troubleshooting (see page 23-65)	
Audio disc cannot be inserted and/or ejected (with navigation)	Symptom Troubleshooting (see page 23-66)	
Display can be opened and/or closed even when an audio disc is being inserted or ejected	Replace the navigation unit (see page 23-155)	
PC card will not play/card icon on audio screen cannot be selected (with navigation)	Symptom Troubleshooting (see page 23-67)	
Error code: XM NO SIGNAL or XM ANTENNA is displayed (with navigation)	Symptom Troubleshooting (see page 23-68)	
XM radio display is blank and no station information is displayed (with navigation)	Symptom Troubleshooting (see page 23-68)	
XM radio preset memory is lost (with navigation)	Symptom Troubleshooting (see page 23-71)	
Poor or no sound with XM radio (Audio unit does display XM channels) (with navigation)	Symptom Troubleshooting (see page 23-72)	

System Description

Overview

The audio unit acts as the processor for all audio functions. Select audio functions from the audio unit, the audio remote (on the steering wheel), or by using the navigation voice control system. The audio display provides the current audio status. For vehicles with navigation, additional audio information is available by touching the audio button on the navigation audio screen (See the owner's manual and the navigation system manual for more details.).

The XM receiver passes its signal to the audio unit. In addition, it communicates with the audio unit via the GA-Net bus. Any open connections in the GA-Net bus circuit causes audio and navigation functions to appear inoperative.

For vehicles with navigation, pressing the open/close switch on the navigation display panel allows access to the CD slot and PC card.

A security signal is daisy-chained between the audio and vehicle components for integration into the vehicle's security system.

Speed-sensitive volume compensation (SVC)
Some audio systems are equipped with speed-sensitive volume compensation (SVC). The navigation or audio unit receives the vehicle speed pulse (VSP) from the ECM/PCM. The system processes the speed input and increases the navigation or audio system volume level as the vehicle speed increases to compensate for the various interior noises that occur at higher speeds. When the vehicle slows down, the volume returns to its normal level. The SVC has four settings: SVC OFF, LOW, MID and HIGH that can be adjusted using the navigation or audio unit. The SVC comes from the factory with the MID setting as the default.

To change the audio unit SVC setting, press the tune folder sound knob repeatedly until the SVC is displayed, rotate the knob to adjust the SVC to the desired setting (SVC OFF, LOW, MID, or HIGH).

To change the navigation unit SVC setting, press the AUDIO button, and then select the SOUND icon on the navigation display. Press the navigation display to select the desired setting (OFF, LOW, MID, HI).

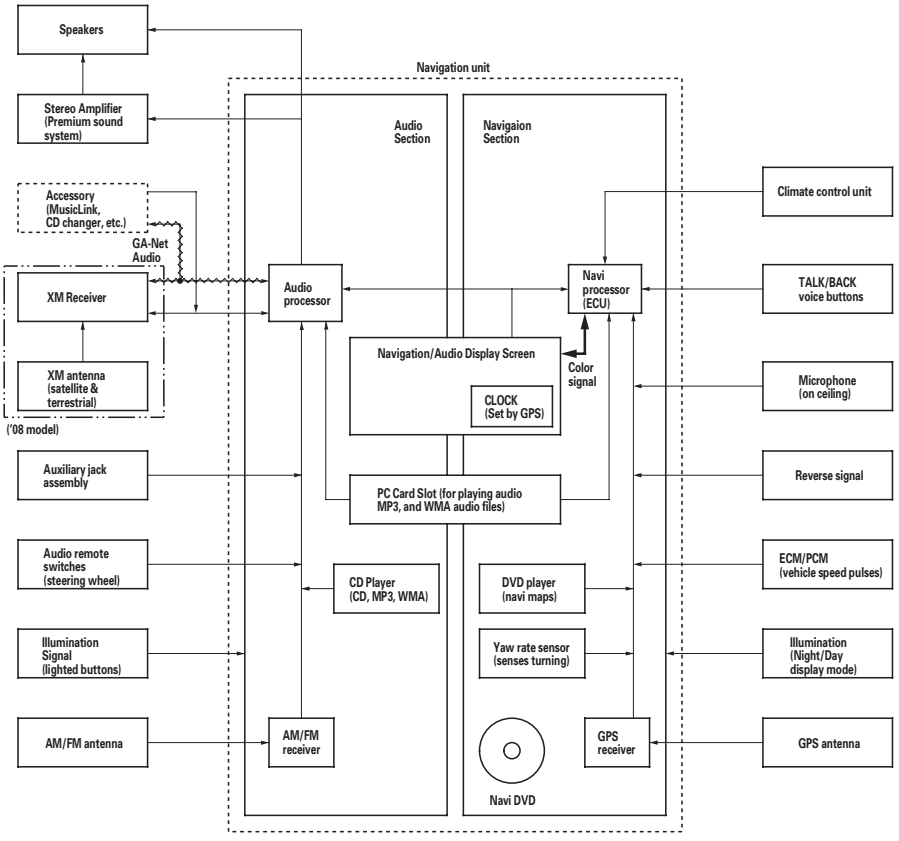
The navigation system allows voice control for the audio, XM, PC card, and CD player. The GA-Net (audio unit) communicates the voice control commands. When using the navigation TALK/BACK button, the audio is muted on all speakers and you hear navigation sound on the front channels. When using the navigation or route guidance (RG), the front speakers provides the navigation sound and the rear speakers continue to play. For more information, see the navigation section. The outline of the interruption function is shown in this table.

Contents	Audio output			
	Left front CH	Right front CH	Right rear CH	Left rear CH
Navigation TALK/BACK Buttons	Navigation voice output	Navigation voice output	Muted	Muted
Route guidance	Navigation voice output	Navigation voice output	Audio	Audio

GA-Net Bus Configuration

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is daisy chained between components (see diagram), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. The addition of any audio accessory must maintain the continuity of the GA-Net bus by installing the Y cable included with the accessory kit.

System Diagram (With navigation)



(cont'd)

System Description (cont'd)

NOTE: All items may not apply to this vehicle. See the owner's manual for more information.

Audio Glossary

Item	Definition
Active noise cancellation	The active noise cancellation system cancels some of the vehicle noise. This occurs in the 1,500—2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a canceling sound from the audio speaker.
AM (Amplitude Modulation)	The type of transmission used in the standard radio broadcast band from 530 to 1710 kHz.
Amplifier	A device that increases the level of a signal by increasing the current or voltage.
Antenna	A device used to send or receive electromagnetic waves through the air.
ATA (PC Card)	A type of card that has been tested for use in playing WMA, and MP3 music files in the PC Card slot. Sizes of up to 1 GB have been tested.
Audio remote switch	The switches on the steering wheel that control the audio system.
Auxiliary jack	Allows the customer to use a portable audio device to input audio recordings.
Balance	A control that changes the relative volume of the left and right channels.
Band	A range of frequencies between two definite limits. Bands are assigned by the Federal Communications Commission for specific uses.
Bass	An adjustment for the low frequency sounds of around 160 Hz and below.
Byte	A unit of storage for computer files and memory. A CD holds approximately 700 million bytes.
Cassette	Audio or video magnetic tape container having two reels. Customers can insert it for play back
Compact flash	A standard for small-size (3 x 4 cm), memory cards used in mobile computers, PDAs, digital cameras. Compact flash memory cards are available in size of 32 MB up to 4 GB or more and can be played in the audio PC slot. Sizes above 1 GB have not been tested.
CD (Compact Disc)	A 4.5-inch plastic disc containing digital audio recording that is played optically on a laser equipped player. Never use discs with a paper label. In a hot vehicle, labels can curl up and jam the unit.
CD (audio disc) changer	CD player that can store and play more than one CD. Two types are available. Some units accept CDs fed into the changer one at a time, and others accept a magazine (with CDs stacked in a container).
CD player	A component designed to play compact disc recordings using a laser optical pickup. The signal from a CD player usually requires amplification.
Decibels (db)	A method of measuring sound or radio signal strength received by the audio unit antenna.
Distortion	Inexact reproduction of an audio signal caused by playing music at levels the audio system cannot handle.
Dolby (noise reduction)	A processing system developed by Dolby Laboratories that reduces the background noise on recording media. The result is a cleaner playback from the audio system.
DUET	A serial data communication line used for sub display.
DVD (Digital Versatile Disc)	A 4.5-inch CD-like format used for storing movies with digital audio and video features. The DVD-A format is a DVD format designed for DVD audio systems. Some vehicles can play DVD and DVD-A formats.
Equalizer	A device that changes the relative volume of individual frequency bands to suit personal tastes of the listener.
Fader	The control that adjusts the relative volume levels of front and rear speakers in a four-speaker system.
Format	To prepare a PC Card to receive files this function is done on a PC. Always choose either FAT or FAT32, as the NTFS format is not accepted by the system. Pick the default sectors for the format method selected.
FM (Frequency Modulation)	The form of modulation used for radio and television sound transmission in most of the world. Less prone to interference than AM. The FM broadcast band in North America covers roughly 87.7 to 107.9 MHz.

Audio Glossary

Item	Definition
GA-Net	The GA-Net allows the audio unit to communicate with all the audio and navigation components in a vehicle. If there is an open in the GA-Net or components, components or the entire audio and navigation system may appear inoperative.
GB (Gigabyte)	A unit of memory or disk storage equal to billion bytes (1000 million bytes).
HDD	Abbreviation for hard disc drive. They are sensitive to heat and it is not recommended that they be used in the PC card slot for playing audio files.
Hertz (Hz)	The unit of frequency equal to one cycle per second (cps). One kilohertz (kHz) equals 1,000 cps; one megahertz (MHz) equals 1 million cps.
Integrated amplifier	A component that combines a pre amp and a power amp into a single unit. A receiver combines an integrated amp and a tuner into a single unit.
Jewel case	The hard plastic case that contains a compact disc or DVD. Always use a jewel case to prevent scratches on the underside of a CD or DVD.
LCD (Liquid Crystal Display)	A type of digital display that changes reflectance or transmittance when an electrical field is applied to it.
Memory	Circuitry or devices that hold information in electrical or magnetic form, such as the AM/FM radio presets.
MB (Megabyte)	One million bytes. Written as 1 MB. Megabytes are used as a measure of digital storage space. For example, a CD can hold 650 MB.
Mic	An abbreviation for microphone. For vehicles with navigation, the microphone accepts navigation voice commands to control audio and navigation functions.
MP3 music files	MP3 is an audio coding format. MP3 is a popular audio compression format on the Internet and computers. CDs and PC Cards with these files can be played on some vehicle's audio system.
Mute	When the navigation gives guidance, the front speakers are muted (no music). When you use the voice control system, all of the speakers are muted.
Noise	Unwanted random sounds like buzzing, hiss, pops, static, whine, etc.
PC card	The slot used for playing MP3 and WMA music files. The PC Card is usually a combination of a small flash card in a PCMCIA adaptor that slides into the slot. The ATA, SD, and compact flash types of cards have been tested up to 1 GB.
PCMCIA	A computer standard for the slot that the PC card slides into. Another term for the PC card slot.
Processor	The part of an audio device that performs tasks/calculations. In the audio unit the processor handles muting to allow the navi to speak its voice commands, and the decoding/playback of the sound files etc.
Radio	A head unit that combines a tuner, a preamplifier, and often a power-amplifier.
Route guidance (RG)	Spoken voice used for turn-by-turn navigation from the audio speakers.
SCF (Cold Start Fix) screens	These screens are displayed if the system requires a GPS initialization. The vehicle should be moved outside into an open area away from buildings/power lines.
Stereo	A recording of at least two channels where you can hear sound or music from the left or right side.
SD (Secure Digital) card	This compact type of memory card allows for fast data transfer and has built-in security functions. SD cards have a small write-protection switch on the side.
Shield	A metallic foil or braided wire layer surrounding conductors which are designed to prevent electrostatic or electromagnetic interference (noise) from external sources such as buzzing, or popping sounds heard on the speakers.
Speaker (Loudspeaker)	A device that converts electrical energy into acoustical energy (sound).
Speed-sensitive volume compensation (SVC)	The SVC increases the audio volume to compensate for increased interior noise when the vehicle drivers at freeway speeds.
Subwoofer	A loudspeaker made to reproduce the lowest audio frequencies, about 25 Hz to 125 Hz.

(cont'd)

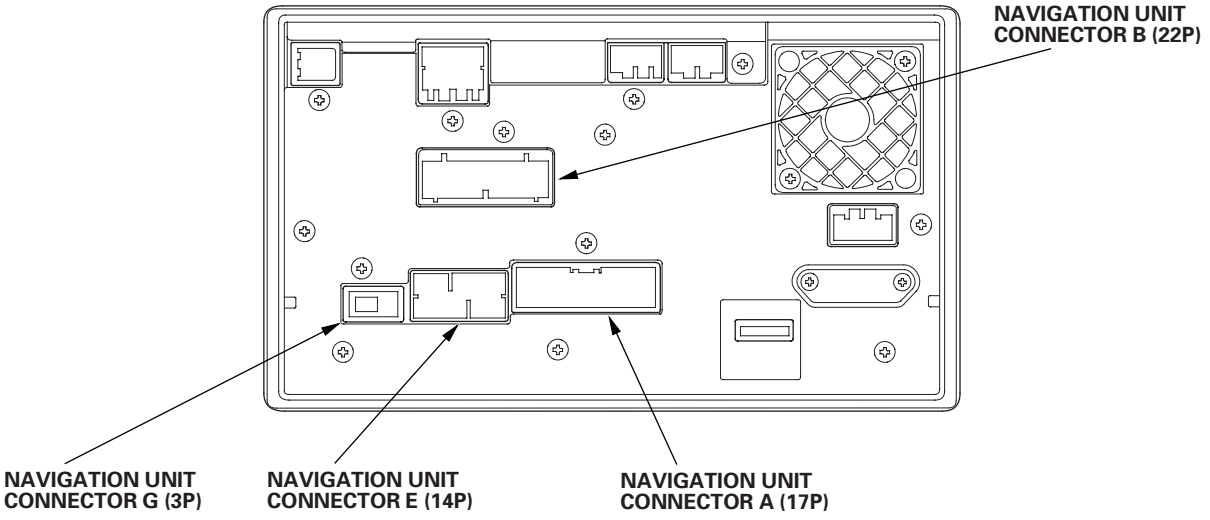
System Description (cont'd)

Audio Glossary

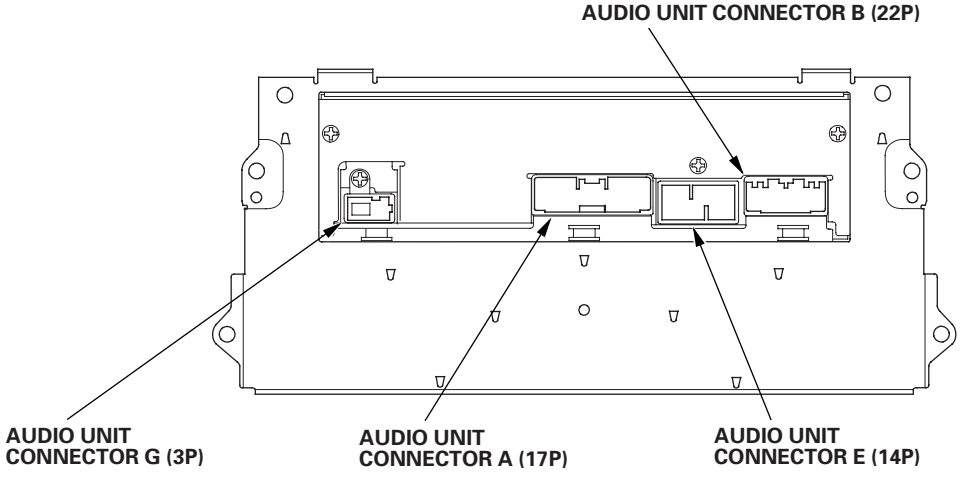
Item	Definition
Track	A sound recording on a CD, tape, or PC Card.
Treble	An adjustment to control the volume of the high frequency sounds.
Tuner	A component (or part of a component) that receives radio signals and selects one broadcast from many.
Tweeter	A speaker designed to reproduce the higher frequencies (treble) only.
USB	Universal Serial Bus. The USB is used for playing the compressed audio files (MP3, WMA, and AAC) on an external device through the audio unit.
Voice coil	A coil of wire wrapped around a tube and then attached to the speaker cone or diaphragm. When an audio signal is applied, the coil becomes an electromagnet and interacts with the permanent magnet causing the come or diaphragm to vibrate. We interpret this vibrations as sound.
Volume control	Allows you to control the loudness of the music.
WMA music file	Windows Media Audio File. This is an accepted format for music files to be played on either a CD-R, a CD-RW or a PC Card.
Woofer	A speaker that is designed to reproduce low (bass) frequencies only.
XM radio	Satellite based radio transmission, which also uses a ground based repeater network to ensure seamless reception. The channels originate from XM's broadcast center, in Washington, DC, and uplink to two satellites. These satellites transmit the signal across the entire continental United States.
XM receiver	The external component that receives and processes the XM signals from the XM satellites, and terrestrial (land) stations. The audio unit communicates to the XM receiver over the GA-Net bus.

Audio Unit Connector for Inputs and Outputs

With navigation (navigation unit)



Without navigation



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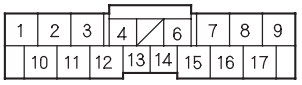
System Description (cont'd)

NAVIGATION UNIT/AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

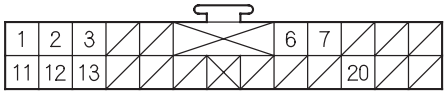
Except Type S model

Cavity	Wire Color	Connect to
A1	RED	Dash lights brightness controller
A2	BRN	Left rear speaker (−)
A3	PNK	Driver's door speaker (−), Left tweeter (−)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A6	LT BLU	Multiplex integrated control unit (MICU) (K-LINE)
A7	BRN	Front passenger's door speaker (−), Right tweeter (−)
A8	ORN	Right rear speaker (−)
A9	BLK	Ground (G505)
A10	GRY	Lights-on signal
A11	YEL	Left rear speaker (+)
A12	LT GRN	Driver's door speaker (+), Left tweeter (+)
A13	BLU	ECM/PCM (VSP)
A14	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A15	GRY	Front passenger's door speaker (+), Right tweeter (+)
A16	BLU	Right rear speaker (+)
A17	WHT	Multiplex integrated control unit (MICU) (+B BACK UP)

Type S model

Cavity	Wire Color	Connect to
A1	RED	Dash lights brightness controller
A2	WHT	Stereo amplifier (RL SIG−)
A3	ORN	Stereo amplifier (FL SIG−)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A6	LT BLU	Multiplex integrated control unit (MICU) (K-LINE)
A7	PNK	Stereo amplifier (FR SIG−)
A8	PUR	Stereo amplifier (RR SIG−)
A9	BLK	Ground (G505)
A10	GRY	Lights-on signal
A11	BLK	Stereo amplifier (RL SIG+)
A12	BLU	Stereo amplifier (FL SIG+)
A13	BLU	ECM/PCM (VSP)
A14	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A15	BLU	Stereo amplifier (FR SIG+)
A16	LT GRN	Stereo amplifier (RR SIG+)
A17	WHT	Multiplex integrated control unit (MICU) (+B BACK UP)

NAVIGATION UNIT CONNECTOR B (22P) (without navigation)



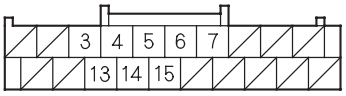
Wire side of female terminals

Cavity	Wire Color	Connect to
B1	BRN	Auxiliary jack assembly (AUX SGND)
B2	GRY*1	Shield for terminals No. 1, No. 3, No. 11, No. 12, and No. 13 (AUX SH GND)
B3	BLU	Auxiliary jack assembly (AUX GND)
B6	BRN	Radio remote switch (AUDIO REMOTE GND)
B7	PNK	Radio remote switch (AUDIO REMOTE SW)
B11	YEL	Auxiliary jack assembly (AUX L)
B12	GRN	Auxiliary jack assembly (AUX R)
B13	WHT	Auxiliary jack assembly (AUX DET)
B20*2	LT BLU	Stereo amplifier (AMP ON)

* 1: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

* 2: Type S model

AUDIO UNIT CONNECTOR B (20P) (with navigation)



Wire side of female terminals

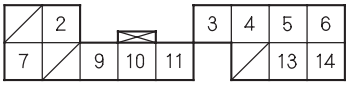
Cavity	Wire Color	Connect to
B3	BRN	Auxiliary jack assembly (AUX SGND)
B4	GRY*	Shield for terminals No. 3, No. 5, No. 13, No. 14, and No. 15 (AUX SH GND)
B5	BLU	Auxiliary jack assembly (AUX GND)
B6	BRN	Radio remote switch (AUDIO REMOTE GND)
B7	PNK	Radio remote switch (AUDIO REMOTE SW)
B13	YEL	Auxiliary jack assembly (AUX L)
B14	GRN	Auxiliary jack assembly (AUX R)
B15	WHT	Auxiliary jack assembly (AUX DET)

* : The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(cont'd)

System Description (cont'd)

NAVIGATION UNIT CONNECTOR E (14P) (with navigation)

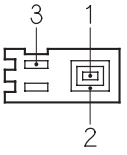


Wire side of female terminals

Cavity	Wire Color	Connect to
E2	LT BLU	XM receiver (SAT SYS ACC)
E3	BRN*	Shield for terminals No. 9 and No. 10 (BUS SH GND)
E4	GRY*	Shield for terminals No. 5, No. 6, No. 13, and No. 14 (SAT SH GND)
E5	WHT	XM receiver (SAT R+)
E6	RED	XM receiver (SAT L+)
E7	BLU	XM receiver (+B)
E9	BLU	XM receiver (SAT BUS+ (GA-NET))
E10	PNK	XM receiver (SAT BUS− (GA-NET))
E11	BLK	XM receiver (GND)
E13	BLK	XM receiver (SAT R−)
E14	GRN	XM receiver (SAT L−)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

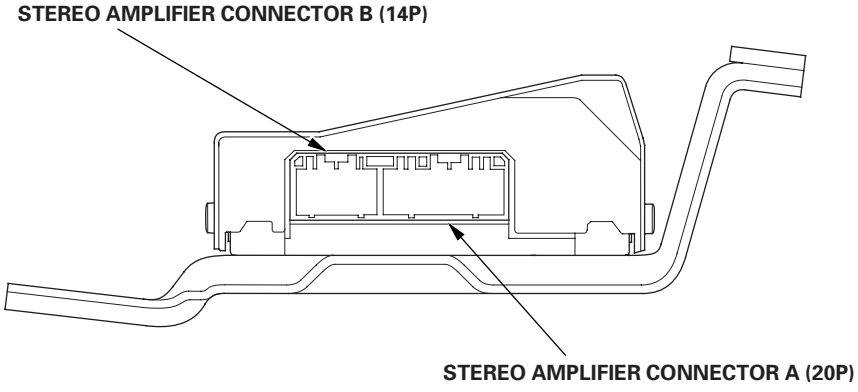
NAVIGATION UNIT/AUDIO UNIT CONNECTOR G (3P)



Terminal side of female terminals

Cavity	Wire Color	Connect to
G1	———	AM/FM antenna amplifier (RF IN)
G2	———	Shield for terminal No.1 (RF SH)
G3	———	AM/FM antenna amplifier (SWD +B)

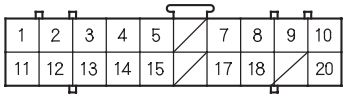
Stereo Amplifier Connector for Inputs and Outputs (Type S model)



(cont'd)

System Description (cont'd)

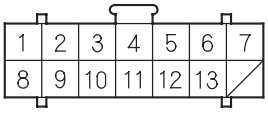
STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Cavity	Wire Color	Connect to
A1	PNK	Right tweeter (+)
A2	GRY	Front passenger's door speaker (+)
A3	LT GRN	Driver's door speaker (+)
A4	RED	Left tweeter (+)
A5	GRN	Subwoofer (+)
A7	BLU	Right rear speaker (+)
A8	GRY	Left rear speaker (+)
A9	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A10	LT GRN	+B (Main stereo power supply)
A11	BLU	Right tweeter (−)
A12	BRN	Front passenger's door speaker (−)
A13	PNK	Driver's door speaker (−)
A14	GRN	Left tweeter (−)
A15	RED	Subwoofer (−)
A17	ORN	Right rear speaker (−)
A18	BRN	Left rear speaker (−)
A20	BLK	Ground (G505)

STEREO AMPLIFIER CONNECTOR B (14P)

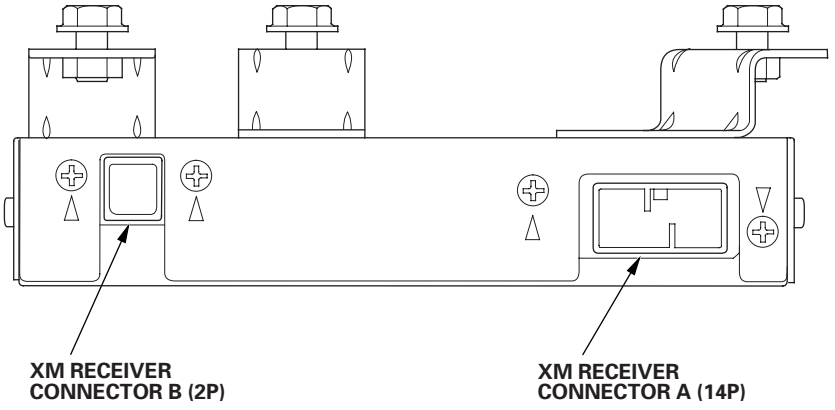


Wire side of female terminals

Cavity	Wire Color	Connect to
B1	BLU	Navigation unit (FL SIG+)
B2	BRN*	Shield for terminals No. 1 and No. 8 (FL SH GND)
B3	BLK	Navigation unit (RL SIG+)
B4	BLU	Navigation unit (FR SIG+)
B5	GRY*	Shield for terminals No. 4 and No. 11 (FR SH GND)
B6	LT GRN	Navigation unit (RR SIG+)
B7	LT BLU	Navigation unit (AMP ON)
B8	RED	Navigation unit (FL SIG−)
B9	GRN*	Shield for terminals No. 3 and No. 10 (RL SH GND)
B10	WHT	Navigation unit (RL SIG−)
B11	PNK	Navigation unit (FR SIG−)
B12	YEL*	Shield for terminals No. 6 and No. 13 (RR SH GND)
B13	PUR	Navigation unit (RR SIG−)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

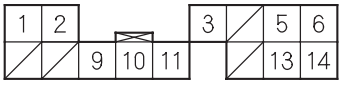
XM Receiver Connector for Inputs and Outputs ('08 model with navigation)



(cont'd)

System Description (cont'd)

XM RECEIVER CONNECTOR A (14P)

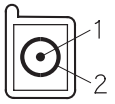


Wire side of female terminals

Cavity	Wire Color	Connect to
A1	BLU	Navigation unit (+B)
A2	LT BLU	Navigation unit (SYS ACC)
A3	BRN *	Shield for terminals No. 9 and No. 10 (GA-NET BUS SH)
A5	WHT	Navigation unit (SAT R+)
A6	RED	Navigation unit (SAT L+)
A9	BLU	Navigation unit (GA-NET BUS+)
A10	PNK	Navigation unit (GA-NET BUS−)
A11	BLK	Navigation unit (GND)
A13	BLK	Navigation unit (SAT R−)
A14	GRN	Navigation unit (SAT L−)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

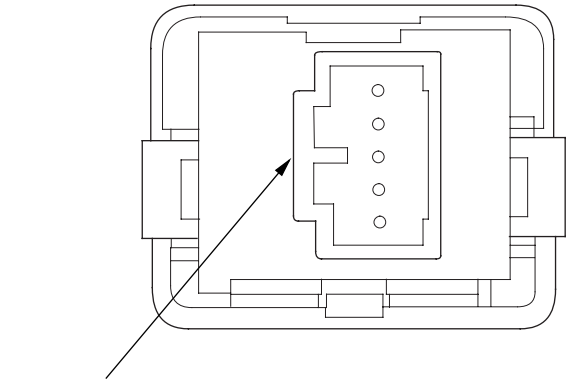
XM RECEIVER CONNECTOR B (2P)



Terminal side of female terminals

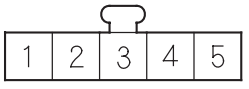
Cavity	Wire Color	Connect to
B1	———	Satellite signal antenna (SAT/TER)
B2	———	Shield for terminal No. 1 (GND SH)

Auxiliary Jack Assembly Connector for Inputs and Outputs



AUXILIARY JACK ASSEMBLY 5P CONNECTOR

AUXILARY JACK ASSEMBLY 5P CONNECTOR



Wire side of female terminals

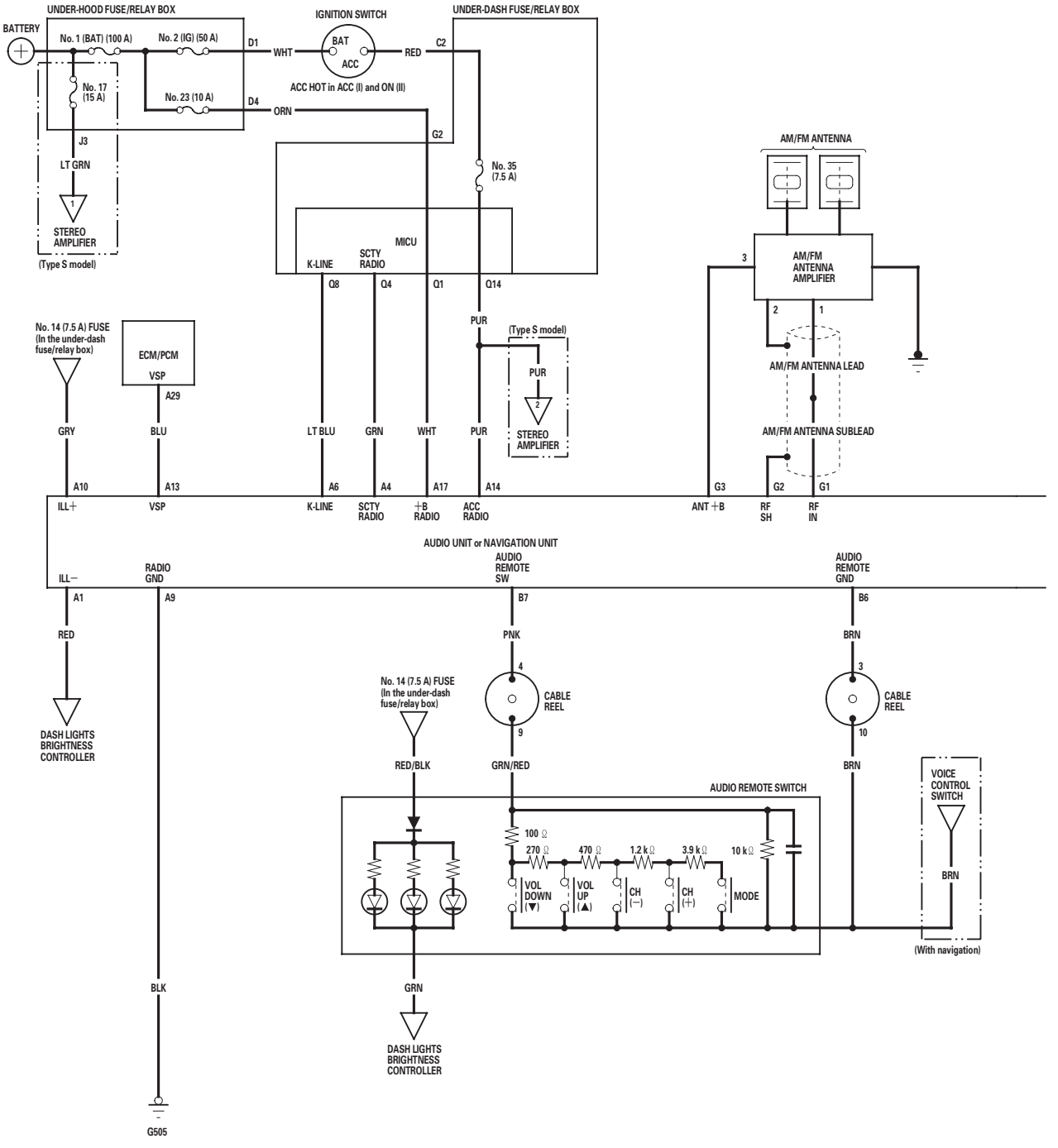
With navigation

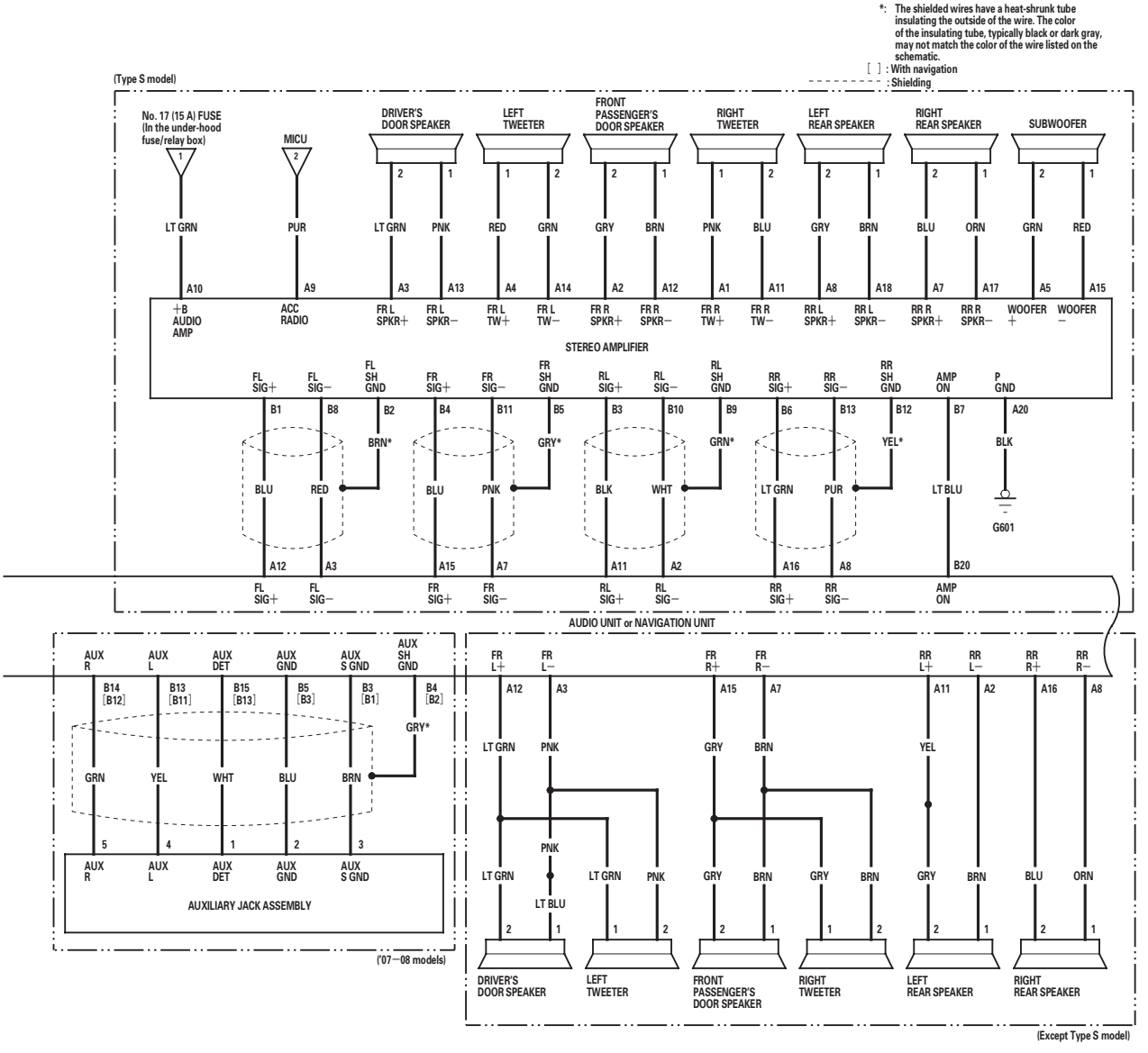
Cavity	Wire Color	Connect to
1	WHT	Navigation unit (AUX DET)
2	BLU	Navigation unit (AUX GND)
3	BRN	Navigation unit (AUX S GND)
4	YEL	Navigation unit (AUX L)
5	GRN	Navigation unit (AUX R)

Without navigation

Cavity	Wire Color	Connect to
1	WHT	Audio Unit (AUX DET)
2	BLU	Audio Unit (AUX GND)
3	BRN	Audio Unit (AUX S GND)
4	YEL	Audio Unit (AUX L)
5	GRN	Audio Unit (AUX R)

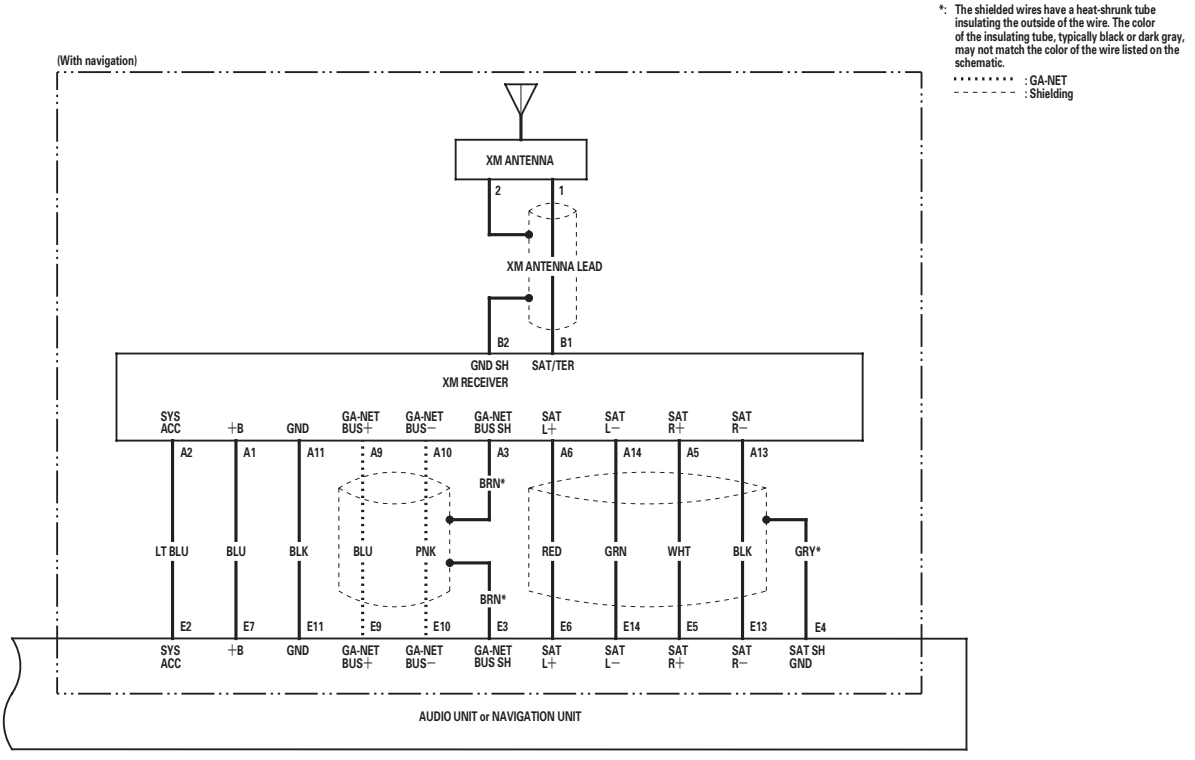
Circuit Diagram




*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.
[ ] : With navigation
: Shielding
(Type S model)
No. 17 (15 A) FUSE (In the under-hood fuse/relay box)
MICU
DRIVER'S DOOR SPEAKER
LEFT TWEETER
FRONT PASSENGER'S DOOR SPEAKER
RIGHT TWEETER
LEFT REAR SPEAKER
RIGHT REAR SPEAKER
SUBWOOFER
LT GRN
PUR
LT GRN
PNK
RED
GRN
GRY
BRN
PNK
BLU
GRY
BRN
BLU
ORN
GRN
RED
A10
A9
A3
A13
A4
A14
A2
A12
A1
A11
A8
A18
A7
A17
A5
A15
+B AUDIO AMP
ACC RADIO
FR L SPKR+
FR L SPKR−
FR L TW+
FR L TW−
FR R SPKR+
FR R SPKR−
FR R TW+
FR R TW−
RR L SPKR+
RR L SPKR−
RR R SPKR+
RR R SPKR−
WOOFER +
WOOFER −
STEREO AMPLIFIER
FL SIG+
FL SIG−
FL SH GND
FR SIG+
FR SIG−
FR SH GND
RL SIG+
RL SIG−
RL SH GND
RR SIG+
RR SIG−
RR SH GND
AMP ON
P GND
B1
B8
B2
B4
B11
B5
B3
B10
B9
B6
B13
B12
B7
A20
BRN*
GRY*
GRN*
YEL*
BLK
BLU
RED
BLU
PNK
BLK
WHT
LT GRN
PUR
LT BLU
G601
A12
A3
A15
A7
A11
A2
A16
A8
B20
AUDIO UNIT or NAVIGATION UNIT
AUX R
AUX L
AUX DET
AUX GND
AUX S GND
AUX SH GND
B14 [B12]
B13 [B11]
B15 [B13]
B5 [B3]
B3 [B1]
B4 [B2]
GRY*
GRN
YEL
WHT
BLU
BRN
5
4
1
2
3
AUXILIARY JACK ASSEMBLY
('07−08 models)
FR L+
FR L−
FR R+
FR R−
RR L+
RR L−
RR R+
RR R−
A12
A3
A15
A7
A11
A2
A16
A8
LT GRN
PNK
GRY
BRN
YEL
PNK
LT GRN
LT BLU
LT GRN
PNK
GRY
BRN
GRY
BRN
GRY
BRN
BLU
ORN
2
1
1
2
2
1
1
2
2
1
2
1
2
1
DRIVER'S DOOR SPEAKER
LEFT TWEETER
FRONT PASSENGER'S DOOR SPEAKER
RIGHT TWEETER
LEFT REAR SPEAKER
RIGHT REAR SPEAKER
(Except Type S model)

(cont'd)

Circuit Diagram (cont'd)



Self-diagnostic Function

Without Navigation

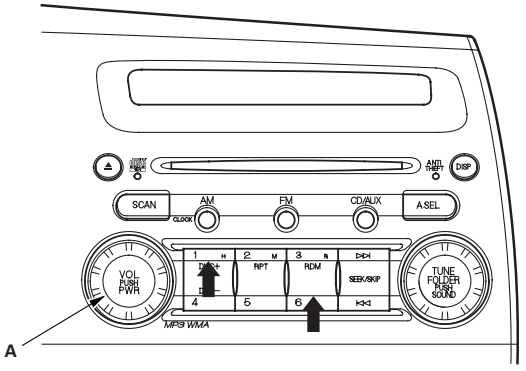
The audio system has a self-diagnostic function.

Serial Number Display Mode

To obtain the audio unit serial number on a vehicle, do the following:

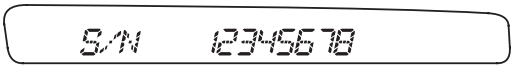
NOTE:
- This procedure can only be performed when the battery power is disconnected from the audio unit and the audio unit displays CODE.
- To obtain the navigation unit serial number, refer to Navi ECU in the navigation system diagnostic mode (see page 23-135).

1. Turn the ignition switch to ON (II).
2. Make sure the audio system is turned off.
3. Push and hold the preset No. 1 and No. 6 buttons.
4. While holding the buttons, push the VOL PUSH PWR knob (A) to ON.
5. Release the buttons and the self-diagnostic begins.



6. The display shows a 8 digit serial number.

   Eight digits of the serial number (example 12345678)



7. Use all 8 numbers as the serial number when using the Interactive Network (iN) to retrieve the 5 digit anti-theft code.
8. To end the self-diagnostic function, turn the audio unit off, or turn the ignition switch to LOCK (0).

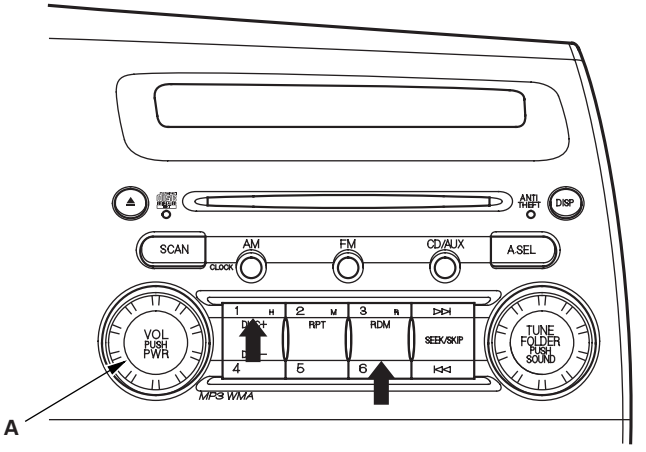
(cont'd)

Self-diagnostic Function (cont'd)

How to check for audio system condition

NOTE:
- The audio unit must be in the code enter screen before performing the self-diagnostic function.
- The self-diagnostic function does not find every problem with the audio system. Check any official Honda service website for more information about the audio system.

1. Turn the ignition switch to ON (II).
2. Make sure the audio system is turned off.
3. Push and hold the preset No. 1 and No. 6 buttons.
4. While holding the buttons, push the VOL PUSH PWR knob (A) to ON.
5. Release the buttons and the self-diagnostic begins.



6. When you are in the self-diagnostic mode, pressing a preset button starts the diagnostic mode that is assigned to that preset switch.

No. 3 button
Entire LCD lighting/light-out mode: Turns on/off the entire LCD to show the presence or absence of an LCD failure. The entire display must appear. If there are dead segments, replace the audio unit.

No. 4 button
Duty indication mode (for the Illumination dim): Indicates the duty for the Illumination dim when the dash lights are on.

No. 5 button
Vehicle speed pulse indication mode: Indicates the vehicle speed pulse.

FM button (Push and hold 5 sec.)
Reception level check mode: Indicates the reception level (dB). When entering the reception level check mode, the AM/FM button is used to change the main/sub antenna. See reception level indication for more information.

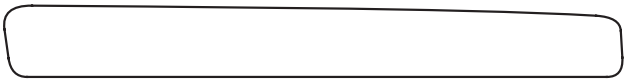
CD button (Push and hold 5 sec.)
DRAM residual quantity indication mode: Indicates the DRAM residual quantity.

7. To end the self-diagnostic function, turn the audio unit off, or turn the ignition switch to LOCK (0).

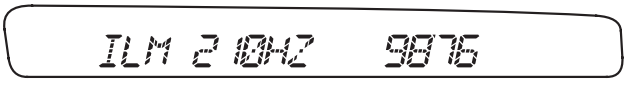
Display Specifications

Entry LCD Lighting
No. 3 button

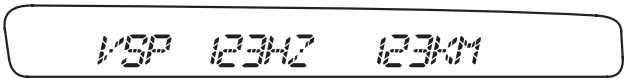
Entry LCD Lights-outs
No. 3 button



Duty (for the illumination) indication
No. 4 button



Vehicle speed pulse indication
No. 5 button



Reception level indication
FM button

DRAM residual quantity indication
CD button

Speaker check mode

8. Turn off the audio unit.

9. Push and hold the No. 1 and No. 3 buttons. While holding the buttons, push the VOL push PWR knob to ON. Release the buttons and the speaker check mode begins. A low-frequency hum should sound for about one minute. Change the test speaker by pushing the SKIP button. If you find a speaker(s) with no sound, check the speaker and harness connections. If the connections are good, replace the speaker, and retest.

10. To end the self-diagnostic function, turn the audio unit off, or turn the ignition switch to LOCK (0).

(cont'd)

Self-diagnostic Function (cont'd)

Reception level indication mode

This diagnostic screen checks the audio unit's reception level. This level then can be used in the diagnosis of audio unit reception quality. The reception level is displayed in decibels (dB)

Preperation:
- Pank the vehicle outdoors in an appropriate location for good radio reception.
- Tune to a powerful local FM radio station then write down the radio station number.

1. Enter the reception level indication mode in the self-diagnostic function. The AM/FM antenna amplifier is on (A. SEL or TP is not displayed in the audio-HVAC display).
2. Tune to the FM radio station you wrote down preperation using the TUNING knob, and note the decibel level of that station when you release the button.
3. Press and release the A. SEL button to turn the AM/FM antenna amplifier off (A. SEL or TP is now displayed in the audio-HVAC display).
4. Tune to the FM radio station you wrote down in preperation using the TUNING knob, and note the decibel level of that station when you release the button.
5. Press and release the A. SEL button to turn the AM/FM antenna amplifier back on (A. SEL or TP is not displayed in the audio-HVAC display).
6. Turn the ignition switch to LOCK (0) or audio unit off to exit the test mode.
7. Compare your results to a known-good (make sure it is the same year and trim level) in the same location and direction, and under the same environmental conditions.

Error Codes

The audio system displays error codes when a problem is detected with the disc changer, the disc, the XM radio, or the anti-theft code.
This is not a complete list of audio error codes. Refer to symptom troubleshooting, or go to any official Honda service website for more service information.

CD Error Codes ('06-07 models and '08 model with navigation)

Error Code Displayed	Possible Cause	Solution
DISC ERROR	The system cannot read the disc because an audio or video DVD is inserted into the unit. The CD may be inserted upside down.	Verify that the unit functions with a standard mass production CD.
MECH ERROR	There is a problem with the mechanism A CD label may be jammed in the mechanism.	Replace the navigation unit.

CD Error Codes ('08 model without navigation)

Error Code Displayed	Possible Cause	Solution
BAD DISC-PLEASE CHECK OWNERS MANUAL PUSH EJECT	• CD label jammed in the mechanism. • CD eject mechanism or motor is inoperative. • CD spindle motor won't spin up the CD. • The wrong type disc is inserted.	Press the EJECT button and hold it for 5 seconds. If the disc does not eject, try again. If the disc still won't eject, replace the unit.

CD Error Codes ('06-08 models)

Error Code Displayed	Possible Cause	Solution
HEAT ERROR	CD player is too hot. This can happen if the vehicle is parked in the sunlight all day.	The unit should function normally when it cools off.
FORMAT	Audio unit cannot read the files on the CD or CD-R.	Current track is skipped. The next supported track or file plays automatically. • Verify that CD, CD-R or CD-RW file names end in CD-A or WMA. • Verify that CD, CD-R or CD-RW with compressed music formats end in MP3 or WMA. • Other file formats like I-tunes or Ogg are not recognized. • WMA files may have (DRM) copy protection and cannot be read.

(cont'd)

Error Codes (cont'd)

XM Error Codes

Error Code Displayed	Possible Cause	Solution
LOADING	XM radio is acquiring audio or program information.	Wait until the radio receives the information.
(XM) OFF AIR	XM channel not in service.	Try another XM channel.
(XM) NO SIGNAL	Loss of signal.	Both terrestrial and satellite antennas have lost signal. Park the vehicle outside with a clear view of the southern horizon.
(XM) UPDATING	XM radio is receiving information update from the network.	This message disappears once the update finishes.
(XM) CHECK ANTENNA (XM) ANTENNA ERROR	XM antenna error.	Repair open or short in the satellite antenna. Substitute the XM antenna with a known-good one, and recheck. If the error is gone, replace the original XM antenna. If the error is still present, replace the antenna lead.
———	No signal from XM.	Check a known-good vehicle with XM radio. If the known-good vehicle has the same symptoms, contact XM Satellite Radio at 800-852-9696.

Audio Unit Error Codes

Error Code Displayed	Possible Cause	Solution
CODE ERROR 1	Anti-theft code mismatch (1st try).	Enter the correct anti-theft code.
CODE ERROR E	Anti-theft code mismatch (10th try).	Remove the No. 23 (10 A) fuse in the under-hood fuse/relay box, then reinsert it. You will have 10 more tries to enter the correct anti-theft code.

NOTE: Do XM error codes checks with the vehicle parked outside with a clear view of the southern horizon.

Poor AM or FM radio reception or interference (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check for aftermarket accessories plugged into the vehicle accessory power sockets (including cell phone).
- Check the connectors for poor connections or loose terminals.
- Check the radio reception in an open area. Compare it to a known-good vehicle whenever possible. Poor reception/interference can be caused by the following:
  – The radio station is far away.
  – Atmospheric conditions are unfavorable.
  – Tall buildings, mountains, or high-voltage power lines are nearby.
  – Aftermarket metallic wi ndow tint.

1. Turn the ignition switch to ON (II).

2. Do the seek stop test (see page 23-78).

   Is the test vehicle within 10 % of the known-good vehicle?

   YES—Multipath interference or weak station. Operation is normal. ■
   NO—Go to step 3.

3. Check if the radio reception/interference is the same in several locations.

   Is the reception/interference the same?

   YES—Go to step 4.
   NO—Multipath interference or weak station. Operation is normal. ■

4. Start the engine.

5. Check the reception/interference.

   Is there noise (static or whine) only with the engine running?

   YES—Check the antenna and radio grounds. If OK, check the charging system and the ignition system. ■
   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Remove the right side C-pillar trim (see page 20-75).

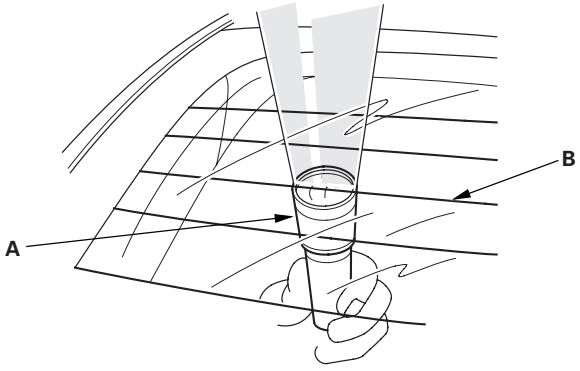
8. Check the connections from the AM/FM antenna amplifier to the window antenna.

   Are there any loose or damaged connections?

   YES—Repair the connections, or substitute a known-good AM/FM antenna amplifier and retest. If the symptom/condition goes away, replace the original AM/FM antenna amplifier (see page 23-87). ■

   NO—Go to step 9.

9. With the help of an assistant inside the vehicle, have the assistant shine a flashlight (A) along each antenna wire (B). Check from the outside of the vehicle for any breaks or openings in the antenna wires (the light shines through).



   Are there any breaks or cuts in the antenna?

   YES—Repair the window antenna. Go to AM/FM antenna repair (see page 23-87), or replace the rear window (see page 20-47). ■

   NO—Go to step 10.

(cont'd)

Symptom Troubleshooting (cont'd)

10. Remove the navigation unit (see page 23-155). Check that the antenna lead is properly connected.

    Is it connected properly?

    YES—Go to step 11.

    NO—Reconnect the connector, and recheck the function. ■

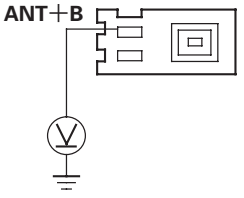
11. Disconnect the AM/FM antenna lead 3P connector from the AM/FM antenna amplifier (see page 23-87).

12. Turn the ignition switch to ON (II).

13. Turn on the navigation unit.

14. Measure the voltage between the AM/FM antenna lead connector terminal No. 3 at the AM/FM antenna amplifier and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 19.

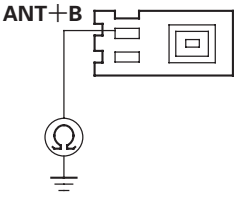
NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).

16. Disconnect navigation unit connector G (3P).

17. Check for continuity between the AM/FM antenna amplifier 3P connector terminal No. 3 and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

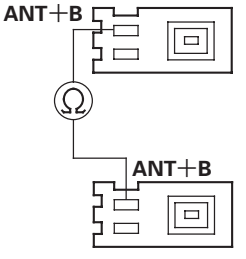
Is there continuity?

YES—Repair short to body ground in the wire between the navigation unit and the AM/FM antenna amplifier. ■

NO—Go to step 18.

18. Check for continuity between navigation unit connector G (3P) terminal No. 3 and the AM/FM antenna amplifier 3P connector terminal No. 3.

NAVIGATION UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good navigation unit (see page 23-155), and recheck. ■

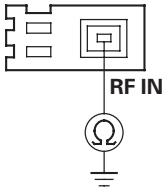
NO—Repair open in the wire between the navigation unit and the AM/FM antenna amplifier. ■

19. Turn the ignition switch to LOCK (0).

20. Disconnect navigation unit connector G (3P).

21. Check for continuity between navigation unit connector G (3P) terminal No. 1 and body ground.

NAVIGATION UNIT CONNECTOR G (3P)



Terminal side of female terminals

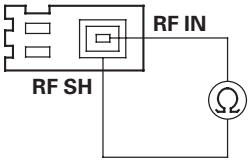
Is there continuity?

YES—Replace the AM/FM antenna lead and/or sublead. ■

NO—Go to step 22.

22. Check for continuity between navigation unit connector G (3P) terminals No. 1 and No. 2.

NAVIGATION UNIT CONNECTOR G (3P)



Terminal side of female terminals

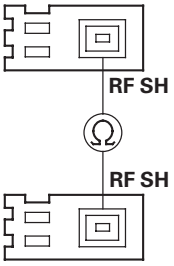
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 23.

23. Check for continuity between navigation unit connector G (3P) terminal No. 2 and the AM/FM antenna amplifier 3P connector terminal No. 2.

NAVIGATION UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

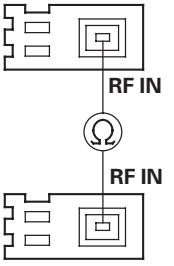
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 24.

24. Check for continuity between navigation unit connector G (3P) terminal No. 1 and the AM/FM antenna amplifier 3P connector terminal No. 1.

NAVIGATION UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Replace the AM/FM antenna amplifier (see page 23-87), and recheck. If the reception is still poor, replace the navigation unit (see page 23-155). ■

NO—Replace the AM/FM antenna lead and/or sublead. ■

Symptom Troubleshooting (cont'd)

Poor AM or FM radio reception or interference (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check for aftermarket accessories plugged into the vehicle accessory power sockets (including cell phone).
- Check the connectors for poor connections or loose terminals.
- Check the radio reception in an open area. Compare it to a known-good vehicle whenever possible. Poor reception/interference can be caused by the following:
  – The radio station is far away.
  – Atmospheric conditions are unfavorable.
  – Tall buildings, mountains, or high-voltage power lines are nearby.
  – Aftermarket metallic wi ndow tint.

1. Turn the ignition switch to ON (II).

2. Do the seek stop test (see page 23-78).

   Is the test vehicle within 10 % of the known-good vehicle?

   YES—Multipath interference or weak station. Operation is normal. ■
   NO—Go to step 3.

3. Check if the radio reception/interference is the same in several locations.

   Is the reception/interference the same?

   YES—Go to step 4.
   NO—Multipath interference or weak station. Operation is normal. ■

4. Start the engine.

5. Check the reception/interference.

   Is there noise (static or whine) only with the engine running?

   YES—Check the antenna and radio grounds. If OK, check the charging system and the ignition system. ■
   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Remove the right side C-pillar trim (see page 20-75).

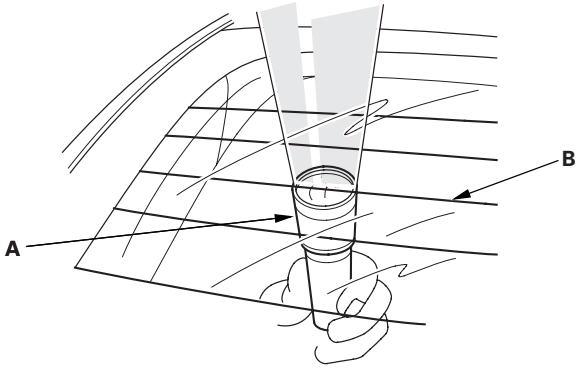
8. Check the connections from the AM/FM antenna amplifier to the window antenna.

   Are there any loose or damaged connections?

   YES—Repair the connections, or substitute a known-good AM/FM antenna amplifier and retest. If the symptom/condition goes away, replace the original AM/FM antenna amplifier (see page 23-87). ■

   NO—Go to step 9.

9. With the help of an assistant inside the vehicle, have the assistant shine a flashlight (A) along each antenna wire (B). Check from the outside of the vehicle for any breaks or openings in the antenna wires (the light shines through).



   Are there any breaks or cuts in the antenna?

   YES—Repair the window antenna. Go to AM/FM antenna repair (see page 23-87), or replace the rear window (see page 20-47). ■

   NO—Go to step 10.

10. Remove the audio unit (see page 23-80). Check that the antenna lead is properly connected.

    Is it connected properly?

    YES—Go to step 10.

    NO—Reconnect the connector, and recheck the function. ■

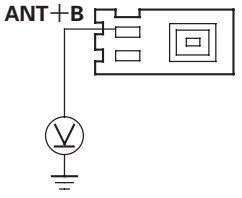
11. Disconnect the antenna cable 3P connector from the AM/FM antenna amplifier (see page 23-87).

12. Turn the ignition switch to ON (II).

13. Turn on the audio unit.

14. Measure the voltage between the AM/FM antenna lead connector terminal No. 3 at the AM/FM antenna amplifier and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 19.

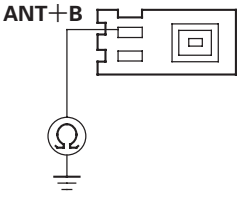
NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).

16. Disconnect audio unit connector G (3P).

17. Check for continuity between the AM/FM antenna amplifier connector (3P) terminal No. 3 and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

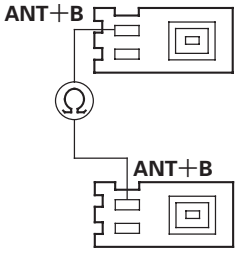
Is there continuity?

YES—Repair short to body ground in the wire between the audio unit and the AM/FM antenna amplifier. ■

NO—Go to step 18.

18. Check for continuity between audio unit connector G (3P) terminal No. 3 and the AM/FM antenna amplifier 3P connector terminal No. 3.

AUDIO UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good audio unit (see page 23-80), and recheck. ■

NO—Repair open in the wire between the audio unit and the AM/FM antenna amplifier. ■

(cont'd)

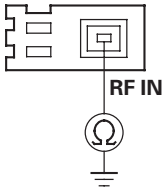
Symptom Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0).

20. Disconnect audio connector G (3P).

21. Check for continuity between audio unit connector G (3P) terminal No. 1 and body ground.

AUDIO UNIT CONNECTOR G (3P)



Terminal side of female terminals

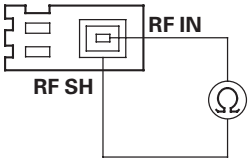
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 22.

22. Check for continuity between audio unit connector G (3P) terminals No. 1 and No. 2.

AUDIO UNIT CONNECTOR G (3P)



Terminal side of female terminals

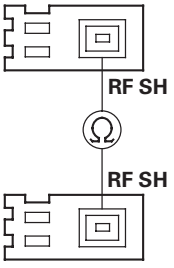
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 23.

23. Check for continuity between audio unit connector G (3P) terminal No. 2 and the AM/FM antenna amplifier 3P connector terminal No. 2.

AUDIO UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

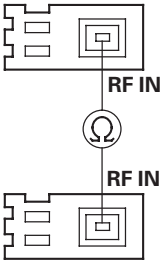
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 24.

24. Check for continuity between audio unit connector G (3P) terminal No. 1 and the AM/FM antenna amplifier 3P connector terminal No. 1.

AUDIO UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Replace the AM/FM antenna amplifier (see page 23-87), and recheck. If the reception is still poor, replace the audio unit (see page 23-80). ■

NO—Replace the antenna lead and/or sublead. ■

Audio unit power switch will not turn on (No information display and no sound) (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Push the power switch ON to see if the navigation unit turns ON.

   Does the navigation unit display operate properly, and does the audio sound normal?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 5.

   NO—Replace the fuse(s), and recheck. ■
5. Remove the navigation unit (see page 23-155). Check that the navigation unit is properly connected.

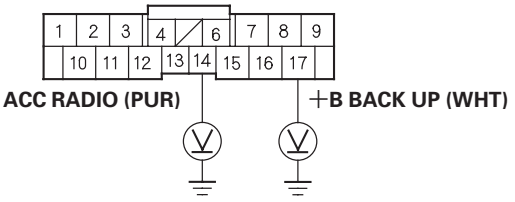
   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.

   Is it connected properly?

   YES—Go to step 6.

   NO—Reconnect the connector, and recheck the function. ■
6. Disconnect navigation unit connector A (17P)
7. Turn the ignition switch to ON (II).
8. Measure the voltage between body ground and navigation unit connector A (17P) terminals No. 14 and No. 17 individually.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage on both terminals?

YES—Go to step 9.

NO—Repair open in the wire(s) between the No. 23 (10 A) fuse in the under-hood fuse/relay box and the No. 35 (7.5 A) in the under-dash fuse/relay box and the navigation unit. ■
9. Turn the ignition switch to LOCK (0).
10. Reconnect navigation unit connector A (17P).

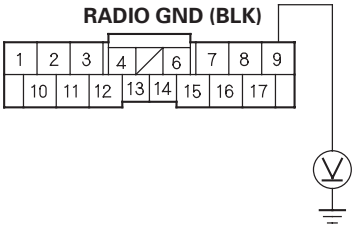
(cont'd)

Symptom Troubleshooting (cont'd)

11. Turn the ignition switch to ON (II).

12. Measure the voltage between navigation unit connector A (17P) terminal No. 9 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there less than 0.1 V on both terminals?

YES—Replace the navigation unit (see page 23-155). ■

NO—Repair open in the wire between navigation unit connector A (17P) terminal No. 19 and body ground (G505). ■

Audio unit power switch will not turn on (No information display and no sound) (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).

2. Push the power switch ON to see if audio unit turns ON.

   Does the audio unit operate properly, and does the audio sound normal?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and the No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 5.

   NO—Replace the fuse(s), and recheck. ■

5. Remove the audio unit (see page 23-80). Check that the audio unit is properly connected.

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

   Is it connected properly?

   YES—Go to step 6.

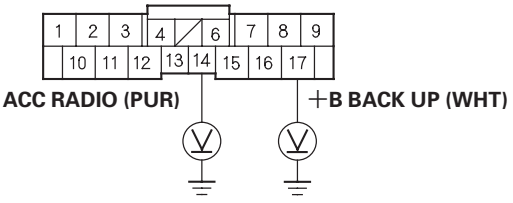
   NO—Reconnect the connector, and recheck the function. ■

6. Disconnect audio unit connector A (17P).

7. Turn the ignition switch to ON (II).

8. Measure the voltage between audio unit connector A (17P) terminal No. 14 and body ground, and between terminal No. 17 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage on the both terminals?

YES—Go to step 9.

NO—Repair open in the wire(s) between the No. 23 (10 A) fuse in the under-hood fuse/relay box and the No. 35 (7.5 A) in the under-dash fuse/relay box and the audio unit. ■

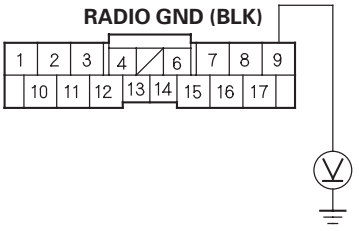
9. Turn the ignition swtich to LOCK (0).

10. Reconnect audio unit connector A (17P).

11. Turn the ignition switch to ON (II).

12. Measure the voltage between audio unit connector A (17P) terminal No. 9 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the audio unit (see page 23-80). ■

NO—Repair open in the wire between audio unit connector A (17P) terminal No. 9 and body ground (G505) (see page 22-32). ■

Symptom Troubleshooting (cont'd)

Audio unit power switch will not turn off (with navigation)

NOTE:
- Check for aftermarket accessories plugged into the vehicle's accessory power sockets.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Push the power switch OFF or turn the ignition switch to LOCK (0) to see if the navigation unit turns OFF.

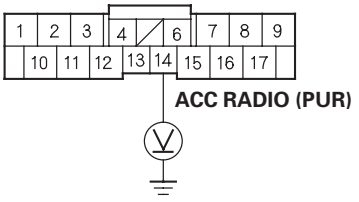
   Is the navigation unit OFF?

   YES—Operation is normal. ■

   NO—Go to step 2.
3. Turn the ignition switch to LOCK (0).
4. Remove the navigation unit (see page 23-155).
5. Disconnect navigation unit connector (17P).

   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.
6. Measure the voltage between navigation unit connector A (17P) terminal No. 14 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

YES—Check for short to power on PUR wire. ■

NO—Replace the navigation unit (see page 23-155). ■

Audio unit power switch will not turn off (without navigation)

NOTE:
- Check for aftermarket accessories plugged into the vehicle's accessory power sockets.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Push the power switch OFF or turn the ignition switch to LOCK(0) to see if the audio unit turns OFF.

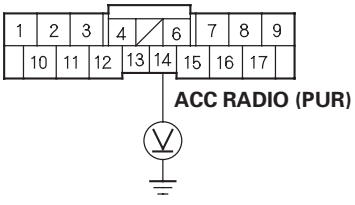
   Is the audio unit OFF?

   YES—Operation is normal. ■

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Remove the audio unit (see page 23-80).
5. Disconnect audio unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
6. Measure the voltage between audio unit connector A (17P) terminal No. 14 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there voltage?

YES—Check for short to power on PUR wire. ■

NO—Replace the audio unit (see page 23-80). ■

No sound is heard from the speaker(s) (display is normal) (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Set the fader and balance positions to the center.
- Before performing symptom troubleshooting, do the power switch will not turn ON troubleshooting (see page 23-35).

1. Turn the ignition switch to ON (II).
2. Check for sound in each mode (AM, FM, XM, and CD).

   Is the sound OK in each mode?

   YES—Intermittent failure. The system is OK at this time. Check for loose connections at the navigation unit and speaker(s). ■

   NO—Go to step 3.
3. Check that the volume button is not set to the min level.

   Is it at the MIN level?

   YES—Raise the volume level, and recheck the function. ■

   NO—Go to step 4.
4. On the steering wheel, check the navigation talk command.

   Is the navigation talk command function set?

   YES—Cancel the navigation talk command by pressing the navigation BACK button, then recheck the function. ■

   NO—Go to step 5.

(cont'd)

Symptom Troubleshooting (cont'd)

5. Check to see if there is a specific speaker that has no sound.

   Do any or all of the speakers fail to sound?

   YES—Speaker(s) failed the test:

   - If at least one speaker is OK, go to step 6.
   - If all speakers fail to sound:
     – With premium audio system: Go to step 14.
     – Without premium audio system: Go to step 9.

   NO—Speakers all work, but sound quality is poor in step 1.

   - If sound is poor only with XM radio, or the XM radio does not function, go to poor or no sound with XM radio (see page 23-72). ■
   - If the sound is poor only with AM or FM, go to poor AM or FM radio reception or interference (see page 23-29). ■
   - If the sound is poor only with disc. ■
     – Try several known- good disc in the navigation unit.
     – If the sound quality is normal, the original disc is faulty.
     – If the sound quality is still poor, replace the navigation unit.
   - If the sound is poor in all modes, go to sound quality diagnosis (see page 23-74). ■

6. Turn the ignition switch to LOCK (0).

7. Remove the speaker(s) with no sound (see page 23-83), and disconnect its connector.

8. Check the speaker 2P connector for a loose or poor connection.

   Reconnect the speaker 2P connector, and recheck the symptom; does it still fail?

   YES—Go to step 9.

   NO—Operation is normal. ■

9. Make sure the ignition switch is in LOCK (0).

10. Measure the resistance between terminals No. 1 and No. 2 of the speaker connector.

    Is there about 4 Ω ?

    YES—
    - With premium audio system: Go to step 20.
    - Without premium audio system: Go to step 11.

    NO—Faulty speaker(s). ■

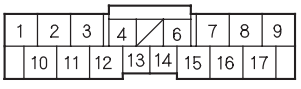
11. Remove the navigation unit (see page 23-155). Disconnect navigation unit connector A (17P).

    NOTE:
    - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
    - Remove the PC card before removing the navigation unit.

12. Measure the resistance between the following terminals of navigation unit connector A (17P) according to the table.

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (−)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (−)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (−)	ORN

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there about 4 Ω ?

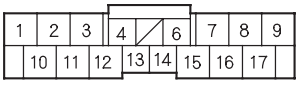
YES—Go to step 13.

NO—Repair open or short in the wires between navigation unit and the speaker(s). ■

13. Check for continuity between body ground and the following terminals of navigation unit connector A (17P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (−)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (−)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (−)	ORN

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

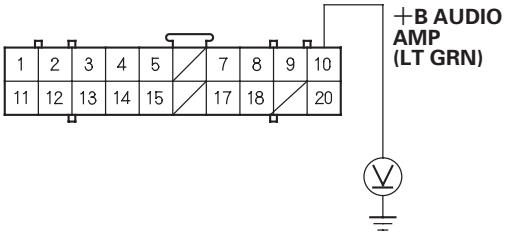
Is there continuity?

YES—Repair short to body ground in the wire(s) between the navigation unit and the speaker(s). ■

NO—Substitute a known-good navigation unit (see page 23-155), and recheck. If the symptom/indication goes away, replace the original navigation unit. ■

14. Measure the voltage between stereo amplifier connector A (20P) terminal No. 10 and body ground.

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 15.

NO—Repair open in the wire between the No. 17 (15 A) fuse in the under-hood fuse/relay box and stereo amplifier connector A (20P) terminal No. 10. ■

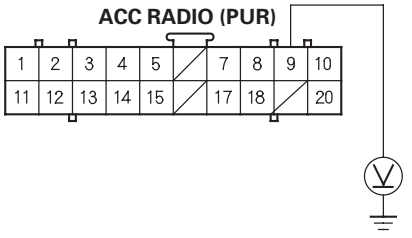
(cont'd)

Symptom Troubleshooting (cont'd)

15. Turn the ignition switch to ON (II).

16. Measure the voltage between stereo amplifier connector A (20P) terminal No. 9 and body ground.

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

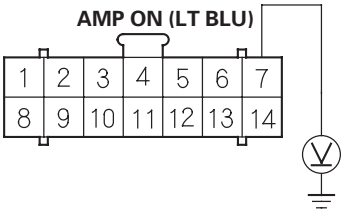
Is there battery voltage?

YES—Go to step 17.

NO—Repair open in the wire between the No. 35 (7.5 A) fuse in the under-dash fuse/relay box and stereo amplifier connector A (20P) terminal No. 9. ■

17. Measure the voltage between stereo amplifier connector B (14P) terminal No. 7 and body ground.

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

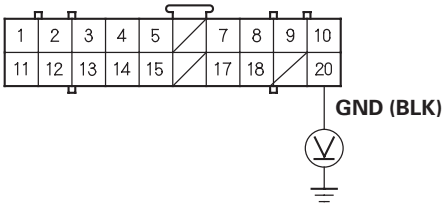
Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the stereo amplifier connector B (14P) terminal No. 7 and navigation unit connector B (22P) terminal No. 20. ■

18. Measure the voltage between stereo amplifier connector A (20P) terminal No. 20 and body ground.

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there less than 0.1 V on both terminals?

YES—Go to step 19.

NO—Repair open in the wire between stereo amplifier connector A (20P) terminal No. 20 and body ground (G601). ■

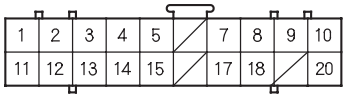
19. Turn the ignition switch to LOCK (0).

20. Disconnect stereo amplifier connector A (20P).

21. Measure the resistance between the following terminals of stereo amplifier connector A (20P) according to the table.

Speaker	Terminal	Wire color
Driver's door speaker	A3 (+)	LT GRN
	A13 (−)	PNK
Left tweeter	A4 (+)	RED
	A14 (−)	GRN
Front passenger's door speaker	A2 (+)	GRY
	A12 (−)	BRN
Right tweeter	A1 (+)	PNK
	A11 (−)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (−)	BRN
Right rear speaker	A7 (+)	BLU
	A17 (−)	ORN
Subwoofer	A5 (+)	GRN
	A15 (−)	RED

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there about 4 Ω ?

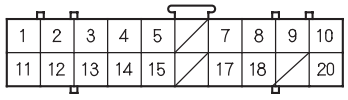
YES—Go to step 22.

NO—Repair open or short in the wires between the stereo amplifier and the speaker(s). ■

22. Check for continuity between body ground and the following terminals of stereo amplifier connector A (20P).

Speaker	Terminal	Wire color
Driver's door speaker	A3 (+)	LT GRN
	A13 (−)	PNK
Left tweeter	A4 (+)	RED
	A14 (−)	GRN
Front passenger's door speaker	A2 (+)	GRY
	A12 (−)	BRN
Right tweeter	A1 (+)	PNK
	A11 (−)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (−)	BRN
Right rear speaker	A7 (+)	BLU
	A17 (−)	ORN
Subwoofer	A5 (+)	GRN
	A15 (−)	RED

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the stereo amplifier and the speaker(s). ■

NO—Go to step 23.

23. Disconnect stereo amplifier connector B (14P).

(cont'd)

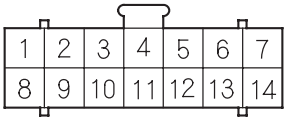
Symptom Troubleshooting (cont'd)

24. Disconnect navigation unit connector A (17P).

25. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 2 (the harness shield).

Stereo amplifier connector	Wire color
B1	BLU
B8	RED

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

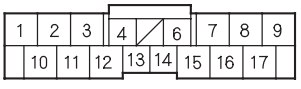
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 26.

26. Check for continuity between navigation unit connector A (17P) and stereo amplifier connector B (14P) according to the table.

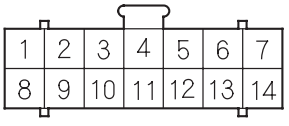
Navigation unit connector	Stereo amplifier connector	Wire color
A3	B8	RED
A12	B1	BLU

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

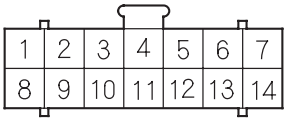
YES—Go to step 27.

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

27. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 5 (the harness shield).

Stereo amplifier connector	Wire color
B4	BLU
B11	PNK

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

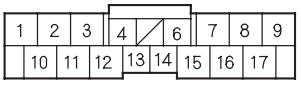
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 28.

28. Check for continuity between navigation unit connector A (17P) and stereo amplifier connector B (14P) according to the table.

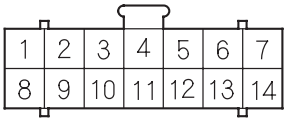
Navigation unit connector	Stereo amplifier connector	Wire color
A7	B11	PNK
A15	B4	BLU

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

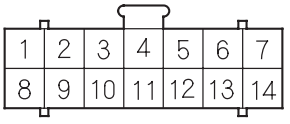
(cont'd)

Symptom Troubleshooting (cont'd)

29. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 9 (the harness shield).

Stereo amplifier connector	Wire color
B3	BLK
B10	WHT

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

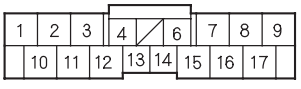
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 30.

30. Check for continuity between navigation unit connector A (17P) and stereo amplifier connector B (14P) according to the table.

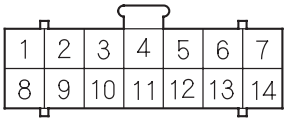
Navigation unit connector	Stereo amplifier connector	Wire color
A2	B10	WHT
A11	B3	BLK

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

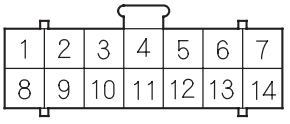
YES—Go to step 31.

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

31. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 12 (the harness shield).

Amplifier connector	Wire color
B6	LT GRN
B13	PUR

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

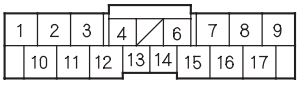
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 32.

32. Check for continuity between navigation unit connector A (17P) and stereo amplifier connector B (14P) according to the table.

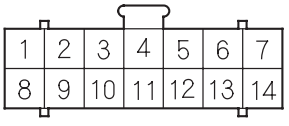
Navigation unit connector	Stereo amplifier connector	Wire color
A8	B13	PUR
A16	B6	LT GRN

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good navigation unit (see page 23-155), and recheck. If the symptom/indication goes away, replace the original navigation unit. If the symptom is still present, substitute a known-good stereo amplifier and recheck. If the symptom/indication goes away, replace the original stereo amplifier (see page 23-83). ■

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

Symptom Troubleshooting (cont'd)

No sound is heard from the speaker(s) (display is normal) (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Set the fader and balance positions to the center.
- Before performing symptom troubleshooting, do the power switch will not turn on troubleshooting (see page 23-36).
- For vehicles with factory installed audio, do the self-diagnostic function, speaker check (see page 23-25) to help isolate the speaker.

1. Turn the ignition switch to ON (II).

2. Check that the volume button is not set to the MIN level.

   Is it at MIN level?

   YES—Raise the volume level, and recheck the function. ■

   NO—Go to step 3.

3. Do the speaker check mode in the self-diagnostic function (see page 23-25).

   Do any or all of the speakers fail to sound?

   YES—Speaker(s) failed the test:

   - If at least one speaker is OK, go to step 4.
   - If all speakers fail to sound, go to step 7.

   NO—Speakers all work, but sound quality is poor:

   - If the sound is poor only with AM or FM, go to poor AM or FM radio reception or interference (see page 23-32). ■
   - If the sound is poor only with disc. ■
     – Try several known- good disc in the audio unit.
     – If the sound quality is normal, the original disc is faulty.
     – If the sound quality is still poor, replace the audio unit.
   - If the sound is poor in all modes, go to sound quality diagnosis (see page 23-74). ■

4. Turn the ignition switch to LOCK (0).

5. Remove the speaker(s) with no sound (see page 23-83), and disconnect its connector.

6. Check the speaker 2P connector for a loose or poor connection.

   Reconnect the speaker 2P connector, and recheck the symptom; does it still fail?

   YES—Go to step 7.

   NO—Operation is normal. ■

7. Make sure the ignition switch is in LOCK (0).

8. Remove the speaker(s) with no sound (see page 23-84), and disconnect its connector.

9. Measure the resistance between terminals No. 1 and No. 2 of the speaker connector.

   Is there about 4 Ω ?

   YES—Go to step 10.

   NO—Faulty speaker(s). ■

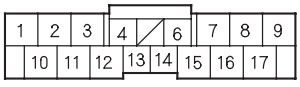
10. Remove the audio unit (see page 23-80). Disconnect audio unit connector A (17P).

    NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

11. Measure the resistance between following terminals of audio unit connector A (17P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (−)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (−)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (−)	ORN

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there about 4 Ω ?

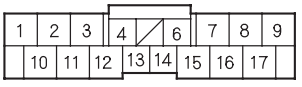
YES—Go to step 12.

NO—Repair open or short in the wires between the audio unit and the speaker(s).■

12. Check for continuity between body ground and the following terminals of audio unit connector A (17P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (−)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (−)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (−)	ORN

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the audio unit and the speaker(s).■

NO—Substitute a known-good audio unit (see page 23-80), and recheck. If the symptom/indication goes away, replace the original audio unit.■

Symptom Troubleshooting (cont'd)

Auxiliary input sound is low or cannot be heard

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Use auxiliary stereo cables with 3.5 mm ends only.
- Auxiliary accessories may be played on the audio unit using the auxiliary input.

1. Turn the ignition switch to ON (II).

2. Turn on the audio unit or navigation unit and connect an auxiliary accessory to the auxiliary input jack.

3. Check the volume operation.

   Is the sound normal?

   YES—Operation is normal at this time. ■

   NO—Go to step 4.

4. Make sure the auxiliary accessory volume to max.

   Is the volume set to high?

   YES—Go to step 5.

   NO—Raise the auxiliary accessory volume is set to high. Make sure the audio unit volume is turned down before retesting. ■

5. Substitute a known-good auxiliary audio accessory and/or auxiliary stereo cable, and recheck.

   Does the auxiliary audio accessory operate properly?

   YES—Original auxiliary audio accessory or auxiliary stereo cable is faulty. ■

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Remove the auxiliary jack assembly (see page 23-85), and check that the auxiliary jack assembly is properly connected.

   Is the auxiliary jack assembly connected properly?

   YES—
   - With navigation: go to step 8.
   - Without navigation: go to step 13.

   NO—Reconnect the connector, and recheck the function. ■

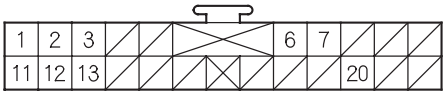
8. Disconnect auxiliary jack assembly 5P connector.

9. Disconnect navigation unit connector B (22P).

10. Check for continuity between body ground and navigation unit connector B (22P) according to the table.

Navigation unit connector	Wire color
B1	BRN
B3	BLU
B11	YEL
B12	GRN
B13	WHT

NAVIGAION UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the navigation unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

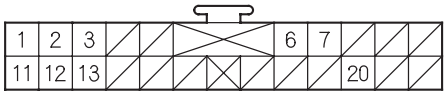
NO—Go to step 11.

11. Check for continuity between navigation unit connector B (22P) according to the table.

From terminal	To terminals
B1	B2*, B3, B11, B12, B13
B2*	B3, B11, B12, B13
B3	B11, B12, B13
B11	B12, B13
B12	B13

*: Shielded wire

NAVIGAION UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

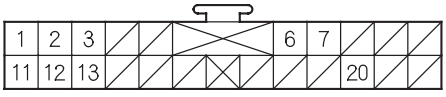
YES—Short in the wire(s) between the navigation unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

NO—Go to step 12.

12. Check for continuity between navigation unit connector B (22P) and auxiliary jack assembly 5P connector according to the table.

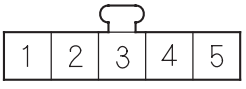
Navigation unit connector	Auxiliary jack assembly connector	Wire color
B1	3	BRN
B3	2	BLU
B11	4	YEL
B12	5	GRN
B13	1	WHT

NAVIGATION UNIT CONNECTOR B (22P)



Wire side of female terminals

AUXILIARY JACK ASSEMBLY 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good auxiliary jack assembly (see page 23-85), and recheck. If the symptom/indication goes away, replace the original auxiliary jack assembly. If the symptom/indication is still present, replace the navigation unit (see page 23-155). ■

NO—Open in the wire(s) between the navigation unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

(cont'd)

Symptom Troubleshooting (cont'd)

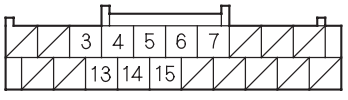
13. Disconnect the auxiliary jack assembly 5P connector.

14. Disconnect audio unit connector B (20P).

15. Check for continuity between body ground and audio unit connector B (20P) according to the table.

Audio unit connector	Wire color
B3	BRN
B5	BLU
B13	YEL
B14	GRN
B15	WHT

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the audio unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

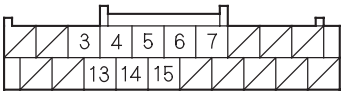
NO—Go to step 16.

16. Check for continuity between audio unit connector B (20P) according to the table.

From terminal	To terminals
B3	B4*, B5, B13, B14, B15
B4*	B5, B13, B14, B15
B5	B13, B14, B15
B13	B14, B15
B14	B15

*: Shielded wire

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there continuity?

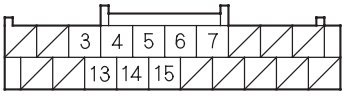
YES—Short in the wire(s) between the audio unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

NO—Go to step 17.

17. Check for continuity between audio unit connector B (20P) and auxiliary jack assembly 5P connector according to the table.

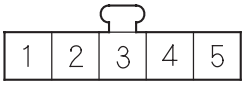
Audio unit connector	Auxiliary jack assembly connector	Wire color
B3	3	BRN
B5	2	BLU
B13	4	YEL
B14	5	GRN
B15	1	WHT

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

AUXILIARY JACK ASSEMBLY 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good auxiliary jack assembly (see page 23-85), and recheck. If the symptom/indication goes away, replace the original auxiliary jack assembly. If the symptom/indication is still present, replace the audio unit (see page 23-80). ■

NO—Open in the wire(s) between the audio unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

Audio system sound is weak or distorted (display is normal)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Check for sound in each mode (AM, FM, XM, and CD).

   Is there sound from the speakers, and is the sound quality normal in each mode?

   YES—Intermittent failure. The system is OK at this time. Check for loose connections at the navigation unit, audio unit, amplifier, and each speaker. ■

   NO—Speakers all work, sound quality is poor. ■

   - If the sound quality is poor only with the XM radio, or the XM radio does not function, go to poor or no sound with XM radio (see page 23-72).
   - If the sound quality is poor only with AM or FM radio, go to poor AM or FM radio reception or interference (see page 23-29).
   - If sound is poor in all modes, go to sound quality diagnosis (see page 23-74).

Symptom Troubleshooting (cont'd)

Radio preset memory is lost

NOTE: If only the XM stations are lost, go to XM radio preset memory is lost (see page 23-71).

1. Set each of the radio station preset buttons.

   Do each of the buttons set properly?

   YES—Go to step 2.

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

2. Turn the ignition switch to LOCK (0) for 1 minute, then turn it back to ON (II).

3. Test the preset buttons for proper recall operation.

   Do the preset buttons recall the set radio stations?

   YES—System is normal at this time. Check the connections at the navigation unit or audio unit. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

Volume does not change

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Set the fader and balance positions to the center.

1. Listen for sound from the speakers.

   Is the sound normal?

   YES—Go to step 2.

   NO—Go to audio system sound is weak or distorted, or no sound is heard from speaker(s) (see page 23-39). ■

2. Operate the volume knob to see if the volume changes.

   Does the volume change?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

Volume does not increase with speed (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Verify the SVC mode setting in the navigation unit sound set-up.

   Is the SVC set to off?

   YES—Change the setting to Mid and retest (see page 23-6). ■

   NO—Go to step 2.

2. Do the self-diagnostic function for the vehicle speed pulse indication (see page 23-23).

   Does the self-diagnostic function indicate a VSP signal?

   YES—Substitute a known-good navigation unit (see page 23-155), and retest. If the symptom/indication goes away, replace the original navigation unit. ■

   NO—Go to step 3.

3. Test-drive the vehicle at highway speeds, and monitor if the volume increases.

   Do the volume increase?

   YES—Intermittent failure, the system is OK at this time. ■

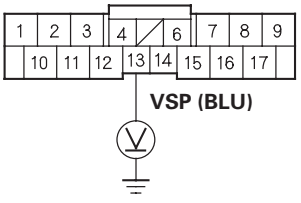
   NO—Go to step 4.

4. Remove the navigation unit (see page 23-155), and disconnect navigation unit connector A (17P).

   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.

5. Drive the vehicle, and have an assistant measure voltage at navigation unit connector A (17P) terminal No. 13.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there a 0—5 V Pulse?

YES—Replace the navigation unit (see page 23-155). ■

NO—Repair open or shorts in the wire between navigation unit connector A (17P) terminal No. 13 and ECM/PCM connector A (44P) terminal No. 29. If no opens or shorts are found, Update the ECM/PCM (see page 11-227) if it does not have the latest software or substitute a known-good ECM/PCM (see page 11-228). ■

Symptom Troubleshooting (cont'd)

Volume does not increase with speed (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Test-drive the vehicle at highway speeds, and monitor if the volume increases.

   Does the volume increase?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 2.

2. Verify the SVC mode setting in the audio unit sound set-up.

   Is the SVC set to off?

   YES—Change the setting to Mid, and retest (see page 23-6). ■

   NO—Go to step 3.

3. Do the self-diagnostic function for the vehicle speed pulse indication (see page 23-23).

   Does the self-diagnostic function indicate a VSP signal?

   YES—Substitute a known-good audio unit and retest. If the symptom/indication goes away, replace the original audio unit. ■

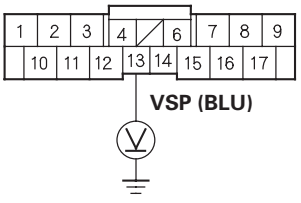
   NO—Go to step 4.

4. Remove the navigation unit (see page 23-80), and disconnect navigation unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

5. Drive the vehicle, and have an assistant measure voltage at audio unit connector A (17P) terminal No. 13.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there a 0—5 V Pulse?

YES—Replace the audio unit (see page 23-80). ■

NO—Repair open or shorts in the wire between audio unit connector A (17P) terminal No. 13 and ECM/PCM connector A (44P) terminal No. 29. If no opens or shorts are found, Update the ECM/PCM (see page 11-227) if it does not have the latest software or substitute a known-good ECM/PCM (see page 11-228). ■

Volume is too high or too low when driving at freeway speeds

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Test-drive the vehicle at highway speeds, and monitor volume level.

   Is the volume level too high, or too low?

   YES—Go to step 2.

   NO—Intermittent failure, the system is OK at this time. ■

2. Change the SVC mode setting in sound set-up to Mid (see page 23-6).

   Is the volume level still too high, or too low?

   YES—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

   NO—Improper SVC setting for customers sound taste. ■

Radio tuner does not change stations

1. Check the audio information on the display panel.

   Does the audio information display properly?

   YES—Go to step 2.

   NO—Go to power switch will not turn on (see page 23-35). ■

2. Operate the tuning knob to see if the radio station changes.

   Does the radio station change?

   YES—Intermittent failure: the tuning knob is OK at this time. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

Symptom Troubleshooting (cont'd)

Navigation unit button illumination does not work (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Turn the combination lighting switch to the parking light position.
3. Check the illumination of the navigation unit buttons.

   Are the buttons illuminated?

   YES—Intermittent problem: the navigation unit is OK at this time. Check for loose or poor connections at navigation unit connector A (17P). ■

   NO—Go to step 4.
4. Check the illumination of several other buttons not related to the navigation system.

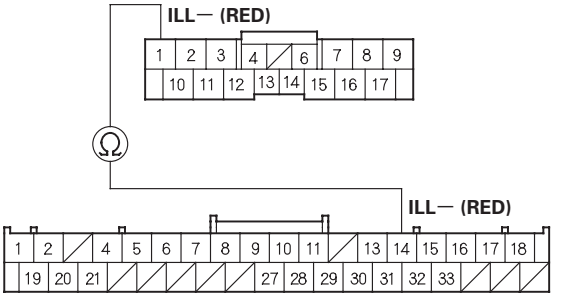
   Are the buttons illuminated?

   YES—Go to step 5.

   NO—Troubleshoot the interior lights. Start by checking the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the navigation unit. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect navigation unit connector A (17P).

   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.
7. Disconnect gauge control module (tach) 36P connector.
8. Check for continuity between navigation unit connector A (17P) terminal No. 1 and gauge control module (tach) 36P connector terminal No. 14.

NAVIGATION UNIT CONNECTOR A (17P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

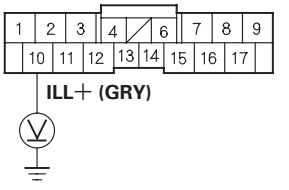
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the gauge control module and the navigation unit. ■

9. Turn the ignition switch to ON (II).
10. With the headlight switch still on, measure the voltage between navigation unit connector A (17P) terminal No. 10 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

YES—Check the connections at navigation unit connector A (17P). If all connections are OK, replace the navigation unit (see page 23-155). ■

NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

Audio unit button illumination does not work (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Turn the combination lighting switch to the parking light position.
3. Check the illumination of the audio unit buttons.

   Are the buttons illuminated?

   YES—Intermittent problem: the audio unit is OK at this time. Check for loose or poor connections at the audio unit connector A (17P). ■

   NO—Go to step 4.
4. Check the illumination of several other buttons not related to the audio system.

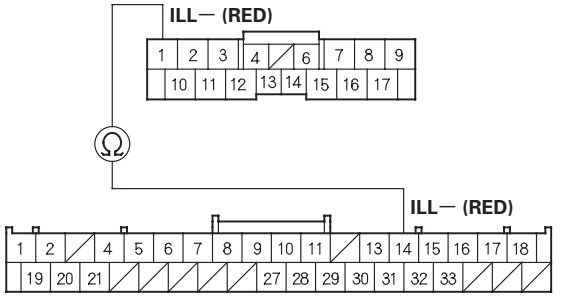
   Are the buttons illuminated?

   YES—Go to step 5.

   NO—Troubleshoot the interior lights. Start by checking the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the audio unit. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect audio unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
7. Disconnect gauge control module (tach) 36P connector.
8. Check for continuity between audio unit connector A (17P) terminal No. 1 and gauge control module (tach) 36P connector terminal No. 14.

AUDIO UNIT CONNECTOR A (17P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

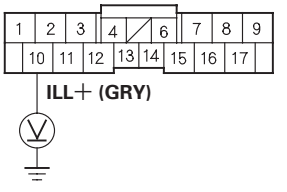
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the gauge control module and the audio unit. ■

9. Turn the ignition switch to ON (II).
10. With the headlight switch still on, measure the voltage between audio unit connector A (17P) terminal No. 10 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

YES—Check the connections at audio unit connector A (17P). If all the connections are OK, replace the audio unit (see page 23-80). ■

NO—Repair open in the wire between the under-dash fuse/relay box and the audio unit. ■

Symptom Troubleshooting (cont'd)

Display does not dim or brighten with dimmer (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Turn the combination light switch ON and OFF to see if the symptom can be duplicated.

   Is it duplicated?

   YES—Go to step 3.

   NO—Operation is normal.
3. Turn the combination light switch to OFF.
4. Rotate the illumination control dial.

   Does the illumination dim and brighten normally as you rotate the dial?

   YES—Operation is normal.

   NO—Go to step 5.
5. Disconnect, and check audio unit connector A (17P) for a loose or a poor connection. ■

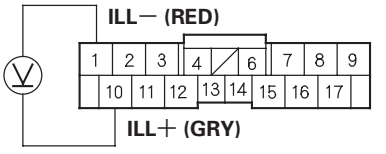
   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

   Reconnect audio unit connector A (17P), and recheck the symptom; does it still appear?

   YES—Go to step 6.

   NO—Operation is normal. ■
6. Turn the ignition switch to LOCK (0).
7. Remove the audio unit (see page 23-80).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between audio unit connector A (17P) terminals No. 1 and No. 10. Rotate the dash brightness controller buttons to see if the voltage changes.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Does the voltage change?

YES—Substitute a known-good audio unit (see page 23-80), and recheck. If the symptom/indication goes away, replace the original audio unit. If symptom is still present, substitute a known-good center panel display and recheck. If the symptom/indication goes away, replace the original center panel display (see page 23-80). ■

NO—Repair open in the wire between the under-dash fuse/relay box and the gauge control module. ■

Audio disc does not load

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.
- Make sure the disc is compatible with the system (see the owner's manual for more information).

1. Insert a known-good disc to see if the symptom can be duplicated.

   Does the disc load?

   YES—Operation is normal. If the disc loads normally, but will not play, go to audio disc does not play (see page 23-62). ■

   NO—Go to step 2.

2. Insert another disc.

   Does the disc load?

   YES—The original disc is faulty. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

Audio disc does not eject

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.

1. Turn on the audio system.

   Does the system turn on?

   YES—Go to step 2.

   NO—Go to power switch will not turn ON (see page 23-35). ■

2. Check to see if the disc ejects correctly with no binding by pushing the EJECT button.

   Does the disc eject normally?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

Symptom Troubleshooting (cont'd)

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Audio disc does not play

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Try loading a known-good disc.

   Does the disc load?

   YES—Go to step 2.

   NO—Go to audio disc does not load (see page 23-61). ■

2. Insert the audio diagnostic CD (T/N: 07AAZ-SDBA100) in the navigation unit or audio unit.

   Does the disc play?

   YES—The original disc is faulty, or has an unreadable format. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

Special Tools Required
- Diagnostics CD 07AAZ-SDBA100
- Skip Test CD 07AAZ-SDBA200 (ABEX-TCD-725B)
- Skip Test CD 07AAZ-SDBA300 (ABEX-TCD-721)

Audio disc skips

1. Confirm the vehicles tires are properly inflated.

2. Check the clients CD for scratches, fingerprints, and marks.

   NOTE: Do this following test with audio unit bass and treble set to clients listening performance. When comparing to known-good vehicles, comparison should be performed on same model and trim level.

3. Test drive to identify when the CD skips. The diagnostics CD (T/N: 07AAZ-SDBA100) can be used if clients CD is not available. Use tracks 10 to 12.

   Does the CD skip?

   YES—Go to step 4.

   NO—Operation is normal. ■

4. Compare the clients CD that skips in a known-good vehicle under the same conditions.

   Does the CD skip in the known-good vehicle under the same conditions?

   YES—Operation is normal. ■

   NO—Go to step 5.

   NOTE: Do this following test with vehicle parked and engine running.

5. Insert the skip test CD (T/N: 07AAZ-SDBA300) (ABEX-TCD-721). Play tracks 2 to 11 and note the track number(s) where the CD starts skipping. Do the same test on a known-good vehicle.

   Does the CD skip on the same track number(s) as the known-good vehicle?

   YES—Operation is normal. ■

   NO—Go to step 6.

6. Insert the skip test CD (T/N: 07AAZ-SDBA200) (ABEX-TCD-725B), and play tracks 7 to 11 and tracks 13 to 15 and note the track number(s) where the CD starts skipping. Perform the same test on a known-good vehicle.

   Does the CD skip on same track number(s) as the known-good vehicle?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-155). ■
   - Without navigation: Replace the audio unit (see page 23-80). ■

Audio remote switch does not work properly (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Check the audio unit operation.

   Is the audio unit operation OK?

   YES—Go to step 2.

   NO—Replace the navigation unit (see page 23-155). ■

2. Test the audio remote switch (see page 23-86).

   Is the audio remote switch OK?

   YES—Go to step 3.

   NO—Replace the audio remote switch (see page 23-86). ■

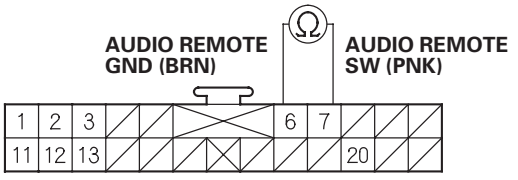
3. Remove the navigation unit (see page 23-155).

(cont'd)

Symptom Troubleshooting (cont'd)

4. Measure the resistance between navigation unit connector B (22P) terminals No. 6 and No. 7 as specified in the table.

NAVIGAION UNIT CONNECTOR B (22P)



Wire side of female terminals

AUDIO REMOTE SWITCH TABLE

Button held down	VOL DOWN	VOL UP	CH (−)	CH (+)	MODE	No button pressed
Resistance	about 100 Ω	about 357 Ω	about 775 Ω	about 1.7 kΩ	about 3.7 kΩ	about 10 kΩ

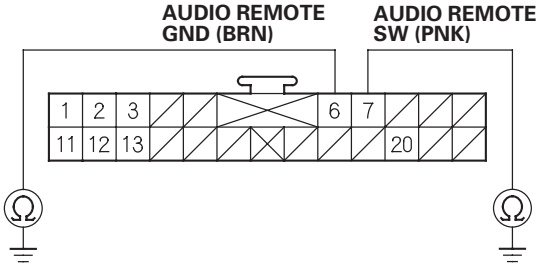
Is the resistance OK?

YES—Go to step 5.

NO—Repair open or high resistance in the circuit between the navigation unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

5. Check for continuity between navigation unit connector B (22P) terminals No. 6 and No. 7 and body ground individually.

NAVIGAION UNIT CONNECTOR B (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the circuit between the navigation unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

NO—Replace the navigation unit (see page 23-155). ■

Audio remote switch does not work properly (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Check the audio unit operation.

   Is the audio unit operation OK?

   YES—Go to step 2.

   NO—Replace the audio unit (see page 23-80). ■

2. Test the audio remote switch (see page 23-86).

   Is the audio remote switch OK?

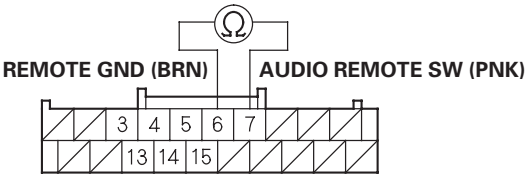
   YES—Go to step 3.

   NO—Replace the audio remote switch (see page 23-86). ■

3. Remove the audio unit (see page 23-80).

4. Measure the resistance between audio unit connector B (20P) terminals No. 6 and No. 7 as specified in the table.

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

AUDIO REMOTE SWITCH TABLE

Button held down	VOL DOWN	VOL UP	CH (−)	CH (+)	MODE	No button pressed
Resistance	about 100 Ω	about 357 Ω	about 775 Ω	about 1.7 kΩ	about 3.7 kΩ	about 10 kΩ

Is the resistance OK?

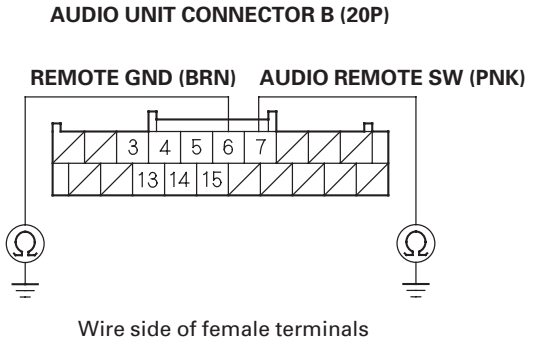
YES—Go to step 5.

NO—Repair open or high resistance in the circuit between the audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

(cont'd)

Symptom Troubleshooting (cont'd)

5. Check for continuity between audio unit connector B (20P) terminals No. 6 and No. 7 and body ground individually.



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the circuit between audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

NO—Replace the audio unit (see page 23-80). ■

Audio disc cannot be inserted and/or ejected (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.
- Make sure the disc is compatible with the system (see the owner's manual for more information).

1. Press the OPEN/CLOSE button to open the navigation display.

2. Try inserting an audio CD.

   Does the player accept the CD?

   YES—The system is OK at this time. ■

   NO—Go to step 3.

3. Press the CD eject button.

   Does the player eject the CD?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-155). ■

PC card will not play/card icon on audio screen cannot be selected (with navigation)

Unfortunately there are no error messages, and no diagnostics for the PC card. There are many reasons why a card won't play audio files in the audio unit.

- The card may not be fully inserted into the slot. Eject the card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a card. This can result in damage to the pins in the rear of the slot.
- The client's card may contain audio files that are not recognized by the system. Only MP3, and WMA music files are played.
- The flash card type may not be accepted by the system. Only Compact Flash and ATA cards have been tested.
- The card's PCMCIA adaptor may be preventing a known-good card from playing. New PCMCIA adaptors are constantly being released, and have not been tested.
- The card's capacity may exceed 1 GB. Only cards with capacities of up to 1 GB (1000 MB) have been tested.
- There may not be any files on the card. Some cards have write protection, make sure it is turned off before putting files on the card.
- Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevents them from playing. The customer should re-format the card using the FAT, or FAT32 format.
- The card may have been damaged by heat. Suggest that the client remove their card when exiting the vehicle.
- The client may have formatted the card using the format NTFS. Only the formats FAT, and FAT32 are accepted by the system.
- Hard Disc Drive (HDD) cards may not work properly in the system and can overheat and quit functioning, particularly in a hot vehicle. They are not recommended.
- The filing structure of the card may exceed the specification of 8 folder levels deep, 99 folders maximum, and 999 total tracks maximum. If any of these limitations is exceeded, the system may not properly display or play the tracks.

NOTE: A delay when first inserting a card is normal. The system is reading the File Tag information for album names, artist, and song titles and there is no hour glass, The delay length depends on the number of tracks, and the complexity of the folder structure. See the audio section glossary for an explanation of the terms used above.

Symptom Troubleshooting (cont'd)

Error code: XM NO SIGNAL or XM ANTENNA is displayed (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Check XM radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines.

1. Check that the XM receiver connectors properly connected.

   Is the connector connected?

   YES—Go to step 2.

   NO—Reconnect the connector. If the error message does not go away, go to step 2.

2. Check the connector at the XM antenna and XM antenna lead.

   Is the connector connected?

   YES—Go to step 3.

   NO—Reconnect the connector. If the error message does not go away, go to step 3.

3. Substitute known-good XM antenna (see page 23-88).

   Is the error message gone?

   YES—Replace the XM antenna (see page 23-88). ■

   NO—Go to step 4.

4. Substitute known-good XM receiver (see page 23-82).

   Is the error message gone?

   YES—Replace the XM receiver (see page 23-82). ■

   NO—Replace the XM antenna lead. ■

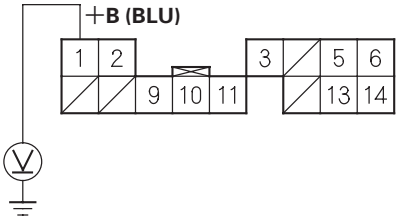
XM radio display is blank and no station information is displayed (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Disconnect XM receiver connector A (14P).

2. Measure the voltage between XM receiver connector A (14P) terminal No. 1 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 3.

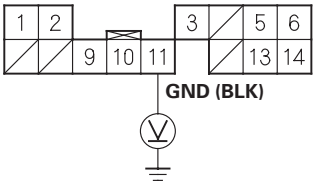
NO—Repair open in the wire between the XM receiver and the navigation unit connector. ■

3. Reconnect XM receiver connector A (14P).

4. Turn the ignition switch to ON (II).

5. Measure the voltage between XM receiver connector A (14P) terminal No. 11 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

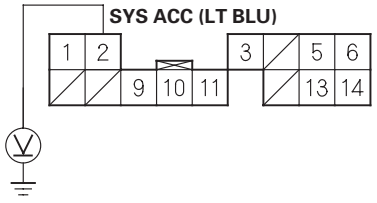
YES—Go to step 6.

NO—Repair open in the wire between the XM receiver and the navigation unit. ■

6. Turn the ignition switch to LOCK (0).

7. Measure the voltage between XM receiver connector A (14P) terminal No. 2 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there 10 V or more present?

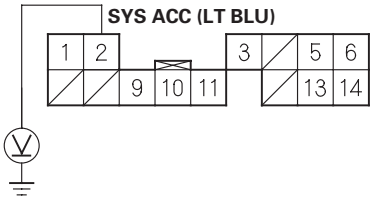
YES—Go to step 8.

NO—Substitute a known- good XM receiver (see page 23-82), and recheck. If 10 V or more are present, replace the original XM receiver. ■

8. Turn the ignition switch to ON (II).

9. Measure the voltage between XM receiver connector A (14P) terminal No. 2 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.5 V?

YES—Go to step 10.

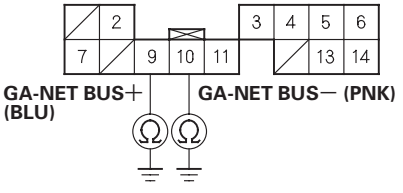
NO—Substitute a known- good navigation unit (see page 23-155), and recheck. If 0.5 V or less are present, replace the original navigation unit.

10. Turn the ignition switch to LOCK (0).

11. Disconnect navigation unit connector E (14P), and XM receiver connector A (14P).

12. Check for continuity between navigation unit connector E (14P) terminal No. 9 and No. 10 and body ground individually.

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Short to body ground in the wire between the XM receiver and the navigation unit. Replace the affected shielded harness. ■

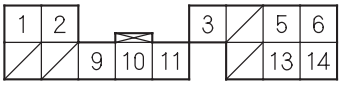
(cont'd)

Symptom Troubleshooting (cont'd)

13. Check for continuity between XM receiver connector A (14P) according to the table.

From terminal	To terminals
A9 (BRN)	A9 (BLU), A10 (PNK)
A9 (BLU)	A10 (PNK)

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

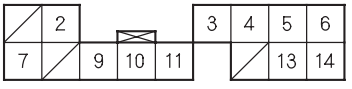
YES—Short in the wire(s) between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

NO—Go to step 14.

14. Check for continuity between navigation unit connector E (14P) and XM receiver connector A (14P) according to the table.

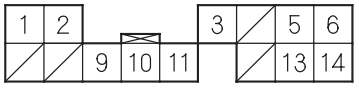
Navigation unit connector	XM receiver connector	Wire color
E9	A9	BLU
E10	A10	PNK

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver (see page 23-82), then reconnect all connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If symptom/indication is still present, replace the navigation unit (see page 23-155). ■

NO—Open in the wire(s) between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

XM radio preset memory is lost (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- If you can only tune to channel 000, 001, 174, and 247, make sure the navigation unit is set to channel mode (see owners manual), if it is set to channel mode, call XM Satellite Radio customer support, and check the account activation status.

1. Turn the ignition switch to ON (II).
2. Turn on the navigation unit, and set each of the XM radio channel preset buttons.

   Do each of the XM radio channel preset buttons set properly?

   YES—Go to step 3.

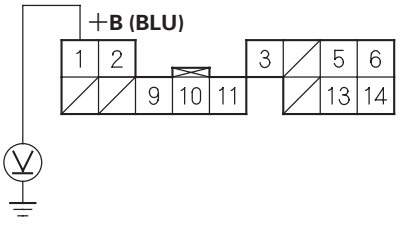
   NO—Go to step 7.
3. Turn the ignition switch to LOCK (0) for 1 minute, then turn it back to ON (II).
4. Test all of the XM radio channel preset buttons for proper recall operation.

   Do the preset buttons recall the set radio stations?

   YES—System is normal at this time. Check connections at the navigation unit. ■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect XM receiver connector A (14P).
7. Measure the voltage between XM receiver connector A (14P) terminal No. 1 and body ground.

XM RECEIVER CONNECTOR A (14P)



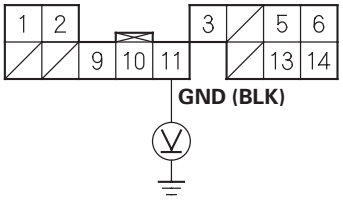
Wire side of female terminals

Is there battery voltage?

YES—Go to step 8. ■

NO—Repair open in the wire between the navigation unit and the XM receiver. ■
8. Reconnect XM receiver connector A (14P).
9. Measure the voltage between XM receiver connector A (14P) terminal No. 11 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Substitute a known-good navigation unit (see page 23-155), and recheck. If the symptom/indication goes away, replace the navigation unit. ■

NO—Repair open in the wire between the XM receiver connector and the navigation unit. ■

Symptom Troubleshooting (cont'd)

Poor or no sound with XM radio (Audio unit does display XM channels) (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the XM radio reception in an open area. Poor reception/interference can be caused by nearby tall buildings, mountains, or high-voltage power lines.
- Check the connectors for poor connections or loose terminals.
- If you can only tune to channel 000, 001, 174, and 247, make sure the navigation unit is set to channel mode (see owners manual), if it is set to channel mode, call XM Satellite Radio customer support, and check the account activation status.

1. Turn the ignition switch to ON (II).
2. Turn on the navigation unit and select XM radio.
3. Check for an error message on the display.

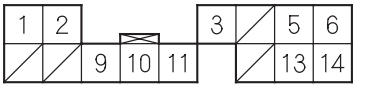
   Are there any messages displayed?

   YES—Go to error code list (see page 23-27). ■

   NO—Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Disconnect navigation unit connector E (14P) and XM receiver connector A (14P).
6. Check for continuity between XM receiver connector A (14P) and body ground according to the table.

XM receiver connector	Wire color
A5	WHT
A6	RED
A13	BLK
A14	GRN

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

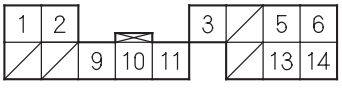
YES—Short to body ground in the wire(s) between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

NO—Go to step 7.

7. Check for continuity between terminals of XM receiver connector A (14P) according to the table.

From terminal	To terminals
A4 (GRY)	A5 (WHT), A6 (RED), A13 (BLK), A14 (GRN)
A5 (WHT)	A6 (RED), A13 (BLK), A14 (GRN)
A6 (RED)	A13 (BLK), A14 (GRN)
A13 (BLK)	A14 (GRN)

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

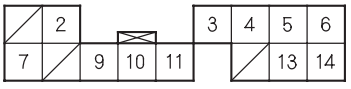
YES—Short in the wires between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

NO—Go to step 8.

8. Check for continuity between navigation unit connector E (14P) and XM receiver connector A (14P) according to the table.

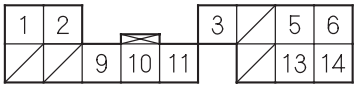
Navigation unit connector	XM receiver connector	Wire color
E5	A5	WHT
E6	A6	RED
E13	A13	BLK
E14	A14	GRN

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver (see page 23-82), then reconnect all of the connectors, and recheck. If the symptom/indication goes away, replace the original XM receiver. If the symptom/indication is still present, replace the navigation unit (see page 23-155). ■

NO—Open in the wire(s) between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

Sound Quality Diagnosis

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Use the following tests to check sound quality.

NOTE: Before beginning the following tests, write down the client's bass, treble, fader and balance settings, and then set them to their center positions for testing.

Left/Right Channel ID

Do this test to confirm proper channel routing.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 1 (left, both, right channel ID) at a normal, or slightly higher than normal, volume level.
3. The voice should be audible only from the channel or channels when indicated.
   - If the channel ID is correct for each side, go to the phase test.
   - If the channel ID is not correct, check for;
     – Shorted speaker wire
     – Faulty amplifier (Type S model)
     – Faulty navigation unit
     – Faulty audio unit

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Phase Test

Do this test to confirm proper speaker phasing.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 2 (phase) at a normal, or slightly higher than normal, volume level.
3. The voice should sound centered and focused when it is in-phase.
4. The voice should sound diffused, and have less bass when it is out of phase.
   - If the voice changes from in-phase to out of phase as indicated by the prompt, the phasing is correct. Go to electrical noise test.
   - If the voice always sounds out of phase, phasing is not correct. Check for;
     – Crossed speaker wires
     – Faulty amplifier (Type S model)
     – Faulty navigation unit
     – Faulty audio unit

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Electrical Noise Test

Do this test to check for electrical noise being induced into the audio system.

NOTE: Electrical noise may be caused by outside sources that cannot be handled by the audio system. Make sure you remove any cell phones and/or turn off any aftermarket device before beginning this test.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 4 (digital zero) at a normal, or slightly higher than normal, volume level.
3. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
4. Play track No. 5 (near digital zero) at a normal, or slightly higher than normal, volume level.
5. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
6. Play track No. 6 (SNR) at a normal, or slightly higher than normal, volume level.
7. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.

   - If no abnormal noise is heard, go to individual speaker test.
   - If the noise is present only during the SNR track, replace the navigation unit or audio unit.
   - If the noise is heard during the digital zero or near digital zero track, check for;
     – Poor ground for the audio unit, amplifier, engine or battery cable
     – Pinched or shorted speaker or amplifier wire
     – Faulty amplifier (Type S model)
     – Faulty navigation unit
     – Faulty audio unit
     – Other faulty components causing excessive electrical noise (ignition coils, alternator, door lock actuators, etc.). Disconnect any suspect components, and then replay the tracks that were originally noisy. If the noise is gone, check the component's circuit and the component.

Sound Quality Diagnosis (cont'd)

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Individual Speaker Test

Do this test to identify a faulty speaker.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 30 (steady 300 Hz tone) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound compared to the other speakers. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
   - If the sound quality produced by a specific speaker is poor, substitute it with a known-good speaker. If the poor sound quality continues, go to the sound balance test.
   - If the sound quality is OK, go to the sound balance test.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Sound Balance Test

Perform this test to identify a faulty channel or speaker.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Confirm the bass and treble are set to the center positions.
3. Play track No. 3 (pink noise) at a normal, or slightly higher then normal, volume level.
4. A static type sound should be heard through all speakers.
5. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit of a known-good vehicle.
6. Set the bass and treble to the center position.
7. Play track No. 3 (pink noise) all the same level as was played in step 3.
8. Compare the sounds made by the two vehicles.
   - If the noise sounds made by the two vehicles are very similar, go to the Frequency Sweep Test (see page 23-77).
   - If the sound does not have as much bass, check the subwoofer and circuit.
   - If the sound does not have enough hiss, check the tweeters and their circuits.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Frequency sweep

Do this test to find rattles or reverberation that may cause a perception of poor sound quality.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.

2. Play track No. 13 (sweep from 500 Hz to 35 Hz) at a normal, or slightly higher than normal, volume level.

3. Listen to each speaker for poor sound quality or reverberations caused by specific frequencies. Use the voice-over to estimate the frequency that causes the vibration. Use the audio unit's fader and balance settings to help isolate the channel with the problem.

   - If vibrations or poor sound quality are heard, go to step 4.
   - If no vibrations or poor sound quality are heard, go to sound judging.

4. Choose the appropriate track from No. 14 to 25 (small range frequency sweep) or 26 to 53 (single frequencies) to recreate the frequency that caused the poor sound quality or vibration located in step 3: this aids in diagnosis of the cause.

   NOTE: When you get to the track that recreates the problem, select the repeat function on the navigation unit or audio unit, this will help you isolate the cause.

5. Replace or insulate the source of the vibrations or, if the speaker is the source of the poor sound quality, replace it.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Sound judging

- Do this test to compare overall sound quality, imaging, and dynamics between the customer's vehicle and a known-good vehicle. Only use a vehicle of the same model and trim level for this test.
- Make sure the vehicle is using only OEM speakers.

1. In the client's vehicle, set the bass, treble, fader, and balance settings to the client's normal settings that were written down before beginning testing.

2. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.

3. Play tracks No. 7 to 12 (sound quality, midland, dynamics, and imaging demonstration tracks) at a normal, or slightly higher than normal, volume level. Write down the volume setting being used.

4. Listen to areas of the track that stand out as being either very clear, or poorer than other areas of the track.

5. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit of a known-good vehicle.

6. Play the tracks at the same volume level and the same bass, treble, balance, and fader settings as used in step 3 in the client's vehicle.

7. Listen to the same area of the track that stood out as being either very clear or poorer than other areas of the track.

(cont'd)

Sound Quality Diagnosis (cont'd)

8. Compare the client's vehicle's sound quality results to the known-good vehicle's results.

   - If the sound quality in the customer's vehicle is comparable to the sound quality in the known-good vehicle, then the client's vehicle is operating as designed.
   - If the sound quality is not comparable, check these items in order.
     – Loose or improperly installed speakers or other hardware that may become excited by the vibrations generated by the speakers
     – Poor power or ground to the stereo amplifier (Type S model)
     – Damaged speaker(s)
     – Faulty amplifier (Type S model)
     – Faulty navigation unit
     – Faulty audio unit

Seek Stop Test

Do this test to check the performance of the audio unit's AM and FM reception. Refer to symptom troubleshooting: audio sound weak or distorted, or no sound is heard from speakers (display is normal) (see page 23-39) before continuing with this test.

NOTE:
- Window tint, aftermarket theft-recovery devices and other aftermarket accessories may reduce radio reception.
- Changes in cloud cover and other atmosphere conditions will affect the ability of the navigation unit or audio unit to receive radio signals.

1. Park the client's vehicle in an open area away from buildings or other obstructions.
2. Park a known-good vehicle (same year, model, and trim level) next to the client's vehicle, facing the same direction.
3. Start the engine in the client's vehicle, and turn on the radio.
4. Set the FM receiver to 87.7 MHz.
5. Press the Seek + button and record the first station that the navigation unit or audio unit locks onto.
6. Press the Seek + button repeatedly, and write down each station that the navigation unit or audio unit locks onto until the station recorded in step 5 is reached again.
7. Set the AM receiver to 530 kHz.
8. Press the Seek + button, and record the first station that the navigation unit or audio unit locks on to.
9. Press the Seek + button repeatedly, and write down each station that the navigation unit or audio unit locks onto until the station recorded in step 8 is reached again.

10. Turn the ignition switch to LOCK (0).

11. Start the engine in the known-good vehicle, and then perform steps 4 thru 10 on the known-good vehicle.

12. Compare the number of stations received in steps 6 and 9 in the client's vehicle with the number of stations received in the known-good vehicle.

    - If the number of stations received is the same, or within 10 %, the audio unit's tuner performance is OK. The problem may be atmospheric conditions, multi path interference, or other obstructions to the radio signal.
    - If the client's vehicle receives fewer stations by at least 10 %, go to step 2 of poor AM or FM radio reception of interference (see page 23-29).

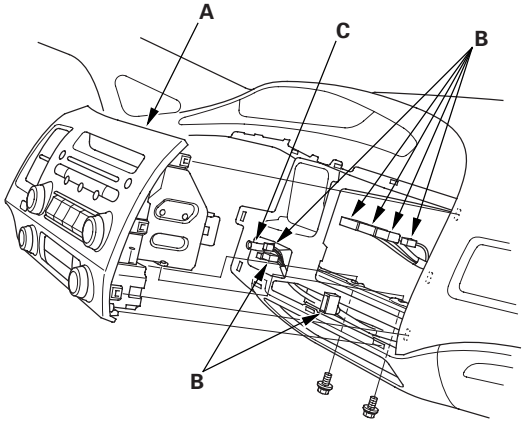
Audio Unit Removal/Installation

Without navigation 6 CD type

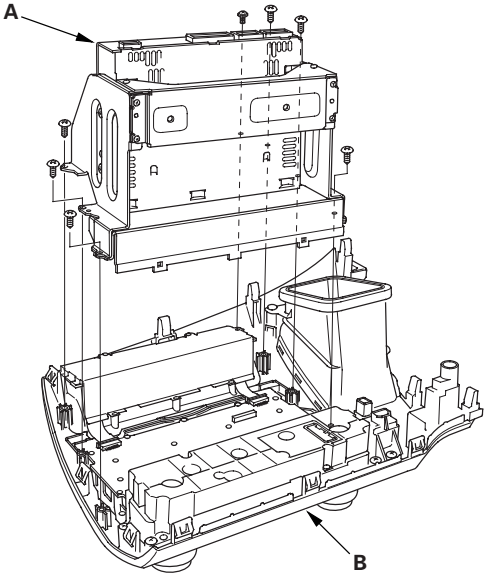
SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board(s) with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)
- Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
- If you are replacing the audio unit, write down the sudio presets (if possible), and enter them into the new audio unit.

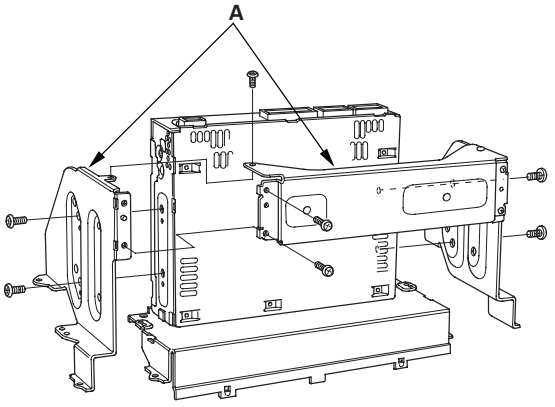
1. Remove the meter inner visor (see page 20-100).
2. Remove the center pocket hole lid and the bolts, then pull out the center panel (A).



3. Disconnect the connectors (B), and the air hose (C) then remove the center panel.
4. Remove the screws, and the audio unit (A) from the center panel display (B).



5. Remove the screws and the brackets (A).



6. Install the audio unit in the reverse order of removal, and make sure all connectors and antenna lead are secure.

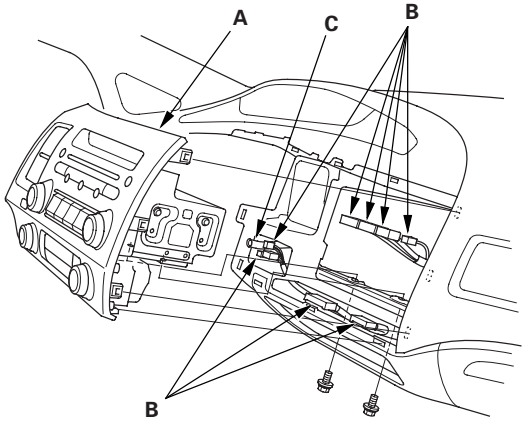
Without navigation 1 CD type

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board(s) with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)
- Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
- If you are replacing the audio unit, write down the sudio presets (if possible), and enter them into the new audio unit.

1. Remove the meter inner visor (see page 20-100).

2. Remove the center pocket hole lid and bolts, then pull out the center panel (A).

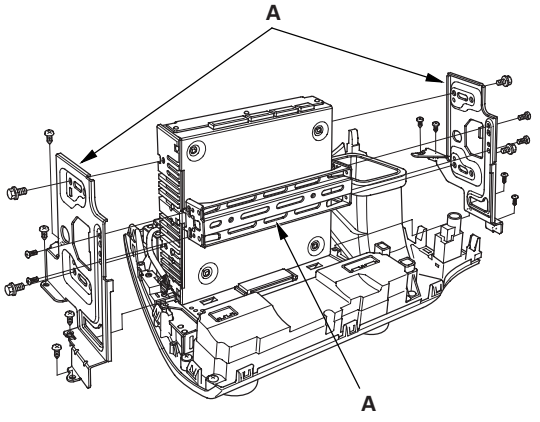


3. Disconnect the connectors (B) and the air hose (C), then remove the center panel.

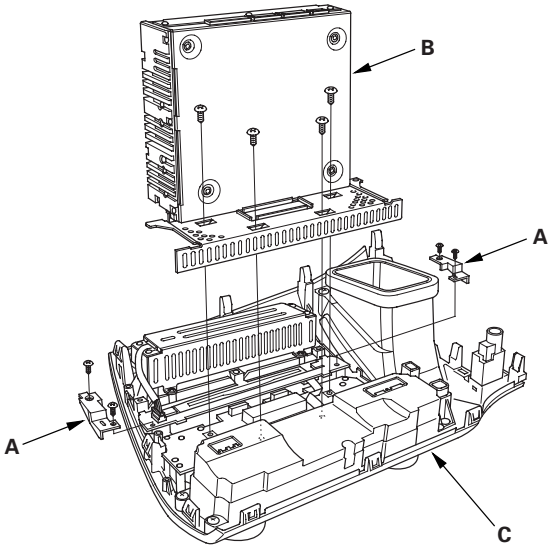
(cont'd)

Audio Unit Removal/Installation (cont'd)

4. Remove the bolts, screws and the brackets (A).



5. Remove the screws, rear covers (A) and the audio unit (B) from the center panel display (C).



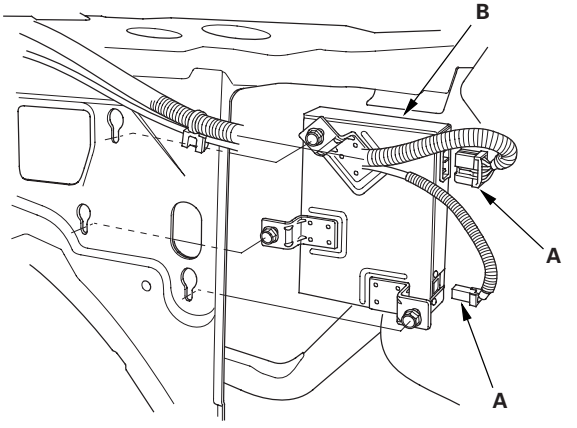
6. Install the audio unit in the reverse order of removal, and make sure all connectors and antenna lead are secure.

XM Receiver Removal/Installation

'08 model with navigation

1. Open the trunk lid and remove the right trunk side trim panel (see page 20-82).

2. Disconnect the connectors (A) from the XM receiver (B).

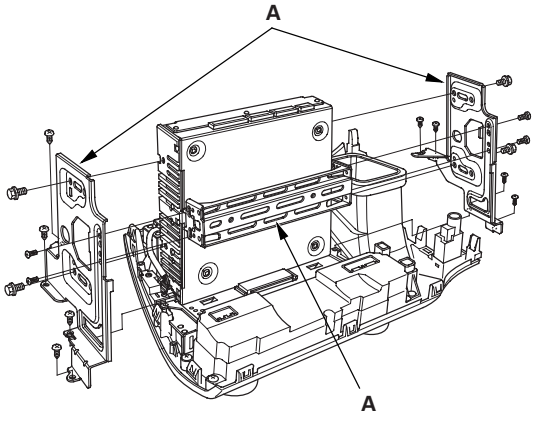


3. Loosen the three bolts, and remove the XM receiver.

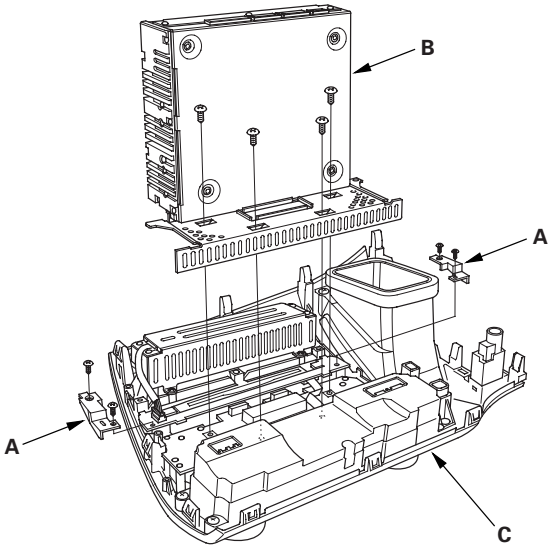
4. Install the XM receiver in the reverse order of removal.

Audio Unit Removal/Installation (cont'd)

4. Remove the bolts, screws and the brackets (A).



5. Remove the screws, rear covers (A) and the audio unit (B) from the center panel display (C).



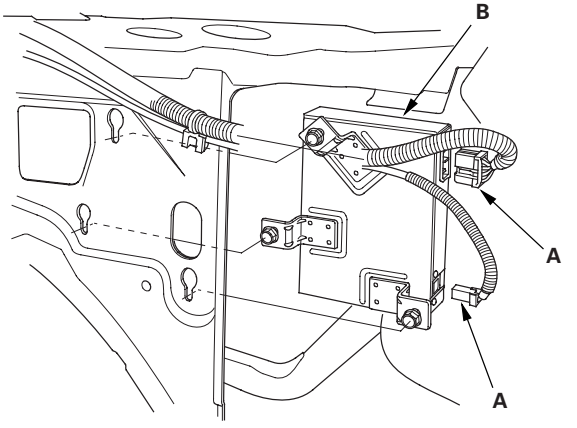
6. Install the audio unit in the reverse order of removal, and make sure all connectors and antenna lead are secure.

XM Receiver Removal/Installation

'08 model with navigation

1. Open the trunk lid and remove the right trunk side trim panel (see page 20-82).

2. Disconnect the connectors (A) from the XM receiver (B).



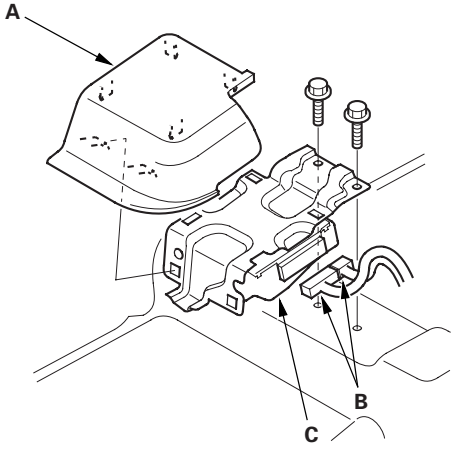
3. Loosen the three bolts, and remove the XM receiver.

4. Install the XM receiver in the reverse order of removal.

Stereo Amplifier Removal/ Installation

Type S model

1. Slide the driver's front seat forward fully.
2. Remove the amp cover (A), then disconnect the connectors (B).

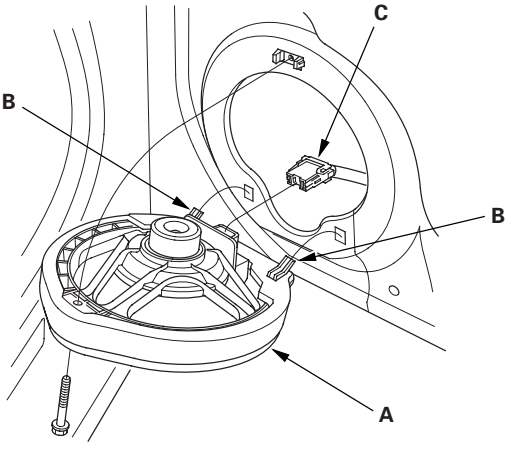


3. Remove the mounting bolts, then remove the stereo amplifier (C).
4. Install the stereo amplifier in the reverse order of removal.

Speaker Replacement

Front Door Speaker

1. Remove the front door panel (see page 20-7).
2. Remove the screw. Then lift the speaker (A) straight up to release the lower clips (B).



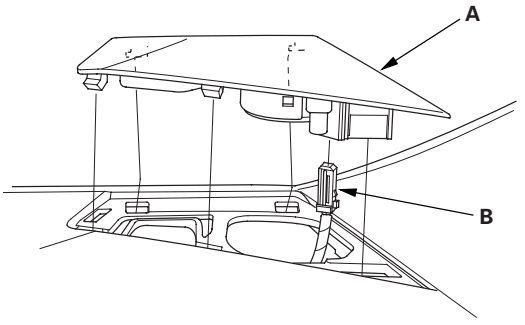
3. Disconnect the 2P connector (C), and remove the speaker.
4. Install the speaker in the reverse order of removal.

(cont'd)

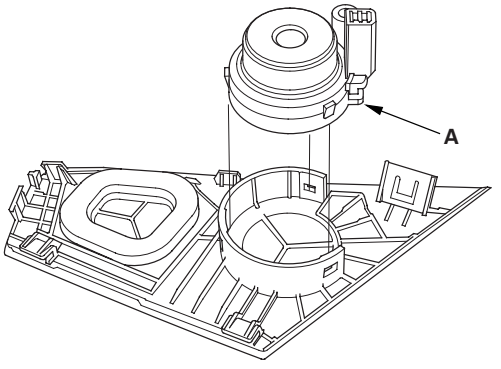
Speaker Replacement (cont'd)

Tweeter

1. Carefully pry the tweeter grille (A) out of the dashboard. Be careful not to damage the tweeter grille and the dashboard.



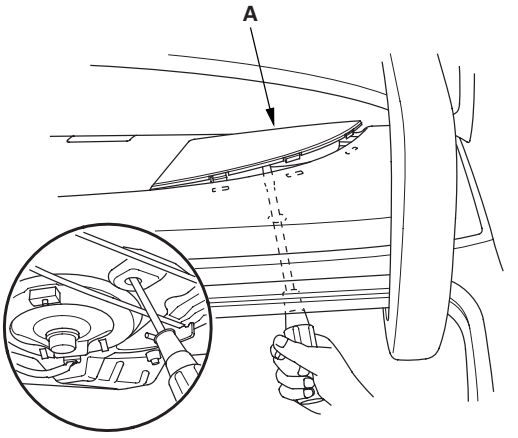
2. Disconnect the 2P connector (B) from the tweeter.
3. Remove the tweeter (A) from the speaker grille.



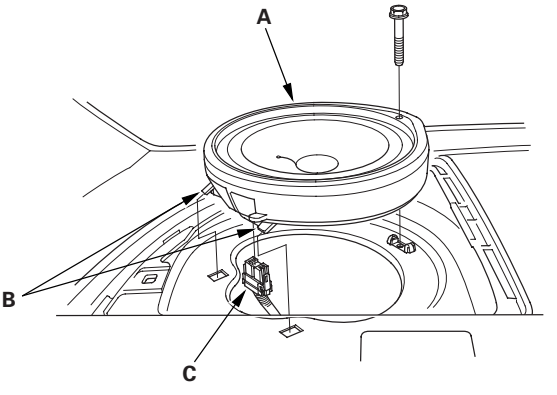
4. Install the tweeter in the reverse order of removal.

Rear Speaker

1. Remove the rear speaker grille (A).



2. Remove the screw. Then lift the speaker (A) straight up to release the clips (B).

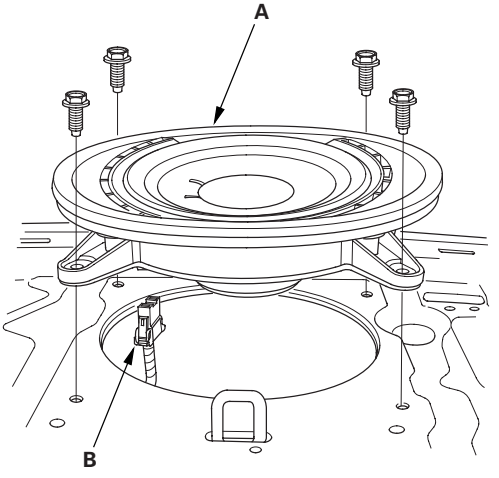


3. Disconnect the 2P connector (C), and remove the speaker.
4. Install the speaker in the reverse order of removal.

Subwoofer (Type S model)

1. Remove the rear tray (see page 20-78).

2. Remove the four mounting bolts from the subwoofer (A).



3. Disconnect the 2P connector (B), and remove the subwoofer.

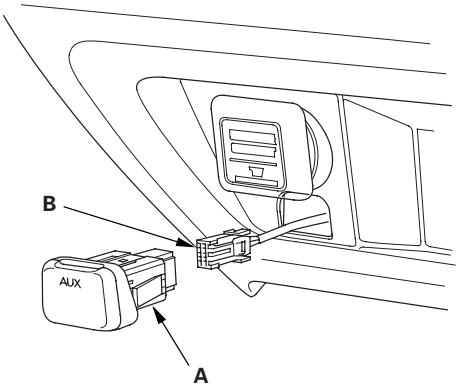
4. Install the subwoofer in the reverse order of removal.

Auxiliary Jack Assembly Replacement

'07-08 models

1. With navigation: Remove the navigation unit (see page 23-155).
   Without navigation: Remove the audio unit (see page 23-80).

2. Carefully pull out the auxiliary jack assembly (A), then disconnect the 5P connector (B).

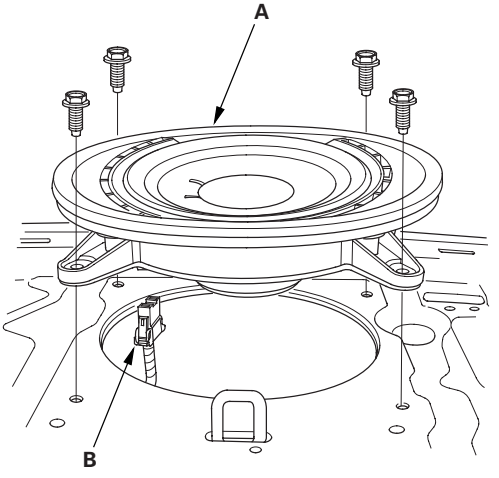


3. Install the auxiliary jack assembly in the reverse order of removal.

Subwoofer (Type S model)

1. Remove the rear tray (see page 20-78).

2. Remove the four mounting bolts from the subwoofer (A).



3. Disconnect the 2P connector (B), and remove the subwoofer.

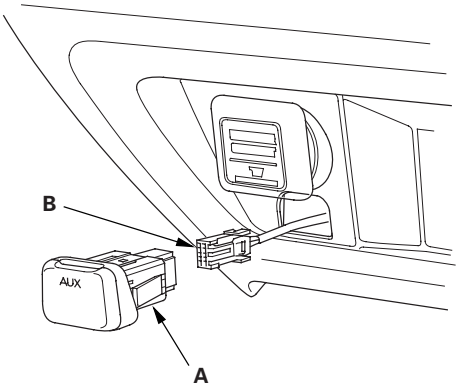
4. Install the subwoofer in the reverse order of removal.

Auxiliary Jack Assembly Replacement

'07-08 models

1. With navigation: Remove the navigation unit (see page 23-155).
   Without navigation: Remove the audio unit (see page 23-80).

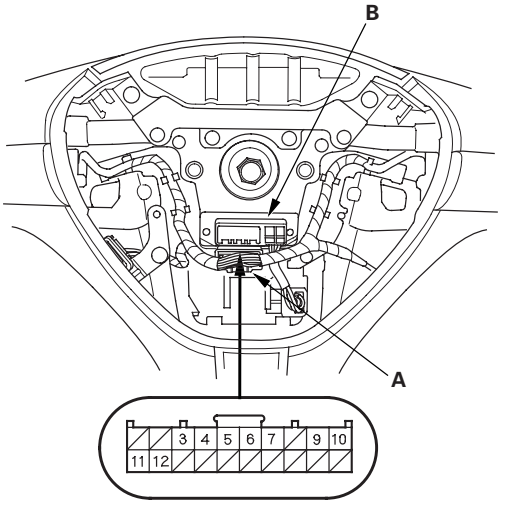
2. Carefully pull out the auxiliary jack assembly (A), then disconnect the 5P connector (B).



3. Install the auxiliary jack assembly in the reverse order of removal.

Audio Remote Switch Test

1. Remove the driver's airbag assembly (see page 24-188).
2. Remove the 20P connector (A) from the cable reel (B).



3. Measure the resistance between terminals No. 9 and No. 10 in each switch position according to the table.

Position	Resistance
No button pressed	About 10 kΩ
MODE	About 3.7 kΩ
CH (+)	About 1.7 kΩ
CH (−)	About 775 Ω
▲ (VOL.UP)	About 357 Ω
▼ (VOL.DOWN)	About 100 Ω

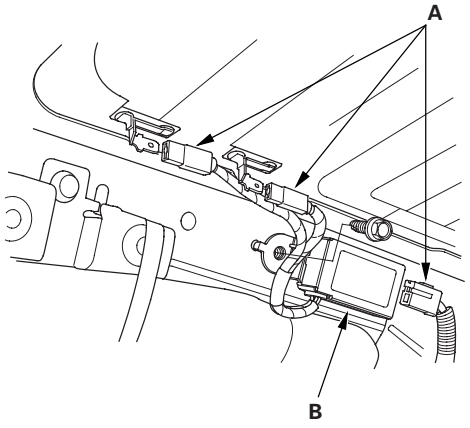
4. If the resistance is not as specified, replace the audio remote switch (see page 23-86).

Audio Remote Switch Replacement

1. Remove the steering wheel (see page 17-6).
2. Remove the audio remote switch (see page 17-7).
3. Install the audio remote switch in the reverse order of removal.

AM/FM Antenna Amplifier Replacement

1. Remove the right side C-pillar trim (see page 20-75).
2. Disconnect the connectors (A) from the AM/FM antenna amplifier (B).

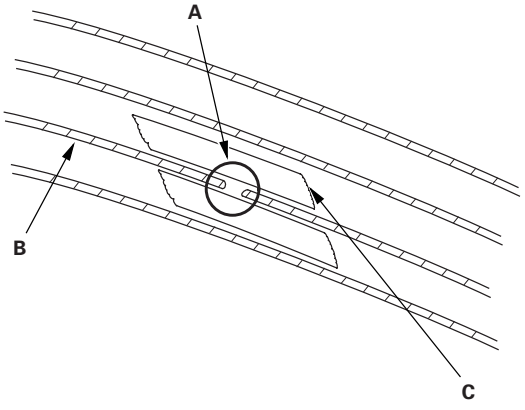


3. Remove the bolt and AM/FM antenna amplifier.
4. Install the AM/FM antenna amplifier in the reverse order of removal.

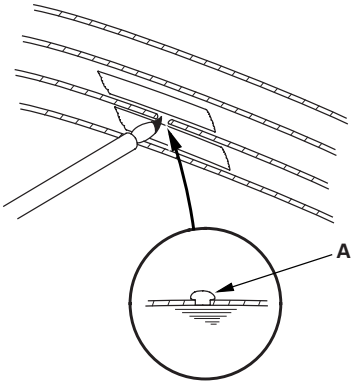
AM/FM Antenna Repair

NOTE: To make an effective repair, the broken section must not be longer than one inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.



2. Carefully mask above and below the broken portion of the window antenna wire (B) with cellophane tape (C).
3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of paint (A) extending about 1/8'' on both sides of the break. Allow 30 minutes to dry.

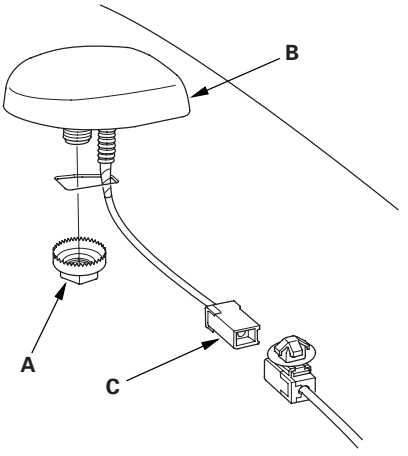


4. Check for continuity in the repaired wire.
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

XM Antenna Replacement

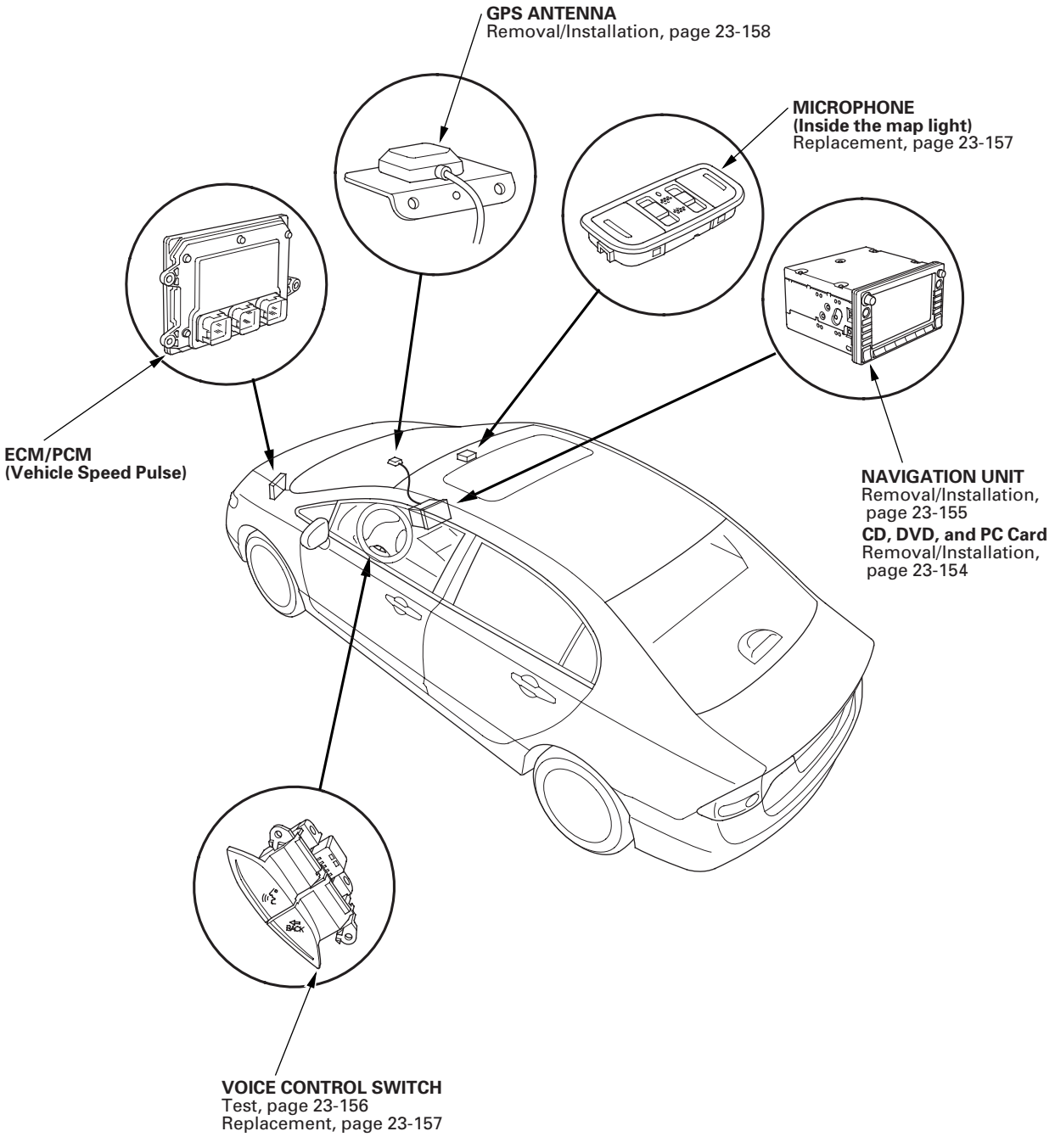
'08 model with navigation

1. Remove the headliner (see page 20-84).
2. Remove the nut (A) from the XM antenna (B).



3. Disconnect the connector (C) and remove the XM antenna.
4. Install the antenna in the reverse order of removal.

Component Location Index



General Troubleshooting Information

General Operation

Refer to the Navigation System manual for the navigation system operating procedures.

Anti-theft Feature

The navigation system has a coded theft protection circuit. Be sure you have the client's anti-theft security code before;

- Disconnecting the battery
- Disconnecting the navigation unit A (17P) and C (12P) connector
- Removing the No. 23 (10 A) fuse from the under-hood fuse/relay box

After service, reconnect power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit anti-theft security codes, then select Done.

If the code cannot be found, use the interactive Network (iN) to look it up. You can view the serial number in one of the Navi ECU diagnostic screen (see page 23-139). Alternatively, you can find the serial number from the navigation unit in the dash.

When replacing the navigation unit, be sure to give the client the new anti-theft security code.

Symptom Diagnosis

Certain circumstances and system limitations can result in occasional vehicle positioning errors. Some clients may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing clients about symptoms of the navigation system.

Self-Inertial Navigation Limitations

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause some discrepancies between the vehicle's actual position and the indicated vehicle position (GPS vehicle position).

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the engine stopped and the vehicle stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table.
- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
  - Continuous tire slippage on a slippery surface.
  - Driving with snow chains mounted.
  - Abnormal tire pressure.
  - Incorrect tire size.
  - Frequent lane changes across a wide highway.
  - Continuous driving on a straight or gently curving highway.
- Tolerances in the system and map inaccuracies will sometimes limit how precisely the vehicle position is indicated. Examples of this include:
  - Driving on roads not shown on the map (map matching is not possible).
  - Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage.
  - Driving on a road with a series of sharp hair-pin turns.
  - Driving near a gradual highway exit or transition.
  - Driving on one of two close parallel roads.
  - Making many 90 degree turns.
  - The direction to destination icon or the destination icon shown or the map may be up to several hundred feet away from the actual location.

Global Positioning System (GPS) Limitations

The GPS cannot detect the vehicle's position during the following conditions:

- Metallic window tinting above the GPS antenna.
- When only three satellite signals are received (Four satellite signals are required for accurate positioning).
- When driving near high tension power lines.
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors and theft recovery systems) and cell phones placed near the navigation system.
- When the satellite control centers are experiencing problems.

The accuracy of the GPS is reduced during these instances:

- Metallic window tinting above the GPS antenna.
- When only three satellite signals are received (Four satellite signals are required for accurate positioning).
- When driving near high tension power lines.
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors and theft recovery systems) and cell phones placed near the navigation system.
- When the satellite control centers are experiencing problems.

Muting Logic

Whenever the navigation system is giving guidance, the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

LCD Unit Limitations

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops.
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the touch panel may sometimes be noticeable because of the panel's low-reflection coating. Clean the screen with a soft damp cloth. You may use a mild cleaner intended for eye glasses or computer screens. To avoid scratching the panel, do not rub too hard, or use abrasive cleaners, or shop towels.
- The touch panel consists of a touch sensitive resistive membrane covering the display. Unlike previous systems, you must actually touch the display to activate it. Never use hard or sharp implements to operate the screen because you risk damaging the sensing membrane. If a touch switch does not function immediately, shift your finger slightly, and touch it again.

(cont'd)

General Troubleshooting Information (cont'd)

Symptom Duplication

- If you can duplicate the symptom, compare it to a known-good vehicle. Only use a vehicle of the same model, same year, same trim, and same software version. If you can duplicate the symptom in the known-good vehicle, then it is a characteristic of the system.
- When the symptom can be duplicated, follow the self-diagnostic procedures and the appropriate troubleshooting procedures.
- When the symptom does not reappear or only reappears intermittently, ask the client about the conditions when the symptom occurred.
  - Try to establish if outside interference may be the cause.
  - Try to duplicate the symptom under the same conditions the client experienced.
  - Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
  - Inspect the vehicle for aftermarket electronic devices (vehicle locators, radar detector amps, etc.) that may be hidden.

NOTICE

When troubleshooting navigation system problems, ensure that the known-good vehicle is the same software version year and model as the vehicle being serviced. Mixing incompatible navigation DVDs or other system components can delay the troubleshooting process by creating effects unrelated to the original problem.

Service Precautions

- If you need to replace the navigation unit, inform the customer that personal information in the navigation system may be lost. If possible, have the client record their personal information before the unit is replaced On '07-08 models you can back-up the navigation data and transfer it to a new navigation unit. See save users memory (see page 23-150).
- Before disconnecting the battery, make sure you have the anti-theft codes for the audio and the navigation system, and write down the audio presets. Also obtain any PGM-FI or transmission DTCs and freeze frame date (which are lost when the ECM/PCM loses power).
- When the battery is disconnected, the internal GPS clock is reset to 0:00. The clock will reset to the correct time after the system finishes GPS initialization.
- After reconnecting the battery, you have to wait to get the initial signal from the satellite. It will take from 10 to 45 minutes.
- Before returning the vehicle to the client, enter the audio and navigation anti-theft security code, then enter the audio presets.
- Adjust the setup clock settings (time zone and daylight savings) in the navigation system.

System Initialization

If the navigation system loses power (like the battery was disconnected), the navigation system requires initialization. Once completed, your system is ready to use.

This initialization requires the following:

- Entering the 4-digit anti-theft security code to unlock the system
- GPS initialization (may not be needed depending of the length of time the system was without power)
- Map matching to align the GPS to a location on the map

Entering Security Code

Any time the navigation system loses power, you need to enter the 4-digit anti-theft code on the navigation system display. The 4-digit code is located on a small card that was given to the customer. Enter the 4-digit code, then select Done.

If the navigation system anti-theft code is missing, use the interactive Network (iN) to look it up. You will need the serial number for the navigation unit to do this. You can view the serial number by entering the diagnostic mode. Select Unit Check from the main menu, then the Navi ECU diagnostic screen. This gives you the serial number without removing the navigation unit.

The iN may display more than one code for a given serial number. This is because serial numbers are not unique. You may have to try more than one 4-digit code. If no code is shown, or if the code(s) given do not work in the navigation unit, contact the Automobile Warranty department. If the code 0000 works, replace the navigation unit.

When replacing the navigation unit, make sure you give the customer the new anti-theft security code.

GPS Initialization

NOTE: You must park the vehicle outside with a clear view of the southern sky.

Depending on the length of time the battery was disconnected, your system may require GPS initialization. If it does, the following screen appears:

*****Wait*****

The system is acquiring its GPS signal.
This could take up to 10 minutes.
• Engine must be running
• Vehicle must be parked outside, away from buildings
• Do not move the vehicle at this time

If this procedure is not necessary, the system proceeds directly to the Disclaimer screen. During initialization, the system searches for all available GPS satellites, and obtains their orbital information. During this procedure the vehicle should be out in the open with a clear view of the sky.

(cont'd)

General Troubleshooting Information (cont'd)

If the navigation system finds the satellites properly, this box clears, and changes to the Disclaimer screen. If within 10 minutes the system fails to locate a sufficient number of satellites to locate your position, the following screen appears.

Navigation system is unable acquire a proper GPS signal.

- **Move vehicle to another location**
- **Turn the ignition switch off**
- **Disconnect the battery for 30 minutes to clear the GPS receiver's memory**
- **Reconnect the battery and follow the screen prompts**

After 30 minutes with this screen displayed, turn off the engine, then restart the vehicle. If the Disclaimer screen appears, the GPS initialization is complete.

NOTE:
- The average acquiring time is less than 10 minutes, but it can take as long as 45 minutes.
- If the system is still unable to acquire a signal, follow the instructions on the screen. If this screen appears again, go to troubleshooting for the GPS icon is white or not shown (see page 23-122).
- To bypass the GPS acquire screens, press and hold the Menu, and Zoom out keys at the same time. Touch the Return button on the screen to exit the diagnostic mode. This allows you to continue troubleshooting while in the shop.

Map Matching

This part of the initialization matches the GPS coordinates with a road on the map screen. To do this part of the procedure, make sure that the navigation system displays a map, and drive the vehicle on a mapped road shown on the map screen. Do not enter a destination at this time. When the name of the current road you are driving on, appears at the bottom of the screen, the entire procedure is complete. Your system is now ready to use.

Obtaining a Navigation DVD

If the navigation DVD is lost or damaged, or you need a yearly updated DVD, you have 2 ways to purchase one. You can either call 888-291-4675, or order on-line at www.hondanavi.com.

Both methods require a credit card. The DVD cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Earlier model navigation DVDs (black, orange, or older vesions with a white label)
- Map software programs manufactured by other companies
- DVD movies, or DVDs containing audio recordings
- Copies of an original Navigation DVD

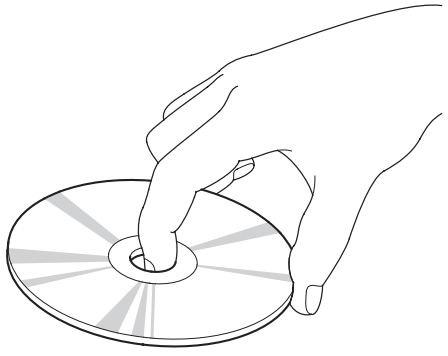
Update DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced maps and points of interest (POI) coverage
- Fixes for minor software bugs
- Additional features

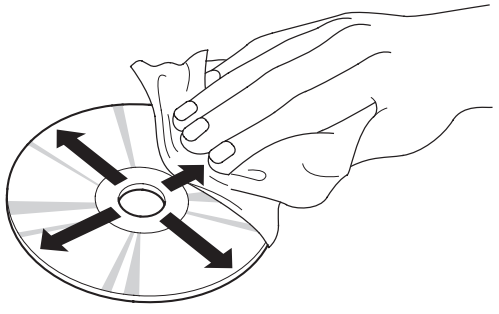
NOTE:
- Map matching must be done any time the DVD is removed or replaced.
- Always order navigation DVDs on an as-needed basis. During a typical model year, each color DVD may undergo a half a dozen software only version upgrades to fix minor issues on some or all models the DVD supports. This is normal. Usually only the letter at the end of the version number changes, while the database (maps and POIs) remain unchanged.
- Never promise your customers future free updates. There are no free programs for updating the navigation DVD. Update DVDs are generally available for purchase each fall. The on-time DVD order site provides information when an update for a particular color DVD is available, damaged discs are not warrantable.

DVD Handling and Cleaning

To avoid damaging or leaving fingerprints on the DVD, always handle it by the edges and place it in a jewel case whenever it is outside the navigation unit. Deep scratches or fingerprints on the back of the DVD can cause intermittent rebooting or other system errors.



Smudges and fingerprints can be carefully removed using a mild cleaner and tissues designed to clean eyeglasses. To clean a DVD, use a clean soft cloth. Very gently wipe across the DVD from the center to the outside edge, never in a circular motion.



Do not place stabilizer rings or labels on the DVD.

Earliest DVD Version Application for Each Model

Each navigation system DVD contains a map/POI (point of interest) database and the navigation system software for each model that it supports. Inserting an older DVD can cause problems since it lacks the software to provide the specific features needed for that model. Unfortunately, the navigation software does not detect or warn you that the version is outdated, and it may even appear to operate.

NOTE: Replacing a DVD just because the version number is higher is not always warranted. A higher software version does not necessarily mean it contains newer software for your model. The DVD contains software for all models that use the same color DVD, and a revised number may or may not have software fixes or upgrades for the model in question.

Typical warning symptoms that an outdated DVD is being used include:

- The Acura model navigation screen displayd a Honda logo while booting up.
- A newly introduced model future or accessory may not display properly, and Extension displays instead.

  NOTE: Extension may be displayed when using Music Link, but should never be displayed when XM is selected.

- The current street (the street being driven on) does not appear properly at the bottom of the map screen display when the vehicle is driven on a main road.

  NOTE: If necessary, compare the operation to the navigation system of the same model and year vehicle that has a current DVD.

(cont'd)

General Troubleshooting Information (cont'd)

How to Identify Navigation DVD Versions, and How to Inspect A DVD for Damage

To determine the navigation version on a particular model, start the engine, then locate the navigation unit. Open the DVD door, and push the eject button to eject the DVD. Hold the DVD by the edges, and check for these items:

- The DVD label color.
- Read the DVD version on the label, and note it on the repair order. The version number is near the bottom of the label text (for example, ver: 4.23A). You will need this version number:
  – To verify that the DVD version is appropriate for the vehicle. Check any official Honda service website for more service information.
  – Any time you call Tech Line regarding a navigation system issue.
  – To answer client inquires concerning update or coverage issue.

    NOTE: Clients may obtain DVDs from sources outside the normal ordering process. If you determine this is the case, recommend that your client purchase the appropriate DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

  – Check the underside of the DVD for signs of mishandling. Deep scratches, or random scratches, light swirl marks, or fingerprints can cause random lock-ups, reboots, erratic voice response, erratic positioning errors, and DVD read or format errors.

    NOTE: A damaged DVD is not covered under warranty unless the disc is damaged by the navigation unit. Damage by the navigation unit typically appears as circular scratches caused by something rubbing against the DVD as it spins. The damage may appear as arcs or complete circles on the DVD reading surface.

  – Verify that the underside of the DVD is silver, and not a copy with a blue color. Copies will not work properly and can cause other symptoms that mimic hardware problems.

- Incorrectly colored DVDs being put into navigation vehicles. This causes the system to either display error messages, or causes system malfunctions that mimic a hardware problem. This results in the client leaving with a malfunctioning navigation system.
- The DVD version provided to the client is out-of date or incompatible with a particular model. This inconveniences your client by delaying the repair, or by causing additional (and unnecessary) returns to your dealership.
- The client experiences bugs or other issues that have already been resolved in later versions currently available at the fulfillment desk.

If the DVD is defective, or has any of the issues mentioned above, return the vehicle to your client and recommend that they order the proper DVD from the Honda Disc Fulfillment Center (see ORDERING A DVD).

NOTE: Navigation DVDs do not come with replacement navigation units. If you are replacing a navigation unit because it is defective (following appropriate service manual troubleshooting), and the DVD does not eject, order a DVD. See Obtaining a navigation DVD.

How to Answer Client Questions About Navigation Coverage

Some clients may ask questions regarding a city, address or POI (point of interest) covered by the navigation system. It is better to verify a coverage question on an actual vehicle than to disappoint your client by promising coverage that may be incomplete or missing in their area. The following suggestions can be used to answer coverage inquiries from your client.

Is my address covered by the navigation system?

Using a current production vehicle (of the same model), enter the client's address (street first) to see if their area is covered. Always enter the street first, because sometimes their city may be included in a neighboring township, or under some lager metropolitan city name. If the address is shown in a later year vehicle, but not your client's vehicle, you might want to recommend that your client purchase an update.

Is my city covered by the navigation system?

For general questions about whether a city is covered, view the map coverage link on the DVD order site. On the site, you enter a year and model, and then click on the Coverage link. You then select a state or province, and the cities are listed. Of course, this does not guarantee that the client's road or address is in the system. Verifying on an actual production vehicle is always the best guarantee that your information is accurate.

The gas station on my corner is now a restaurant. Why is it still incorrect in the navigation system?

For POI-related client questions, explain that businesses are constantly moving, and there can be a considerable lag in updating the millions of POIs in the system. The database is updated annually, and the best way to the verify whether the POI is accurate is verify the inquiry on a current production vehicle.

Answers to these and other questions regarding coverage can be found in these locations:

- In the Frequently Asked Questions section of the navigation system manual.
- At the on-line DVD order site, by clicking on the **FAQs** link (see ORDERING A DVD).

Precaution on Client Sneak Previews

Your client might request a look (or sneak preview) at features in the latest navigation software. You should never preview a navigation DVD in a client vehicle. Inserting a newer DVD installs the latest software from the DVD into the memory of the client's navigation system. When the original DVD is reinstalled, the newer software remains in memory and is often incompatible with the client's original DVD Map and POI database, or software.

If wishes to see the latest navigation coverage or software features, demonstrate it on an in-stock vehicle that already has the latest DVD version.

If, by chance, a newer version is loaded accidentally, either by the dealer or the client, the only remedy is to enter the navigation diagnostic mode's Version screen and do a forced download. Check any official Honda service website for more information about what patches may need reinstalling.

Why are some features different or missing compared to my previous Honda vehicle?

Hardware and software continually go through updates and improvements. Features may change or disappear over time based on the navigation system development.

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Navigation system stays on the GPS initialization screen	Symptom Troubleshooting (see page 23-92)	• Navigation unit • GPS antenna/cable is disconnected or damaged • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches
Vehicle position icon constantly leaves road, moves erratically, or is displayed very far from actual vehicle position	Symptom Troubleshooting (see page 23-126)	• Navigation unit • GPS antenna/cable • PCM (speed and fuel pulses) • Harness/fuses/switches
System always comes up in in-line diagnostic mode	Symptom Troubleshooting (see page 23-127)	
Navigation system will not accept security code	Symptom Troubleshooting (see page 23-134)	Wrong color DVD
Navigation frequently asks for anti-theft code and/or needs GPS initialization	Symptom Troubleshooting (see page 23-131)	• Loss of voltage or poor ground (G504, G505) • Navigation unit • Low battery voltage • Harness/fuses/switches
GPS icon is white or not shown	Symptom Troubleshooting (see page 23-122)	• Navigation unit • Aftermarket accessories connected to the system • The wrong color DVD is installed • The DVD is damaged or dirty • GPS antenna/cable • Harness/fuses/switches
Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins	Symptom Troubleshooting (see page 23-126)	• Navigation unit • GPS antenna/cable • ECM/PCM (speed signal)
No picture is displayed	Symptom Troubleshooting (see page 23-119)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches
Picture has lines/rolls/other issues or is an odd color	Symptom Troubleshooting (see page 23-120)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Aftermarket accessories connected to the system • Harness/fuses/switches
Display day/night mode does not work or does not work properly	• If you use the display mode button, the auto day/night function is disabled until you turn the ignition switch to ON (II) • Symptom Troubleshooting (see page 23-128)	• Display brightness set to High in day or night mode • Gauge control module • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches
System locks up or freezes constantly	Symptom Troubleshooting (see page 23-128)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches

Symptom	Diagnostic procedure	Also check for
Voice guidance cannot be heard, is broken up, or there is static	Symptom Troubleshooting (see page 23-122)	• Volume or voice feedback setting (see Owner's manual) • Navigation unit • Harness/fuses/switches
Voice control does not work/ respond	Symptom Troubleshooting (see page 23-123)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Microphone harness/switches
Navigation cannot control HVAC by voice command	Symptom Troubleshooting (see page 23-130)	• Wrong color DVD is installed • Harness/fuses/switches • Wrong navigation unit (model code)
Navigation cannot control XM radio	Symptom Troubleshooting (see page 23-130)	Low or weak battery
Navigation cannot control audio system	Symptom Troubleshooting (see page 23-129)	Wrong color DVD
Navigation display buttons do not work or respond properly	Symptom Troubleshooting (see page 23-121)	• Navigation unit • Open/short between the XM receiver or the GA-Net bus • The wrong color DVD is installed • The DVD is damaged or dirty
Today's Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The client has not entered a group of locations for Today's Destinations. This is normal. The button is only selectable if the client is using this function	See Owner's Manual
Some set-up and information functions of the navigation system are grayed-out and do not work	Client did not select OK from Disclaimer screen. Refer to System Function Diagram (see page 23-111)	
Previous Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The vehicle may be new, or the client deleted the destination. Enter a destination, and allow the system to route to it. After the trip, the Previous Destinations button will be selectable	
Address cannot be found or system gives poor routing	• Verify proper operation and system limitations using the owner's manual • See Answering customer question Navigation coverage in general troubleshooting • Refer to Database limitation in the navigation system manual to report database errors	• Database limitations (address not in database) • Wrong color DVD installed
OPEN/CLOSE function of the display does not work	Symptom Troubleshooting (see page 23-132)	• Navigation unit • Harness
Navigation display will not close	Symptom Troubleshooting (see page 23-133)	• Navigation unit • Harness
Navigation display does not open or opens part way	Symptom Troubleshooting (see page 23-133)	• Navigation unit • Harness
PC card will not play/card icon on audio screen cannot be selected	Symptom Troubleshooting (see page 23-67)	Navigation unit

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Navigation display stays on with ignition switch in LOCK (0)	Symptom Troubleshooting (see page 23-129)	• Harness/fuses/switches • Aftermarket accessory connected to the system
DVD read error messages	Symptom Troubleshooting (see page 23-127)	• Navigation unit • Wrong color DVD installed • Damaged DVD
Navigation system will not go beyond the disclaimer screen and displays the OK button	See navigation display buttons do not work or respond properly	• Wrong color DVD installed • Scratched or damaged DVD • Navigation unit
The navigation anti-theft code card is lost or missing	See anti-theft feature (see page 23-90)	
The vehicle icon lags behind when the vehicle turns	See self-inertial navigation limitations (see page 23-90)	• Aftermarket accessories connected to the system • GPS antenna/cable
Navigation screen is darker than normal or takes time to brighten when it is cold	See LCD display unit limitations (see page 23-91)	
The navigation clock is off by 1 to 3 hours after replacing the navigation unit	See service precautions (see page 23-92)	• Perform map matching (see page 23-94) • GPS antenna/cable • Check and adjust the clock settings
A new navigation DVD is needed	See obtaining a navigation DVD (see page 23-94)	
Time is not correct	Reset Time Adjustment in set-up	The wrong colored DVD or version is installed
The DVD is scratched or dirty	See ''DVD Handling and Cleaning'' (see page 23-95)	Navigation unit
The wrong DVD was installed and now the system does not function properly	See Precaution customer Sneak Previews (see page 23-97)	• Install the correct version DVD • Check any official Honda service website for more service information about the navigation system
A specific city cannot be found	See How to answer client questions about navigation coverage (see page 23-97)	• The DVD is scratched or dirty • Refer to Database limitation in the navigation system manual to report database errors
The Honda Globe Screen (not the Acura Globe Screen) appears every time the vehicle is started	Symptom Troubleshooting (see page 23-135)	Also see the symptom The wrong DVD was installed and now the system does not function properly

System Description

Overview

The navigation system is a highly sophisticated, hybrid locating system.

The navigation unit uses global positioning system (GPS) satellite signals, internal yaw and vehicle speed inputs, and a map database to show where the vehicle is and to help guide you to a desired destination.

The navigation unit's GPS receiver receives signals from the GPS, a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude, and elevation of the vehicle.

Signals from the system's yaw rate sensor (inside the navigation unit) detects turns, and the ECM/PCM vehicle speed pulse (VSP) and reverse signal enable the system to keep track of the vehicle's speed and direction of travel. The advantage of this hybrid system is that the system can track your position if either the GPS signal or the vehicle speed signal is missing. For instance, when in a tunnel (no GPS), the speed signal is used to update your position on the map. Alternately, while the vehicle is being transported on a ferry, GPS signals can show the vehicle position on the map as it crosses the water.

The navigation system uses the location, direction, and speed information to display the appropriate map and calculate a route to the destination entered. As you drive to a destination, the system provides both visual and audio guidance. Audio guidance is sent to the audio unit, and an RGB graphics color signal is sent to the navigation display.

This navigation system also has voice recognition that allows voice control of most of the navigation, and audio functions. The voice control switches (navigation TALK and navigation BACK buttons on the steering wheel) activate the voice control system. The microphone on the ceiling receives your voice commands. For more information on this feature, consult the navigation owner's guide.

The illumination signal is used by the navigation unit to automatically switch the display mode between the Night and Day display modes. When the headlights are on, the dash brightness control setting full brightness overrides the Night display mode, and allows a daytime navigation display with the lights on.

When the navigation system is giving voice guidance commands, the front speakers are muted. When the voice control system is being used (navigation TALK button pressed), all of the speakers are muted.

The internal GA-Net II bus passes information back and forth between the navigation display, the navigation unit, and the audio system components. The information passed on this bus are touch button commands, audio muting signal, audio (radio and XM), and any open in these bus lines can affect the navigation system or other audio accessory operation.

The clock on the navigation display is set and maintained by the navigation unit. The time is automatically adjusted for daylight savings, and time zone changes while driving. The time can be adjusted in setup.

Additional information is available about the navigation components following the System Diagram. A glossary of terms that are used throughout this section follows the detailed information.

The Navigation System Manual in the glove box covers all of the system functions and settings. Use this as a resource when evaluating a client concern.

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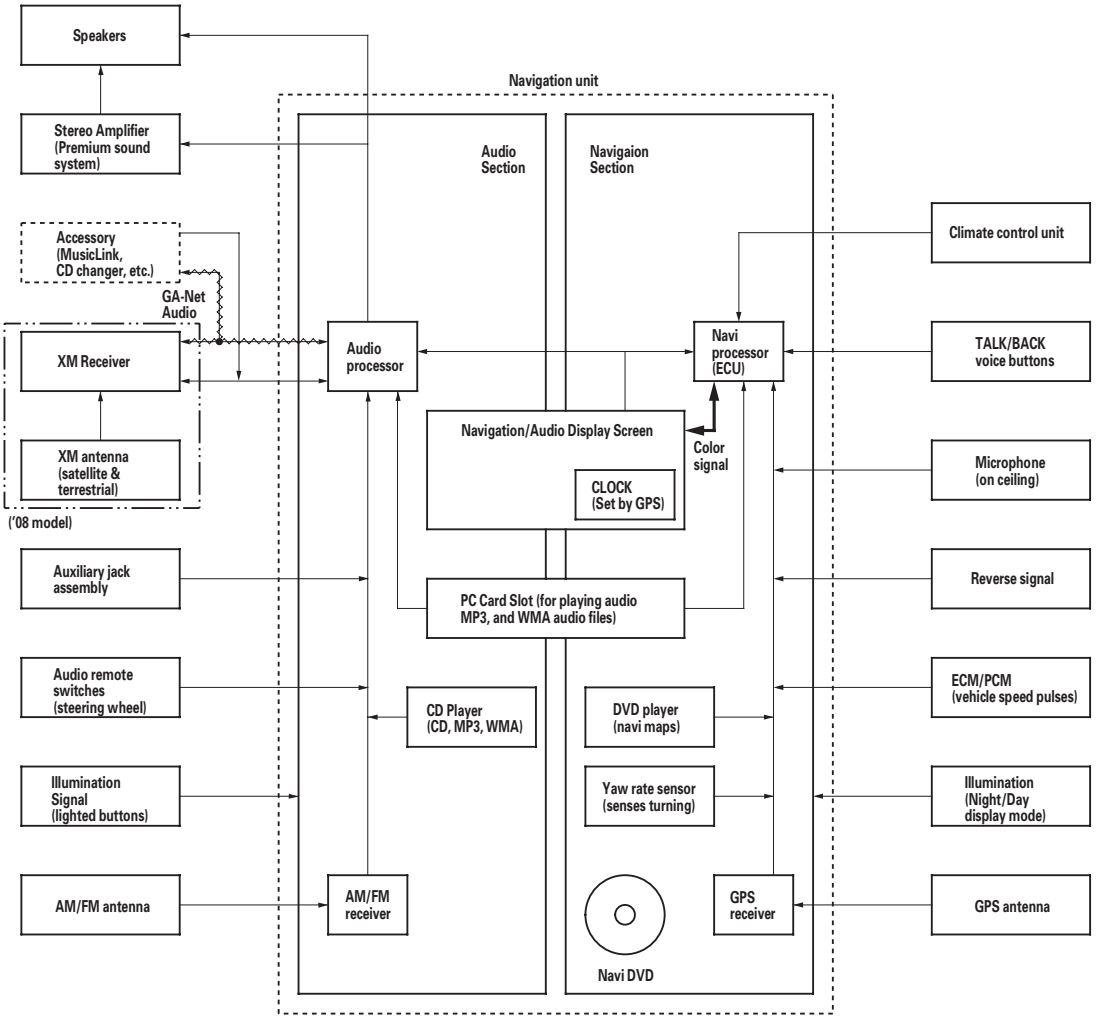
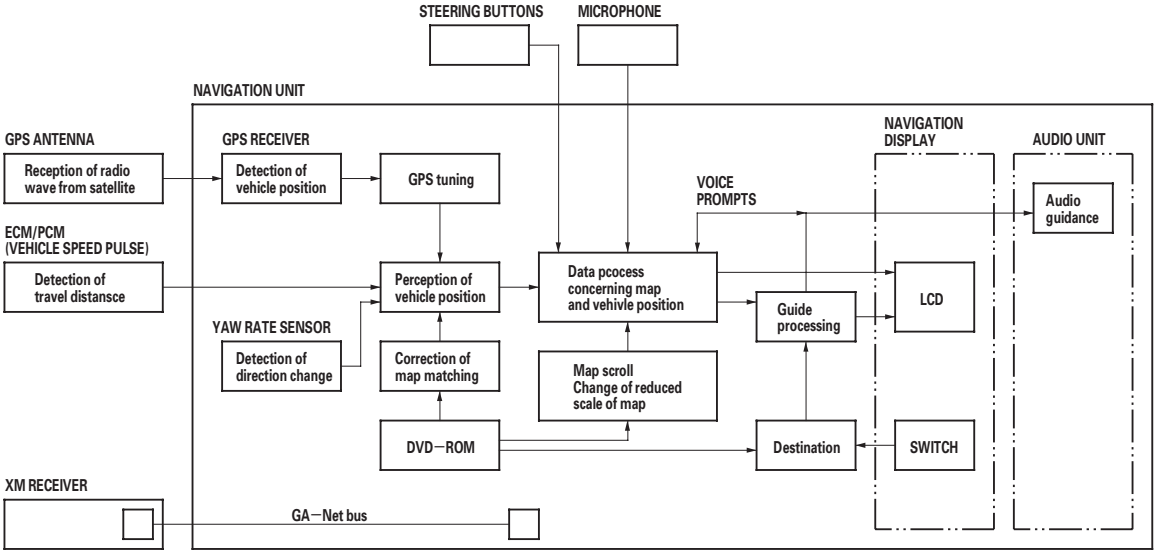
System Description (cont'd)



Navigation Function

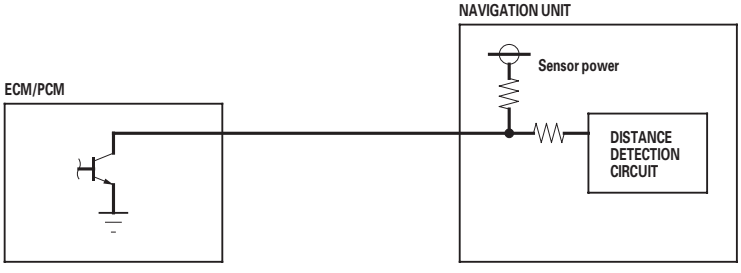
The navigation system is composed of the navigation unit, the ECM/PCM (vehicle speed signal), the GPS antenna, the microphone, the voice control switch, the XM receiver, and the climate control unit.
These units communicate with each other on the GA-Net bus.

Function Diagram



Vehicle Speed Pulse

The vehicle speed pulse is sent by the ECM/PCM. The ECM/PCM receives a signal from the countershaft speed sensor, then it processes the signal, and transmits it to the speedometer and other systems.

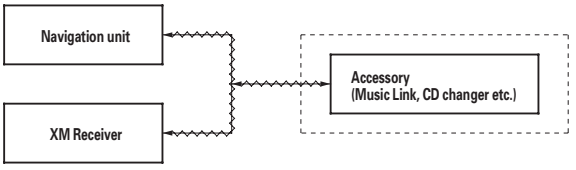


(cont'd)

System Description (cont'd)

GA-Net Bus Configuration

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include audio/XM selections by voice, and XM station and music title names. Because the entire bus is daisy chained between components (see diagram below), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. The addition of any factory audio accessory must maintain the continuity of the GA-Net bus by installing the Y cable included with the accessory kit.

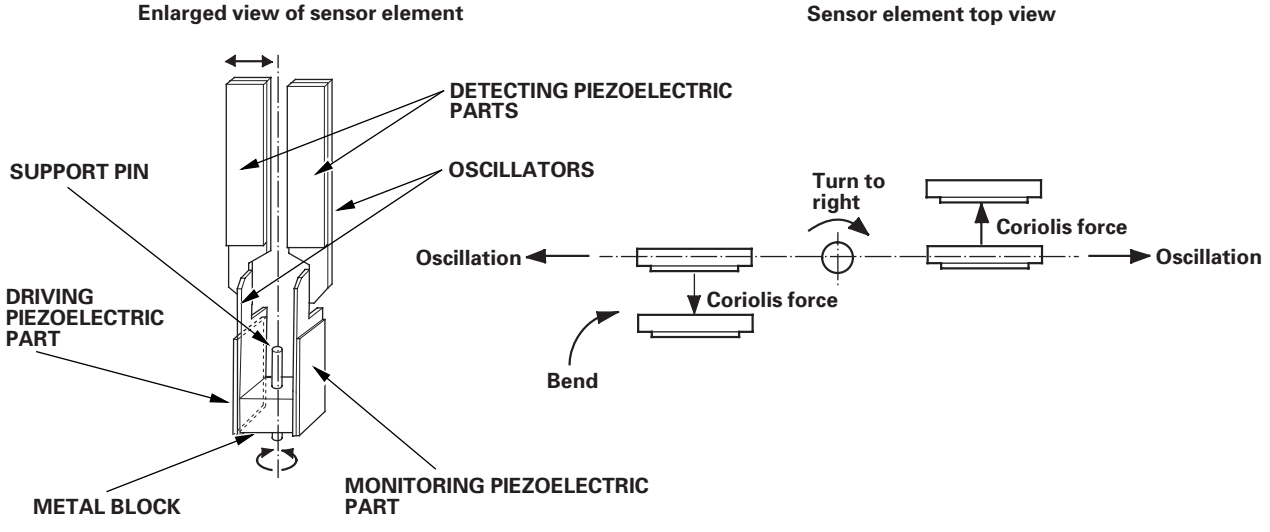


Yaw Rate Sensor
The yaw rate sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

Sensor Element Structure
The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

Oscillation Gyro Principles
The piezoelectric parts have electric/mechanical transfer characteristics. They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and Coriolis force. (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

Operation
1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part, The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force).
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.

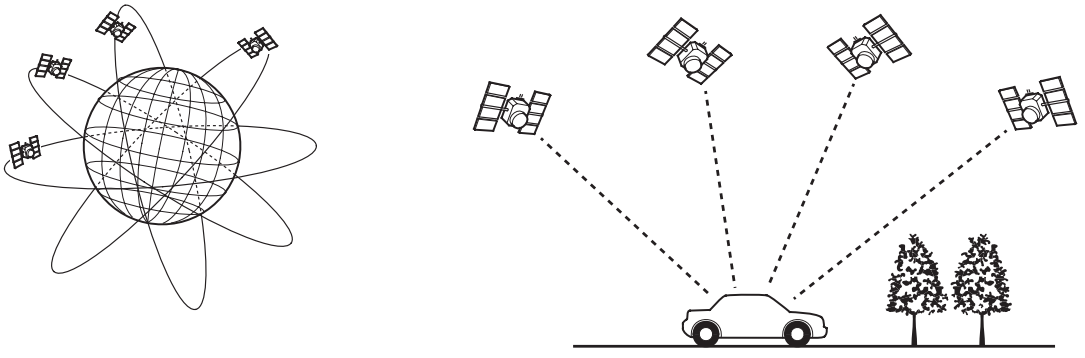


(cont'd)

System Description (cont'd)

Global Positioning System (GPS)
The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by using the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from four or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellite's positions in its respective orbit.

Position Detection Image with GPS Satellite



Precision of GPS
The precision of the GPS varies according to the number of satellites from which signals are received and the view of the sky. The accuracy is indicated by the color and shape of the GPS icon shown on the display.

GPS ICON COLOR	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
No GPS icon	None	Faulty reception	The GPS can't be utilized due to a faulty GPS receiver, open in the wire, or other fault or interference.
White GPS icon	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Green GPS icon	3	Vehicle position detectable in 2 dimensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
	4 or more	Vehicle position detectable in 3 dimensions (elevation displayed)	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)

GPS Antenna
The GPS antenna amplifies and transmits the signals received from the satellites to the GPS receiver.

GPS Receiver and Clock
The GPS receiver is built into the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The current time vehicle position and signal reception condition is transmitted from the GPS receiver to the navigation unit to adjust vehicle position.

Navigation Unit
The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions and the DVD-ROM drive, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the navigation display and audio driving instructions to the audio unit.

Calculation of Vehicle Position
The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCMs vehicle speed pulse (VSP) signal.

Map Matching Tuning
The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicated on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS Tuning
The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

Distance Tuning
The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

Route Guidance
The navigation unit can calculate different routes to a selected destination. You have five options:

- Direct Route — Calculate a route that is the most direct.
- Easy Route — Calculate a route that minimizes the number of turns needed.
- Minimize Freeways — Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Minimize Toll Roads — Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways — Calculate a route that uses freeways as much as possible.

Audio Guidance
The navigation unit transmits audio driving instructions before entering an intersection or passing a junction. The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers are muted when the voice control system is being used.

DVD-ROM
The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:

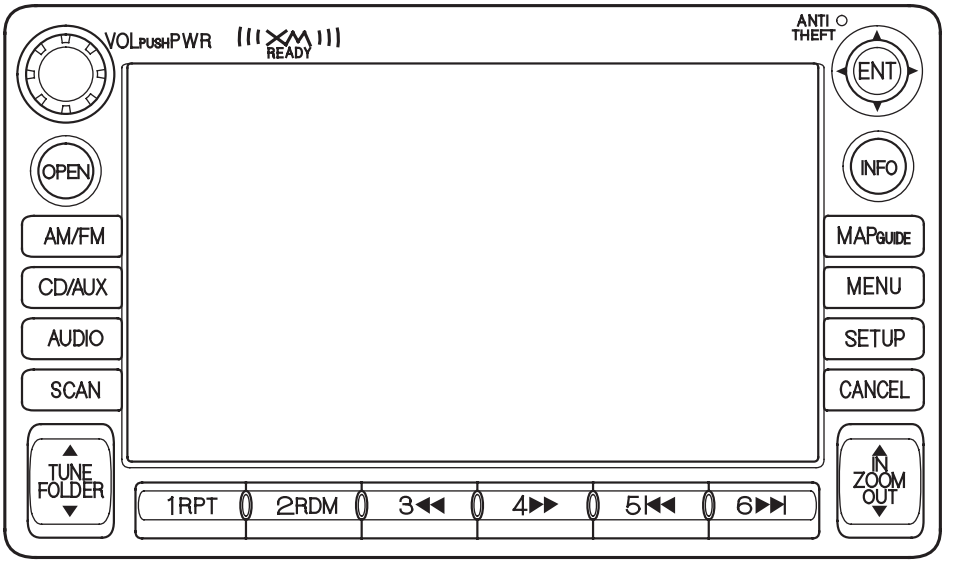
- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.

(cont'd)

System Description (cont'd)

Audio Unit (Built in the navigation unit)
The audio unit receives the audio driving instructions from the navigation unit, and transmits the instructions through the front speakers even when the audio system is in use.

Navigation Display
The navigation display uses liquid crystal display (LCD). The LCD is a 6.5-inch-diagonal, thin film transistor (TFT), stripe type with 65,536 color, The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD consists of a touch sensitive resistive membrane with an infinite number of possible touch locations.



Microphone
The microphone (on the ceiling, near the front map light) receives voice commands and transmits them to the navigation unit for interpretation.

Navigation TALK Button
Activates the voice control system in the navigation unit to accept voice commands.

Navigation BACK Button
Returns the display to the previous screen (similar function as the CANCEL button).

Glossary
The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

Item	Definition
Active noise cancellation (ANC)	The active noise cancellation system cancels some of the vehicle noise. This occurs in the 1,500—2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a canceling sound from the audio speaker.
Address Book	The HFL system can import a copy of the phone book from and approved HFL compatible phone and display the imported phone book on the navigation screen as the address book. See the Owner's Manual for more information.
B-CAN	Body CAN Bus (see CAN)
Bread-crumbs (White dots)	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CAN	Controller Area Network. This communication network allows processors in the vehicle to send/receive information. The fuel pulses used by the MID trip computer are received from the ECM/PCM using the F-CAN (Fast Controller Area Network) bus.
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
CSS	Countershaft (Output) Speed Sensor. This sensor reads the output shaft speed at the transmission and provides a speed pulse to the ECM/PCM.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed Coverage Area. Main metropolitan areas in the Lower 48 states, and Canada are mapped to this level. See the navigation system manual for a list of these areas.
DTC	DTC Diagnostic Trouble Codes. Use HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when tall buildings, or driving in a tunnel obscures the GPS signal.
Digitized road	A road that appears on the navigation screen. The road name appears at the bottom of the navigation screen. If the user drives off road, the navigation system displays not on a digitized road, and after 1/2 mile, the bread-crumbs appear.
Disclaimer screen	Screen containing cautionary information. It is meant to be read carefully and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation Owner's Manual for information on how to order a replacement or an update DVD.
ECM	Engine Control Module. Typically referred to as the ECM.
FAQ	Frequently Asked Questions. See the navigation system manual for a list of the customer FAQs, and troubleshooting information.
F-CAN	Fast CAN Bus (see CAN)
GA-NET	The GA-NET allows the audio unit to communicate with all the audio and navigation components in a vehicle. If there is an open in the GA-NET, components or the entire audio and navigation system may appear inoperative.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately position the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC used for diagnosing vehicle problems. This device can be used to obtain DTC codes for diagnosis of the navigation system and CAN related problems.
HFL	HandsFreeLink uses Bluetooth technology as a wireless link between it and an approved Bluetooth compatible cell phone. See the vehicle Owner's manual or Quick Start Guide for more information.
HIP (AcuraLink)	Honda Information Platform (see AcuraLink)
H/U	Head Unit. The audio unit in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
Interface Dial	This control device consists of a rotating knob and the buttons surrounding it. This device allows control of the navigation, audio, and climate functions displayed on the screen.
Jog Dial	See interface dial.

(cont'd)

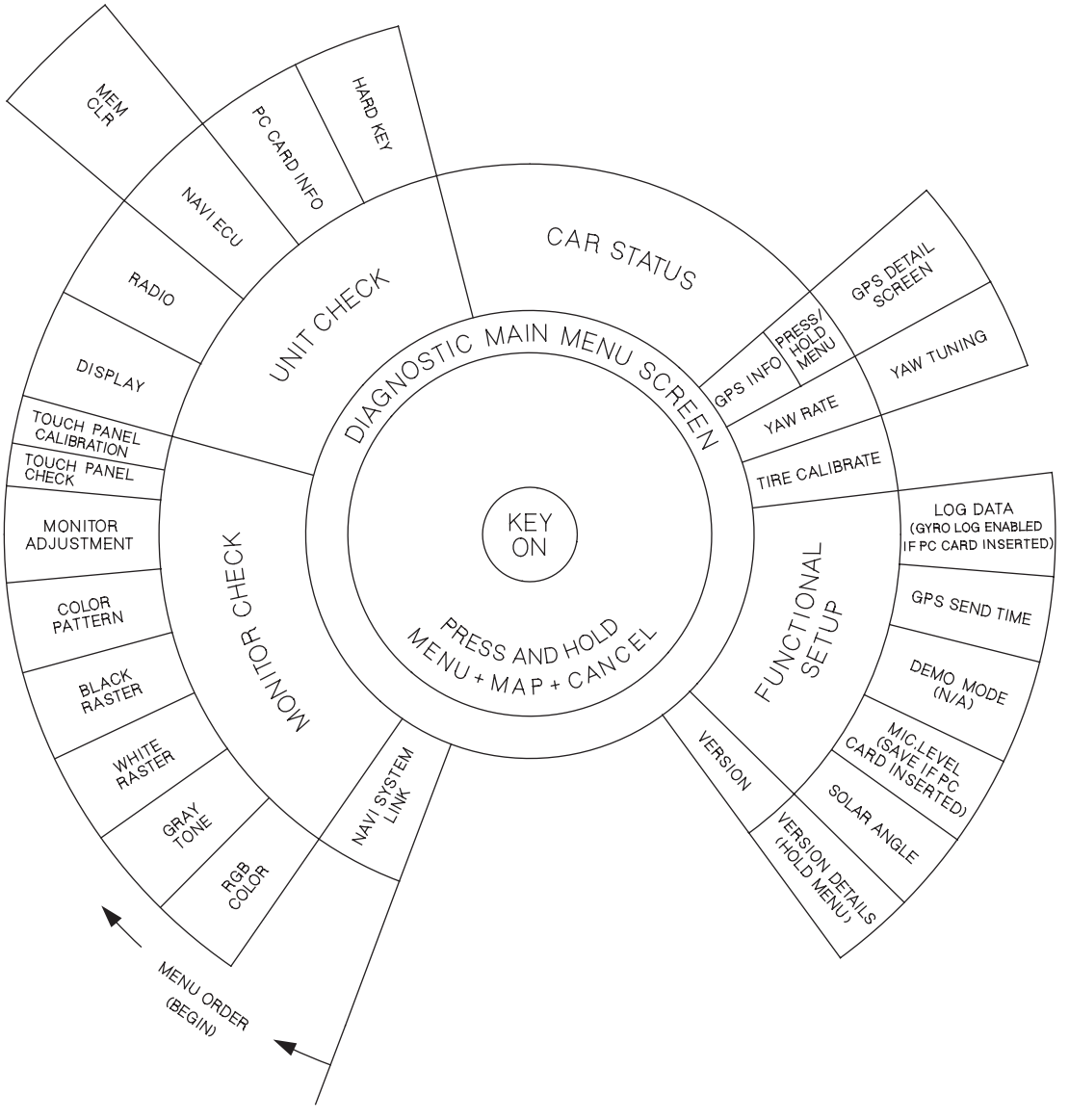
System Description (cont'd)

Item	Definition
LCD	Liquid Crystal Display (the navigation screen)
Map matching	The received GPS information allows the navigation system to position the vehicle on the map. Map matching has occurred if the map screen displays the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling. The ANC circuit may also use it to check its tuning.
MID	Multi-Information Display
MW	Maneuver Window. While on-route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System.
Off-road tracking	See bread-crumbs.
Off route	Off route This occurs when the user leaves mapped roads. Off road tracking dots (bread-crumbs) are displayed if the option is enabled in the setup menu. The user can use them to return to a mapped road. The bottom of the navigation screen displays Not on a digitized road.
Outlying areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since they have not been verified.
Paired	Linking your cell phone to the HFL.
PC Card slot	PC Card Slot The PC Card (PCMCIA, type II) slot is for factory use only. Make sure that the sliding door is closed at all times, if opened, an error message is displayed on the screen.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal, also refered to as PCM.
PCMCIA	A computer industry defined term referring to the PC Card slot standard.
PIN	Personal Identification Number, a random 4 digit number created by the customer to protect personal information.
POI	Point Of Interest. These are the businesses, schools, etc. found under the places option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools, etc. See the Navigation System Manual Driving to Your Destination for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
SCS connector	The service check signal 2-pin connector used to put the navigation system into the diagnostic mode.
Security code	Code needed to activate the navigation system. You can get the security code from the iN by entering the navigation unit serial number. You can find the serial number on the diagnostic screens (unit check, Navi ECU), or on the underside of the navigation unit.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either System Description, or System Diagnosis Mode (see page 23-135).
Unverified Streets	These streets have not been verified for turn restrictions, one-way, etc. They appear light brown on the map. You can enter address destinations in these areas, but depending on your Unverified Routing choice in setup, voice guidance may end at the last verified street closest to your destination.
USB	Universal Serial Bus. the USB is used for playing the compressed audio files (MP3, WMA, and AAC) on the external device through the audio unit.
Verified streets	These streets consist of the detailed metropolitan coverage areas, and all other inter-town connection roads. These roads are shown in black or red on the map. (interstates are red)
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map.
VR	Voice Recognition. This allows voice control of many of the navigation functions. The hardware consists of the microphone, voice control switch (navigation TALK/BACK buttons), and the center speaker. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the PCM (via the CSS) is used to update the Vehicle position on the map. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal and directs the VP to move backwards on the map.
XM	This device receives information from the XM satellites and passes XM audio information to the audio unit. In addition, traffic information is sent to the navigation unit.
Yaw Sensor	This device is located in the navigation system control unit and senses the side-to-side twisting force generated when the vehicle turns. See a detailed description of how this sensor works in system description.

Diagnostic System Diagram

This diagram below shows and over view of the navigation diagnostic features starting at the center and working outward in layers. The diagram starts with Key on. From any of the navigation Map or Menu screens, press and simultaneously hold the keys Menu, MAP/GUIDE, and Cancel.

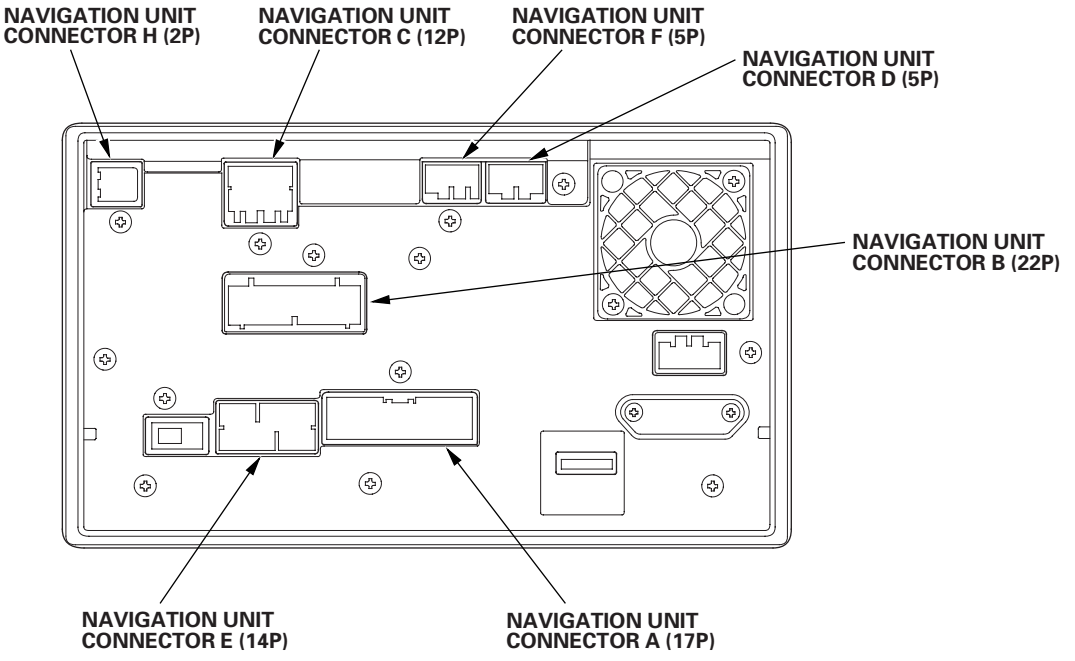
Finally, the diagram shows the available diagnostic menu choices, starting at the bottom left, and moving clockwise. In most cases, do not clear or change settings in any diagnostic screen unless instructed to do so in the explanation, or by the factory. If the factory asks you to insert a PCMCIA memory card into the PC card Slot, then the features specified on the diagram with PC card are available.



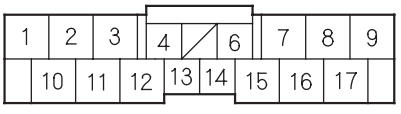
(cont'd)

System Description (cont'd)

Navigation System Connector Location

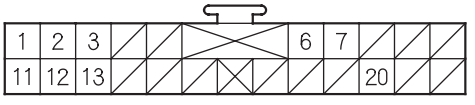


NAVIGATION UNIT CONNECTOR A (17P)



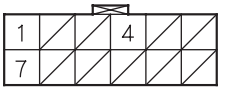
Wire side of female terminals

NAVIGATION UNIT CONNECTOR B (22P)



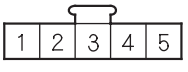
Wire side of female terminals

NAVIGATION UNIT CONNECTOR C (12P)



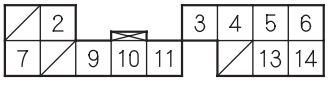
Wire side of female terminals

NAVIGATION UNIT CONNECTOR D (5P)



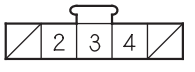
Wire side of female terminals

NAVIGATION UNIT CONNECTOR E (14P)



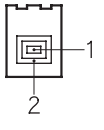
Wire side of female terminals

NAVIGATION UNIT CONNECTOR F (5P)



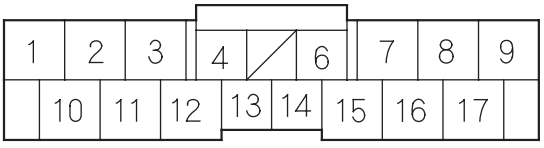
Wire side of female terminals

NAVIGATION UNIT CONNECTOR H (2P)



Terminal side of female terminals

Navigation Unit Inputs and Outputs for Connector A (17P)



Wire side of female terminals

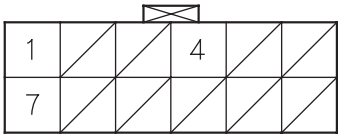
Navigation Unit Connector A (17P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	RED	ILL (−)	Ground for illumination light	With full dash lights brightness, 0 V	If open: When brightness = Auto, night mode for the display is inoperative when lights on. If short to ground: No change to display.
9	BLK	RADIO GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.
10	GRY	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights	Light on = battery voltage, Lights off = 0 V	If open: When brightness = Auto, night mode for the display is inoperative when lights on. If short to ground: Blows fuse No. 14 (7.5 A) in under-dash fuse/relay box.
13	BLU	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from ECM/PCM	Pulses 0—5 V: Average 2.5 V, when moving	If open: No vehicle speed pulses. Diagnostic screen Car Status, VSP Navi = 0. If short to ground: No vehicle speed pulses. Diagnostic screen Car Status, VSP Navi = 0.
17	WHT	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows fuse No. 23 (10 A) in the under-hood fuse/relay box.

(cont'd)

System Description (cont'd)

Navigation Unit Inputs and Outputs for Connector C (12P)

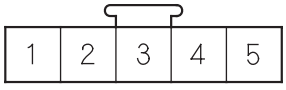


Wire side of female terminals

Navigation Unit Connector C (12P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	+B BACK UP	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to enter code screen. If short to ground: Blows fuse No. 23 (10 A) in the under-dash fuse/relay box.
4	BLK	GND	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
7	BRN	BACK LT—	Reverse signal of select laver from Multiplex integrated Control unit (A/T) or backup light switch (M/T)	In reverse, battery voltage: Otherwise 0 V	If open: Navigation never sees the reverse signal and back-up camera does not come on when in reverse. Diagnostic screen Car Status, Back = 0. If short to ground: Blows fuse No. 10 (7.5 A) in the under-dash fuse/relay box.

Navigation Unit Inputs and Outputs for Connector D (5P)



Wire side of female terminals

Navigation Unit Connector D (5P)

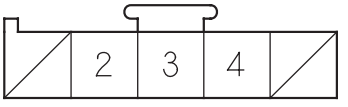
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BRN	MIC GND	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: Navi System Link and Functional Set up Mic Level. If short to ground: No effect on voice recognition.
2	YEL	MIC SIG+	Microphone output signal positive	4—5 V (with navigation TALK button pressed)	If open: No microphone signal shown in diagnostic screens: Navi System Link and Functional Setup Mic Level. If short to ground: No microphone signal shown in diagnostic screens: Navi System Link and Functional Setup Mic Level.
3	GRY*	MIC SH	Shield for terminal No. 1, 2, 5	0 V	If open: No effect on voice recognition. If short to ground: No effect on voice recognition.
4	GRN	NAVI GUIDE	Steering wheel switch output	4—5 V (navigation TALK button pressed) 2.5—3 V (navigation BACK button pressed)	If open: Steering wheel navigation TALK, and navigation BACK buttons do not work. If short to ground: Steering wheel navigation TALK, and navigation BACK buttons do not work.
5	ORN	MIC ADPT	Control signal for microphone	0 V	If open: No effect on voice recognition. If short to ground: No effect on voice recognition.

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(cont'd)

System Description (cont'd)

Navigation Unit Inputs and Outputs for Connector F (5P)

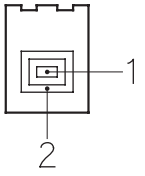


Wire side of female terminals

Navigation Unit Connector F (5P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
2	BLU	AC CK	Time set sync signal	0-battery voltage pulses	If open: A/C voice control does not work. If short to ground: A/C voice control does not work.
3	YEL	AC SI	A/C input signal	0-battery voltage pulses	If open: voice control does not work. If short to ground: Voice control does not work.
4	RED	AC SO	A/C output signal	0-battery voltage pulses	If open: A/C voice control does not work. If short to ground: A/C voice control does not work.

Navigation Unit Inputs and Outputs for Connector H (2P)

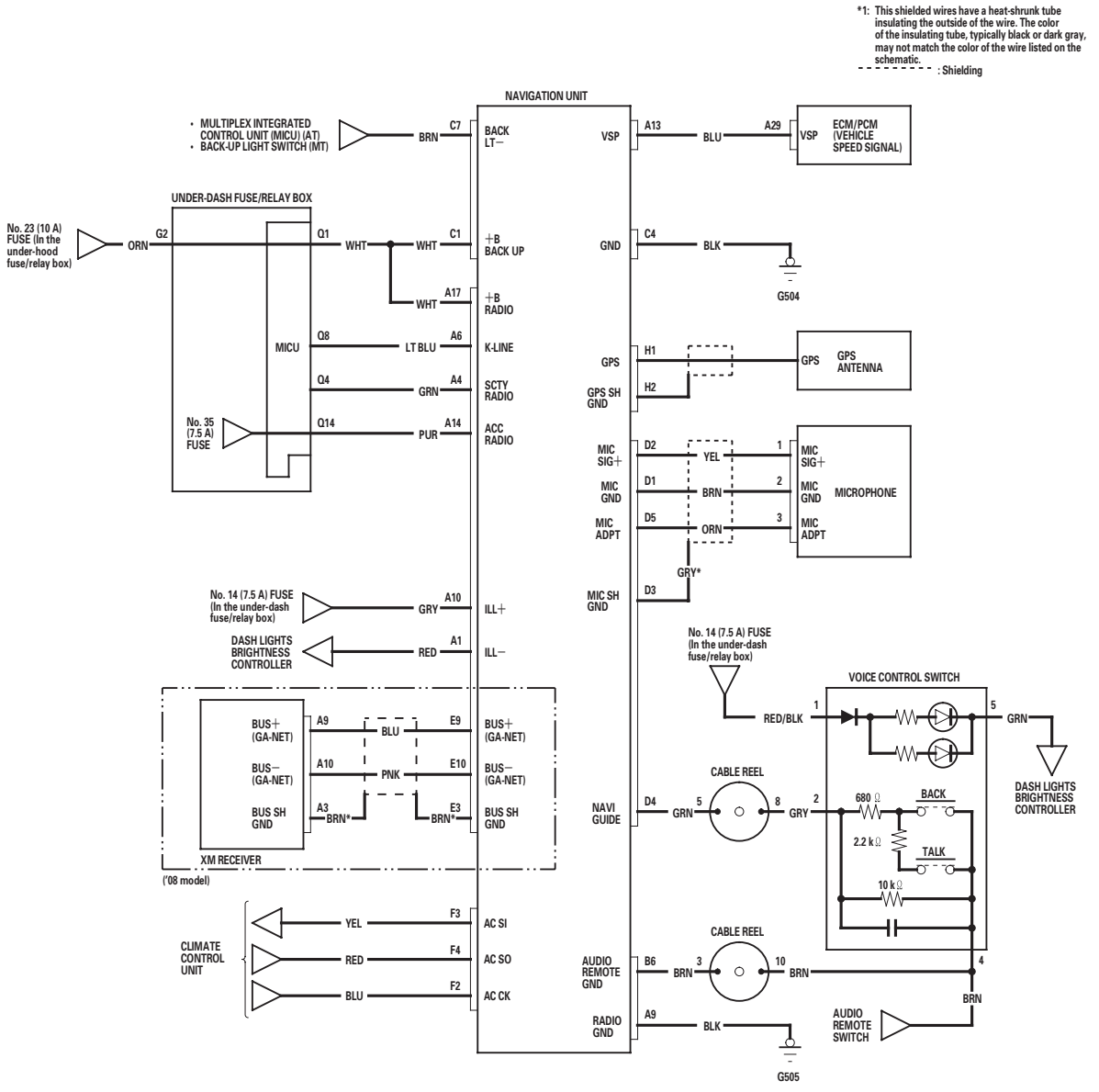


Terminal side of female terminals

Navigation Unit Connector H (2P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	———	GPS	GPS signal (5 V in, GPS signal out)	5 V	If open: GPS icon on screen is white, system links screen ANT shows NG. If short to ground: GPS icon on screen is white, system links screen ANT shows NG.
2	———	GPS SH	Shield for terminal No. 1	0 V	If open: GPS icon on screen is white, system links screen ANT shows NG. If short to ground: No effect on system.

Circuit Diagram



Symptom Troubleshooting

No picture is displayed

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft code.

1. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) fuse in the under-dash fuse/relay box, and reinstall the fuse if it is OK.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse and recheck. ■

2. Turn the ignition switch to ON (II).

3. Operate the radio and listen to the audio.

   Can you hear the audio?

   YES—Go to step 4.

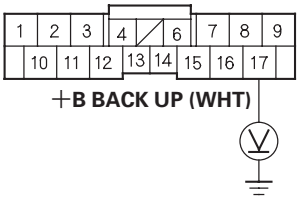
   NO—Refer to audio system troubleshooting. ■

4. Turn the ignition switch to LOCK (0).

5. Remove the navigation unit (see page 23-155).

6. Measure the voltage between navigation unit connector A (17P) terminal No. 17 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

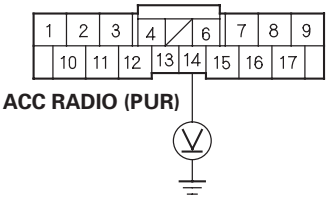
YES—Go to step 7.

NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

7. Turn the ignition switch to ON (II).

8. Measure the voltage between navigation unit connector A (17P) terminal No. 14 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 9.

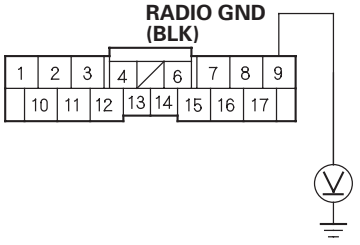
NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

(cont'd)

Symptom Troubleshooting (cont'd)

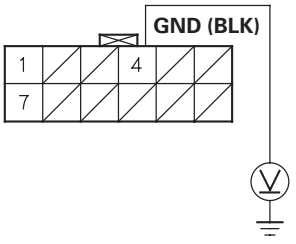
9. Measure the voltage between navigation unit connector A (17P) terminal No. 9 and body ground, and between navigation unit connector C (12P) terminal No. 4 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

NAVIGATION UNIT CONNECTOR C (12P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the navigation unit (see page 23-155). ■

NO—Repair open in the wire between the navigation unit and body ground (G504) (see page 22-30), (G505) (see page 22-32). ■

Picture has lines/rolls/other issues or is an odd color

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the navigation screen settings for brightness, contrast, black level and the color screen for map color and menu color.
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation and audio system anti-theft codes.

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the navigation unit.

   Are there any electronic accessories?

   YES—Disable the accessories, and recheck. ■

   NO—Go to step 2.

2. Turn the ignition switch to ON (II).

3. Start up the navigation picture.

   Is the picture scrolling horizontally (left to right or right to left)?

   YES—Go to step 5.

   NO—Go to step 4.

4. Go into the Diagnostic mode and use RGB Color diagnostic under Monitor Check (see page 23-137).

   Are the red, green, and blue colored circle shown?

   YES—Go to step 5.

   NO—Replace the navigation unit (see page 23-155). ■

5. Turn the ignition switch to LOCK (0), then turn to ON (II) and observe the navigation picture.

   Did the image improve?

   YES—Check for sources of electrical noise, such as poor battery connection, alternator, defective battery, aftermarket accessories or cell phone, and poor pin fits at the navigation unit. ■

   NO—Replace the navigation unit (see page 23-155). ■

Navigation display buttons do not work or respond properly

NOTE:
- Check the vehicle battery condition first.
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation and audio system anti-theft codes.

1. Turn the ignition switch to ON (II).

   Does the navigation display turn on?

   YES—Replace the navigation unit (see page 23-155). ■

   NO—Refer to troubleshooting for no picture is displayed (see page 23-119). ■

Symptom Troubleshooting (cont'd)

GPS icon is white or not shown

NOTE:
- Check the vehicle battery condition first.
- Make sure the vehicle is parked outside and away from buildings.
- Refer to GPS Information (see page 23-142) for realtime satellite reception display.
- Check for window tinting above the GPS antenna and any non-OEM accessories mounted near the navigation unit or GPS antenna.

1. Check for metallic window tint on the windshield and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

   Is there metallic window tint or electronic accessories?

   YES—Remove tint or the accessories, and recheck. ■

   NO—Go to step 2.

2. Go into the Diagnostic Menu, and use the Navi System Link test (see page 23-136) to check the GPS antenna.

   Is the GPS Ant icon red?

   YES—Use the Navi ECU test under Unit Check (see page 23-139) to check for a kinked, crushed, or disconnected GPS antenna wire. If necessary, try a known-good GPS antenna. If icon is still red, replace the navigation unit (see page 23-155). ■

   NO—Check that nothing is blocking the GPS antenna located behind the gauge assembly, and recheck. Substitute a known-good navigation unit, and recheck. ■

Voice guidance cannot be heard, is broken up, or there is static

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check that the volume setting and voice feedback are turned ON.
- Check the connectors for poor connection or loose terminals.
- Before troubleshooting, make sure you have the navigation system 4-digit anti-theft code.
- After troubleshooting, enter the navigation system anti-theft code.

1. Press the display unit SET-UP button.

2. Check the volume setting for the navigation system.

   Is it set to OFF?

   YES—Set the volume to an audible level. ■
   NO—Go to step 3.

3. Check the radio operation.

   Can you hear the radio?

   YES—Go to step 4.
   NO—Troubleshoot the audio system. ■

4. Go into the Diagnostic Menu, and use the Navi System Link test (see page 23-136) to check the radio.

   Is the Radio icon red?

   YES—Troubleshoot the audio system. ■
   NO—Go to step 5.

5. Test the voice control switch (see page 23-156).

   Is voice control switch OK?

   YES—Replace the navigation unit (see page 23-155). ■
   NO—Replace the voice control switch (see page 23-157). ■

Voice control does not work/respond

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the connector for poor connection or loose terminals.
- Before troubleshooting, make sure you have the navigation system 4-digit anti-theft code.
- After troubleshooting, enter the navigation system anti-theft code.

Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.

- Make sure you are on the correct screen when trying to issue a voice command. For instance, the command ''Find the nearest Italian Restaurant'' only works on a Map screen (See the Navigation System Manual for a complete list of allowed voice commands for the information being displayed.).
- Close the windows, moonroof, and doors.
- Set the fan speed to low (1 or 2).
- Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
- Pause after pressing the navigation TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
- If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
- If you speak a command with something in your mouth, or your voice is too husky, the system may misunderstand your command.
- Compare the system operation with a known-good vehicle. Have more than one person test the system operation. If the known-good vehicle performs the same, it is a characteristic of the system.

1. Turn the ignition switch to ON (II).

2. Go into the Diagnostic Menu and use the Mic Level test under Functional Setup (see page 23-147) to check the operation of the navigation TALK and navigation BACK buttons.

   Are the navigation TALK and navigation BACK buttons operational?

   YES—Go to step 10.

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Do the voice control switch test (see page 23-156).

   Is the voice control switch OK?

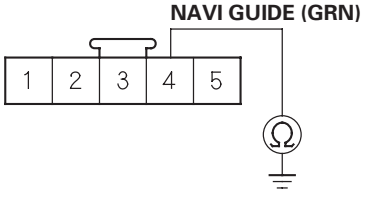
   YES—Go to step 5.

   NO—Replace the voice control switch.

5. Disconnect the cable reel 20P connector and navigation unit connector D (5P).

6. Check for continuity between body ground and navigation unit connector D (5P) terminal No. 4.

NAVIGATION UNIT CONNECTOR D (5P)



Wire side of female terminals

Is there continuity?

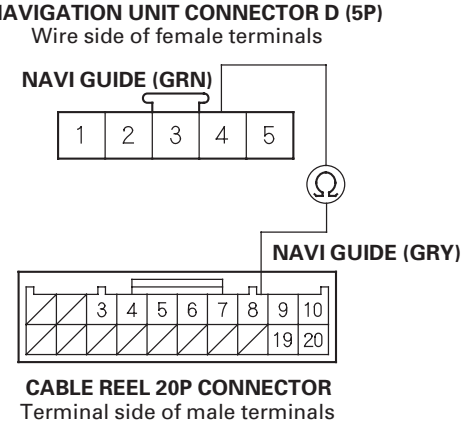
YES—Repair short to body ground in the wire between the navigation unit and the voice control switch, or replace the cable reel. ■

NO—Go to step 7.

(cont'd)

Symptom Troubleshooting (cont'd)

7. Check for continuity between navigation unit connector D (5P) terminal No. 4 and cable reel 20P connector terminal No. 8.



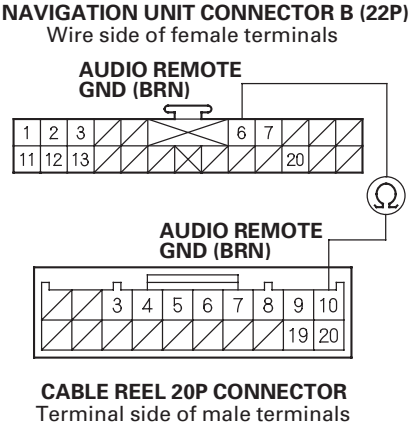
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the navigation unit and the voice control switch, or replace the cable reel. ■

8. Disconnect navigation unit connector B (22P).

9. Check for continuity between navigation unit connector B (22P) terminal No. 6 and cable reel 20P connector terminal No. 10.



Is there continuity?

YES—Replace the navigation unit. ■

NO—Repair open in the wire between the navigation unit and the voice control switch, or replace the cable reel. ■

10. Use the Mic Level diagnostic under Functional Setup (see page 23-147) to check the operation of the microphone.

Is the microphone operational?

YES—Check the operation of the voice control system (see the Navigation System Manual). ■

NO—Go to step 11.

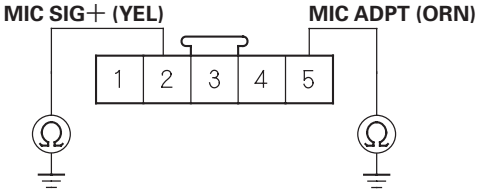
11. Turn the ignition switch to LOCK (0).

12. Disconnect the microphone 3P connector (see page 23-157).

13. Disconnect navigation unit connector D (5P).

14. Check for continuity between body ground and navigation unit connector D (5P) terminal No. 2 and No. 5 individually.

NAVIGATION UNIT CONNECTOR D (5P)



Wire side of female terminals

Is there continuity?

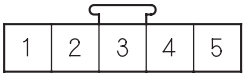
YES—Repair short to body ground in the wire(s) between navigation unit and the microphone. ■

NO—Go to step 15.

15. Check for continuity between navigation unit connector D (5P) according to the table.

From terminal	To terminals
D2	D3, D5
D3	D5

NAVIGATION UNIT CONNECTOR D (5P)



Wire side of female terminals

Is there continuity between any of the terminals?

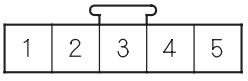
YES—Short in the wire(s) between the navigation unit and the microphone. Replace the affected shielded harness. ■

NO—Go to step 16.

16. Check for continuity between navigation unit connector D (5P) and microphone 3P connector according to the table.

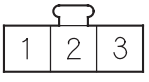
Navigation unit connector	Microphone connector	Wire color
D1	2	BRN
D2	1	YEL
D5	3	ORN

NAVIGATION UNIT CONNECTOR D (5P)



Wire side of female terminals

MICROPHONE 3P CONNECTOR



Wire side of male terminals

Is there continuity?

YES—Substitute a known-good microphone (see page 23-157), then reconnect all of the connectors, and recheck. If the symptom/indication goes away, replace the original microphone. If the symptom/indication is still present, replace the navigation unit (see page 23-155). ■

NO—Repair open in the wire(s) between the navigation unit and the microphone. Replace the affected shielded harness. ■

Symptom Troubleshooting (cont'd)

Vehicle position icon constantly leaves road, moves erratically, or is displayed very far from actual position

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check for aftermarket accessories.

1. Check the GPS icon on the navigation picture.

   Is the GPS icon on the map screen?

   YES—Do the troubleshooting for GPS icon is white or not shown (see page 23-122). ■

   NO—Go to step 2.

2. Go into the Diagnostic Menu, and use the Yaw Rate test (see page 23-144) to check the yaw rate sensor.

3. Go into the Diagnostic Menu and use the Car Status test (see page 23-141) to check the vehicle speed pulse.

   Are the yaw rate sensor and vehicle speed pulse OK?

   YES—The problem may be a normal characteristic. Check to see if the problem occurs in the same place. If it does, the problem could be in the database. Compare to a known-good vehicle under the same conditions. If you can duplicate the problem, report it. Refer to the client Assistance section of the Navigation User's Guide, ''Reporting Errors''. ■

   NO—If the problem is the yaw rate sensor, replace the navigation unit (see page 23-155). If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit. ■

Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins

NOTE:
- Check the vehicle battery condition first.
- This symptom is usually caused by a defective yaw rate sensor. Perform this diagnostic when the vehicle is cold and warm.
- Also refer to symptom troubleshooting for GPS icon is white or not shown (see page 23-122).

1. Go into the Diagnostic Menu, and use the Yaw Rate test (see page 23-144).

   Are the values correct?

   YES—The system is OK. ■

   NO—Replace the navigation unit (see page 23-155). ■

DVD read error messages

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the Navigation System Manual for a list of common DVD screen error messages and the probable cause.
- Go into the Diagnostic Menu, and use the Car Status test (see page 23-141) to check the status of the display.

1. Check the DVD-ROM reading surface for scratches.

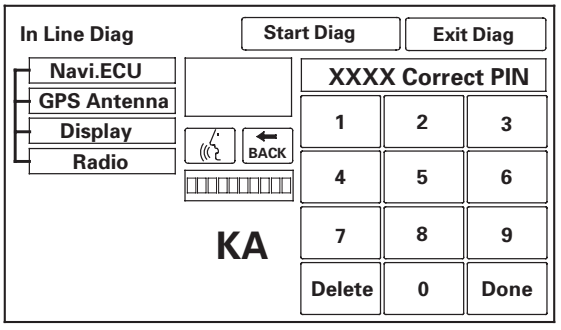
   Are there scratches?

   YES—Replace the DVD-ROM. ■

   NO—If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see page 23-155). ■

System always comes up in in-line diagnostic mode

1. When a navigation unit is powered up for the first time at the factory, the factory diagnosis screen (In Line Diag) appears. Normally the factory performs the steps necessary to verify proper operation and terminate the factory diagnostic. Until the proper confirmation sequence is performed, the screen will appear every time the vehicle is started.



2. Follow the steps to prevent the screen from showing up in the future:

   - Hold down the buttons (Menu, Map/Guide, and Cancel) for about 5 seconds (the Select Diagnosis Items screen appears).
   - Hold down the Map/Guide button for 5—10 seconds (A screen with a Complete button appears).
   - Touch Complete, and then the Return button (the system may re-boot).
   - Restart the vehicle, and confirm normal operation by completing the PDI of the navigation system Service Bulletin.

Symptom Troubleshooting (cont'd)

Display day/night mode does not work or does not work properly

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connection or loose terminals.
- Before troubleshooting, get the navigation system anti-theft code.
- After troubleshooting, enter the navigation system anti-theft code.
- Full brightness on the instrument panel brightness control with the head lights turned on causes the system to stay in the day mode, even when the lights are on.

1. Make sure the instrument panel brightness control is not on full brightness. Turn the headlights on and adjust the dash brightness to the middle range.

2. Change the day/night mode under Set-up to AUTO, and recheck.

   Does the display change to day and night modes when turning the headlights on and off?

   YES—The system is OK at this time. ■

   NO—Go to step 3.

3. Go into the Diagnostic Menu and use the Car Status test to check for an ILL signal (see page 23-141).

   Is the ILL signal OK?

   YES—Replace the navigation unit (see page 23-155). ■

   NO—Check the ILL+ circuit between the navigation unit and the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. ■

System locks up or freezes constantly

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Start the engine and turn the ignition switch to LOCK (0), then turn the ignition switch to ON (II).

   Does the system reboot?

   YES—The system is OK at this time. ■

   NO—Check the DVD for scratches or damage, and the navigation unit for water damage. If OK, go into the Diagnostic Menu and do all of the Unit Check tests (see page 23-139). Also check for low battery charge or poor charging system performance. ■

Navigation display stays on with ignition switch in LOCK (0)

NOTE:
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft code, then write down the audio presets.
- After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system, then enter the audio presets.
- Check for aftermarket accessories that use the same power circuit. A feedback can cause this problem.

1. Remove the key from the ignition.

   Does the navigation screen stay on?

   YES—Go to step 2.

   NO—The system is OK at this time. ■

2. The vehicle may have been used as a demonstration vehicle at an event like an auto show. In these events, power is often jumpered to the navigation system so that the ignition key is not needed in the vehicle. At the end of the show, the jumper wire may not have been removed. Check the navigation unit connector A (17P) for a non-factory jumper wire in series with the factory cable.

   Is there a jumper wire?

   YES—Remove the jumper wire, and re-test. Return the jumper wire to Tech Line. ■

   NO—Go to step 3.

3. Check if the audio unit works.

   Does the audio unit work with the ignition switch off?

   YES—Troubleshoot the ACC circuit for a short to power with another circuit. ■

   NO—Replace the navigation unit (see page 23-155). ■

Navigation cannot control audio system

NOTE:
- Check the vehicle battery condition first.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic mode and use Version (see page 23-149).
- Check for connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have anti-theft codes for the navigation system.
- After troubleshooting, enter the anti-theft codes for the navigation system.
- Make sure that the correct navigation DVD color and version are installed.
- Inspect the navigation DVD for dirt or damage.
- Check any official Honda service website for more service information about the navigation system.

1. Make sure the anti-theft code for the navigation system is entered.

2. Go into the Diagnostic Menu and use the Navi System Link test (see page 23-136).

   Is the Radio icon red?

   YES—Do the troubleshooting for the voice guidance cannot be heard (see page 23-122). ■

   NO—Go to step 3.

3. Substitute a known-good navigation unit (see page 23-155), and recheck.

   Can the navigation control audio?

   YES—Replace the navigation unit (see page 23-155). ■

   NO—Do the audio system troubleshooting. ■

Symptom Troubleshooting (cont'd)

Navigation cannot control HVAC by voice command

NOTE:
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft code.
- After troubleshooting, enter the navigation system anti-theft code.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic Menu and use Version (see page 23-149).

1. Go into the Diagnostic Menu and use the Navi System Link test (see page 23-136).

   Is the Air-con icon red?

   YES—Do the climate control system troubleshooting.■

   NO—Replace the navigation unit (see page 23-155). ■

Navigation cannot control XM radio

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Substitute a known-good navigation unit (see page 23-155), and recheck.

   Can the navigation control the XM radio?

   YES—Replace the navigation unit (see page 23-155). ■

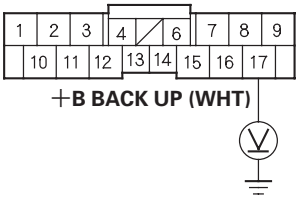
   NO—Do the audio system troubleshooting. ■

Navigation frequently asks for anti-theft code and/or needs GPS initialization

NOTE:
- This is often caused by a loss of battery power, a low or poor battery condition, or a poor ground.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about navigation system.

1. Measure the voltage between navigation unit connector A (17P) terminal No. 17 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

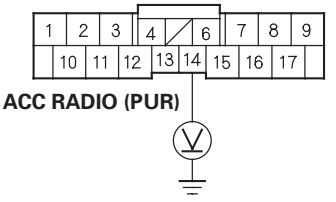
YES—Go to step 2.

NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

2. Turn the ignition switch to ON (II).

3. Measure the voltage between navigation unit connector A (17P) terminal No. 14 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 4.

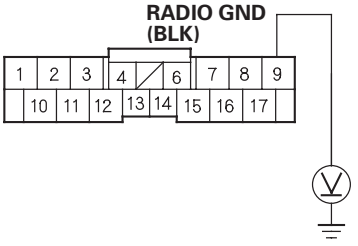
NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

(cont'd)

Symptom Troubleshooting (cont'd)

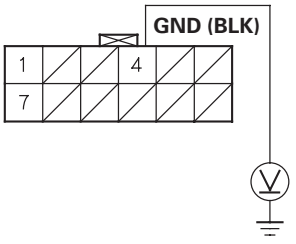
4. Measure the voltage between navigation unit connector A (17P) terminal No. 9 and body ground, and between navigation unit connector C (12P) terminal No. 4 and body ground.

NAVIGATION UNIT CONNECTOR A (17P)



Wire side of female terminals

NAVIGATION UNIT CONNECTOR C (12P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the navigation unit (see page 23-155). ■

NO—Repair open in the wire between the navigation unit and body ground (G504, G505). ■

OPEN/CLOSE function of the display does not work

NOTE:
- Check the vehicle battery condition first.
- If the display's Open/Close button does not work, you must manually open the display to obtain the client's navigation DVD, audio CD, and PC card (see page 23-154).

1. Press the OPEN/CLOSE button.

   Does the display open and/or close normally?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-155). ■

Navigation display will not close

NOTE: Check the vehicle battery condition first.

1. Check the CD slot. Look for foreign objects, a stuck CD, a broken or sticking slot.

   Is the CD slot OK?

   YES—Go to step 2.

   NO—Replace the navigation unit (see page 23-155). ■

2. Check the PC card.

   Is the PC card fully seated?

   YES—Go to step 3.

   NO—Reseat the card or remove it. If it still won't close, replace the navigation unit (see page 23-155). ■

3. Press the OPEN/CLOSE button.

   Does the display open and/or close normally?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-155). ■

Navigation display does not open or opens part way

NOTE: Check the vehicle battery condition first.

1. Press the OPEN/CLOSE button.

   Does the unit beep?

   YES—Go to step 2.

   NO—Replace the navigation unit (see page 23-155). ■

2. Press the OPEN/CLOSE button.

   Does the display open normally?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-155). ■

Symptom Troubleshooting (cont'd)

Navigation system will not accept security code

NOTE:
- Check the vehicle battery condition first.
- The system will not operate without the 4-digit security (anti-theft) code. Follow the this procedure. (After 10 consecutive tries, you must cycle the key to continue trying)
- The Navigation System Diagnosis and Core Return Form is available online, under Job aids, and can be printed out for recording this information. This information will help the reman facility determine what caused the failure.
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the anti-theft codes for the navigation system.
- Verity that the correct navigation unit is installed for this model. Go into the Diagnostic mode, and use Version (see page 23-149).
- Make sure that the correct navigation DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Go into the System diagnosis menu (see page 23-135), select Unit check, and then Navi ECU. A brief diagnostic runs for 20 seconds, and the serial number is displayed.

   Is the serial number displayed?

   YES—Go to step 4.

   NO—Go to step 2.

2. Remove the navigation unit (see page 23-155).

3. Check the serial number on the label on the underside of the navigation unit.

   Is the serial number confirmed on the underside of the navigation unit?

   YES—Go to step 4.

   NO—Replace the navigation unit (see page 23-155). ■

4. Using the serial number, look up the navigation security code in the Interactive Network. (click: Service, Vehicle Information, Anti-Theft code Inquiry, and then select Navigation from the Product drop down box). Enter the serial number.

   Is a 4-digit code displayed on the screen?

   YES—Go to step 5.

   NO—Call the Warranty Department to obtain the code (the telephone number is in the PDI service bulletin). Then go to step 5.

5. Check that the obtained code works to bypass the code screen in the navigation system.

   Does the code work?

   YES—The system is OK at this time. Return the vehicle to the client, and give them the anti-theft code. ■

   NO—Go to step 6.

6. Try entering four zeros (0000) in place for the code.

   Do the four zeros work to bypass the code screen?

   YES—Replace the navigation unit (see page 23-155), and enter Security code is 0000 in the problem description field of the core return form. ■

   NO—Replace the navigation unit (see page 23-155), and enter in Won't take security code (as proof, enclose the sticker that contains the Serial number and the Code) in the problem description field of the core return form. ■

The Honda Globe Screen (not the Acura Globe Screen) appears every time the vehicle is started

NOTE: The navigation DVD and the navigation unit are correct for the vehicle, but earlier and possibly later versions of the navigation software may have been installed. When this happens, the software may not be recognized by the navigation unit, and could cause the navigation unit to revert to an Acura model profile.

1. Remove the navigation unit (see page 23-155) and verify that the part number printed on the navigation unit label is the correct one for the year/model vehicle you are working on.

   Is the correct navigation unit installed based on the part number?

   YES—Go to step 2.
   NO—Replace the navigation unit with the correct unit for the year/model vehicle you are working on.■

2. Reinstall the navigation unit.

3. Remove the navigation DVD (see page 23-155).

4. Note the software version marked on the navigation DVD label and verify if it is the correct version for the vehicle year/model you are working on by checking any official Honda service website for more service information about the navigation system and navigation software.

   Is the software version marked on the navigation DVD label the correct one for the vehicle year/model you are working on?

   YES—Replace the navigation unit (see page 23-155). ■
   NO—Go to step 5.

5. Obtain the correct version DVD (see page 23-94), and install it.

   Does the navigation system boot-up with the Acura Globe Screen?

   YES—The problem is resolved, troubleshooting is complete.■
   NO—The system still shows an Honda Globe Screen. Replace the navigation unit (see page 23-155).■

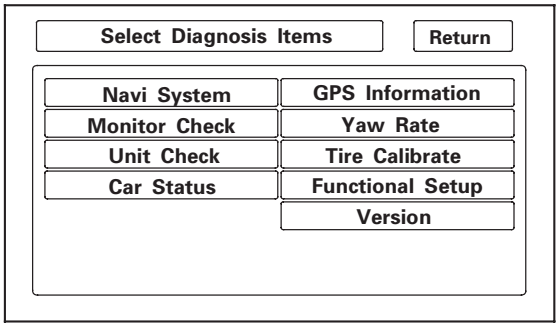
System Diagnostic Mode

Start-up procedure and Diagnosis Menu

1. Turn the ignition switch to ON (II).

   Press and hold the Menu, the Map/Guide, and the Cancel buttons, for about 3 seconds. The display screen then goes directly to the Diagnostic Menu.

DIAGNOSTIC MENU SCREEN



2. After the display changes to the Diagnostic Menu, select the item you want to check, and the test begins. To return to the previous screen, select Return.

   - Navi System (Link)
   - Monitor Check
   - Unit Check
   - Car Status
   - GPS Information
   - Yaw Rate
   - Tire Calibrate
   - Functional Setup
   - Version

(cont'd)

The Honda Globe Screen (not the Acura Globe Screen) appears every time the vehicle is started

NOTE: The navigation DVD and the navigation unit are correct for the vehicle, but earlier and possibly later versions of the navigation software may have been installed. When this happens, the software may not be recognized by the navigation unit, and could cause the navigation unit to revert to an Acura model profile.

1. Remove the navigation unit (see page 23-155) and verify that the part number printed on the navigation unit label is the correct one for the year/model vehicle you are working on.

   Is the correct navigation unit installed based on the part number?

   YES—Go to step 2.
   NO—Replace the navigation unit with the correct unit for the year/model vehicle you are working on.■

2. Reinstall the navigation unit.

3. Remove the navigation DVD (see page 23-155).

4. Note the software version marked on the navigation DVD label and verify if it is the correct version for the vehicle year/model you are working on by checking any official Honda service website for more service information about the navigation system and navigation software.

   Is the software version marked on the navigation DVD label the correct one for the vehicle year/model you are working on?

   YES—Replace the navigation unit (see page 23-155). ■
   NO—Go to step 5.

5. Obtain the correct version DVD (see page 23-94), and install it.

   Does the navigation system boot-up with the Acura Globe Screen?

   YES—The problem is resolved, troubleshooting is complete.■
   NO—The system still shows an Honda Globe Screen. Replace the navigation unit (see page 23-155).■

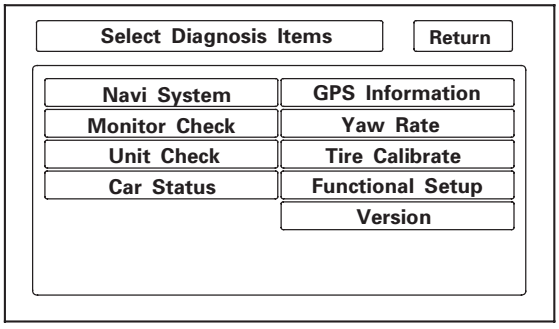
System Diagnostic Mode

Start-up procedure and Diagnosis Menu

1. Turn the ignition switch to ON (II).

   Press and hold the Menu, the Map/Guide, and the Cancel buttons, for about 3 seconds. The display screen then goes directly to the Diagnostic Menu.

DIAGNOSTIC MENU SCREEN



2. After the display changes to the Diagnostic Menu, select the item you want to check, and the test begins. To return to the previous screen, select Return.

   - Navi System (Link)
   - Monitor Check
   - Unit Check
   - Car Status
   - GPS Information
   - Yaw Rate
   - Tire Calibrate
   - Functional Setup
   - Version

(cont'd)

System Diagnostic Mode (cont'd)

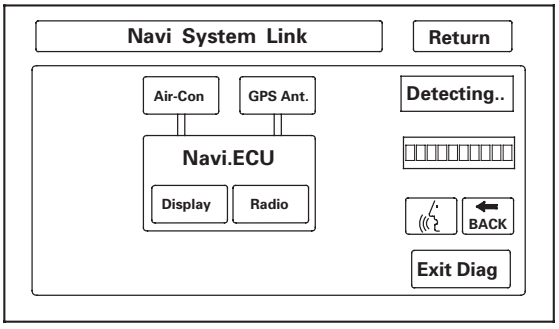
Navi System Link

- This diagnostic step tests the cables connecting the navigation components. Ensure that the ignition switch is in the ON (II) position. When the diagnosis begins, you hear a bong sound. The system is in a Detecting mode, and is waiting for all the items in white to be tested. This includes the voice control switch (navigation TALK/BACK buttons), and the microphone. Press the navigation TALK button on the steering wheel, and in a normal voice, say ''testing''. The Talk indicator on the screen should turn green, and the voice level indicator should move to at least the 6th bar to pass. Next, press the navigation BACK button. The Cancel indicator should turn green.
- If all of the communication lines connecting the system components, and the navigation TALK/BACK buttons/microphone check out OK (all block diagram items green), then the OK indicator turns green.
- If there is a problem with the system, the faulty system component item turns red, and the screen shows NG in red. Use the troubleshooting index, and other diagnostic screens to help locate the problem.
- The indicator on the screen may not change until you cycle the ignition switch. After repairing the affected cable or system, repeat this diagnostic.

  NOTE: Green boxes and green OK indicate that the communications lines (cables) are intact. This diagnostic does not necessarily imply that the individual components are functioning properly. For instance, the GPS antenna wire may be crushed, but still show as green. A road test, or other diagnostic may be necessary to find the problem.

- Select Return to return to the Diagnostic Menu, or the Exit Diag button to exit.

NOTE: The Mic Level indicator must reach the 6th bar or greater to pass the test.



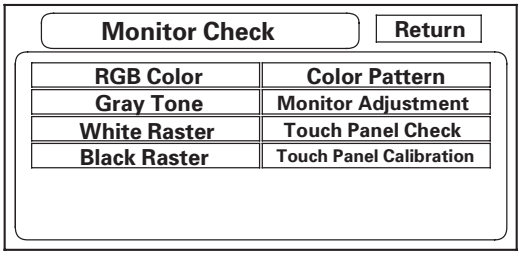
Monitor Check

Overview of navigation display:

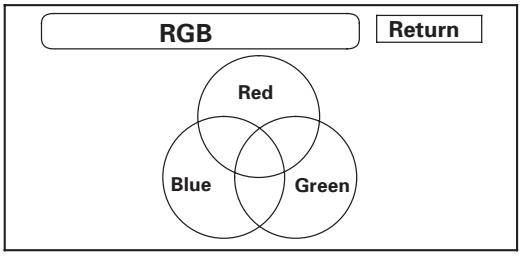
The illumination input from the gauge brightness control provides back lighting for the buttons surrounding the screen.

These screens help you troubleshoot the navigation display. Select the item you want to troubleshoot, and follow the diagnostic instructions.

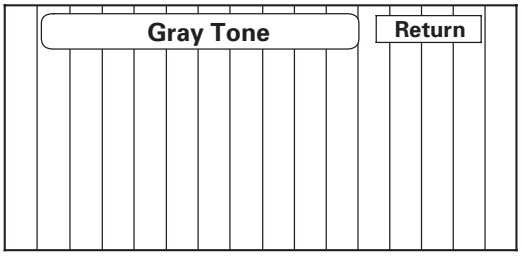
- RGB Color
- Gray Tone
- White Raster
- Black Raster
- Color Pattern
- Monitor Adjustment
- Touch Panel Check
- Touch Panel Calibration



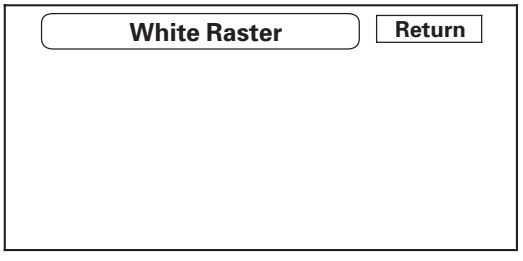
RGB Color
This screen verifies that the navigation display is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all appear without distortion. The combination of all three should produce a central white section. If the picture has lines in it, or scrolls horizontally or vertically, and any of the colors are missing, troubleshoot for a Composite sync and color signal problem (see page 23-120).



Gray Tone
This screen help diagnoses problems with contrast. You should be able to see the changes from bar to bar across the scale. If you can't see changes from bar to bar, substitute a known-good navigation unit and retest.



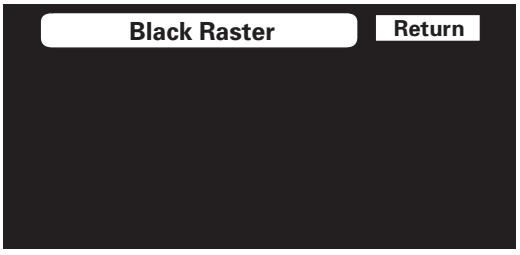
White Raster
This diagnostic screen checks for pixels that may be dead (off). The entire display must be white. If pixels are dead, replace the navigation unit.



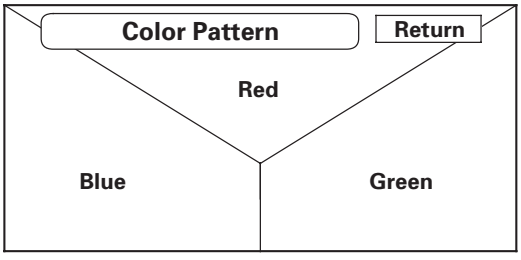
(cont'd)

System Diagnostic Mode (cont'd)

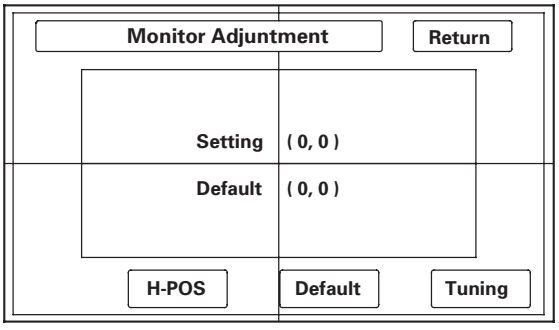
Black Raster
The entire display must be black. This diagnostic screen checks for pixels that may be stuck (on). If pixels are stuck on, replace the navigation unit.



Color Pattern
The chart below shows the colors being used for the various screens. This is for factory use only. To check the color signal use the RGB test.

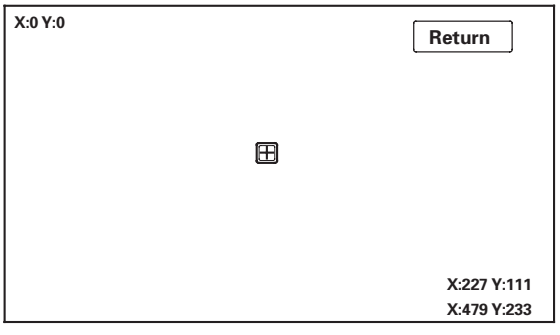


Monitor Adjustment
It is unlikely that you will ever need to adjust the monitor position. This is for factory use only. The Default button will reset the display position to factory specifications. The factory default is 0, 0. The H-POS button is for factory use only.



Touch Panel Check
The panel touch sensing system consists of a touch sensitive resistive membrane covering the display. Contrary to other systems using infrared beams, the screen has to be physically touched to make it work. The display has the capability of 479 touch locations (left to right), and 233 touch locations (top to bottom). The upper left hand corner is position (0, 0) and the lower right hand corner is (479, 233) as displayed. Touching anywhere on the screen displays the coordinate of the location, and a + icon appears where you touched the screen. If any area of the screen either doesn't respond, or responds at some other location when touched, then replace the navigation unit.

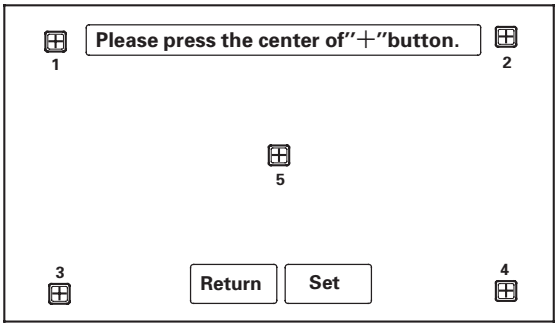
NOTE: Unlike earlier screens that used infrared sensors, direct sunlight will not affect this test.



Touch Panel Calibration
The display screen uses a touch sensitive membrane. This means that every location of the entire surface of the display is touch sensitive. This diagnostic allows alignment of these touch locations with the location of the buttons images on the screen.

Normally this should never need adjustment, and is used only to adjust the touch locations for parallax (the touch locations appear different when viewed at an angle). However, if an adjustment is necessary, follow this procedure:

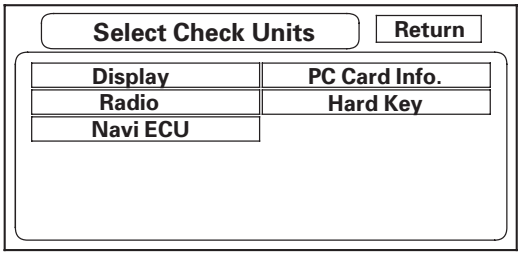
- The screen consists of the + button icons. Touch the center of the five + buttons on order 1—5.
- To store any change you make, touch the Set button.
- Use the Return key to exit the diagnostic.



Unit Check

Select the item you want to check, and the test starts.

- Display
- Radio
- Navi ECU
- PC Card Info
- Hard Key

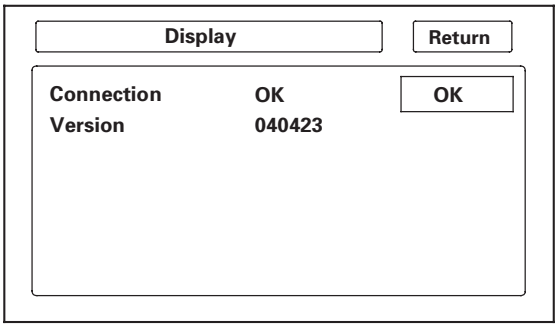


(cont'd)

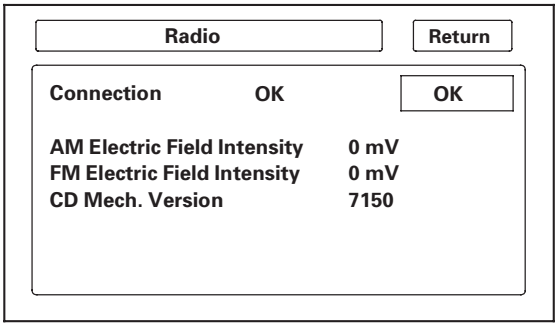
System Diagnostic Mode (cont'd)

Display
This performs additional checks on the communication bus between navigation CPU and the display. In addition, the test checks the internal electronic functions.

If the connection is NG, replace the navigation unit.
- Connection verifies internal communications.
- Version represents the software version for the display.

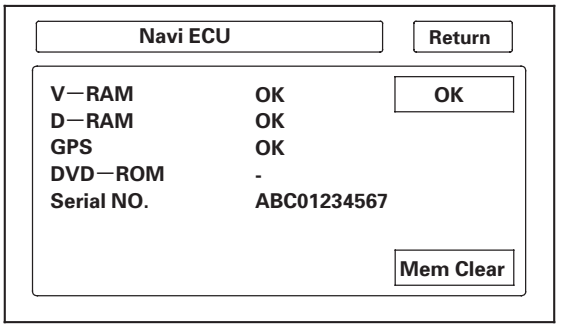


Radio
This diagnostic screen checks the internals of the radio (AM and FM) and CD player. If NG, replace the navigation unit.

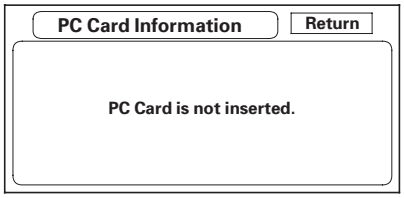


Navi ECU
This screen looks for problems with the navigation unit. When you initiate this diagnostic, the navigation unit may freeze of delay up to a minute while the diagnostic runs.

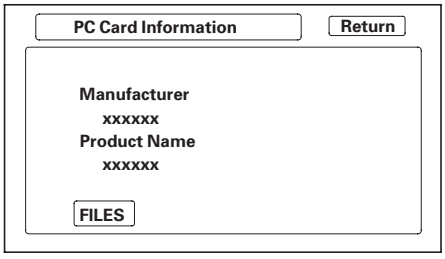
- If V-RAM or D-RAM is NG, then replace the navigation unit.
- If GPS indicates NG (ANT), check the entire GPS antenna wire from the navigation unit to the antenna. If the wire is crushed or damaged, try a known-good antenna. If this diagnostic reads OK, then order a new GPS antenna. If the diagnostic still reads NG (ANT), replace the navigation unit.
- DVD ROM represents the database version on the DVD. You can also find this information in setup by selecting System Information.
- Serial No. should be the same as the serial number found on the underside of the navigation unit. You need this number to obtain the security code from the Interactive Network system.
- Mem Clear is for factory use, and should never be used unless instructed by the factory. Accidental selection will erase the client's personal data, PINS, and settings. If selected, a popup box appears asking if you want to clear the memory. If so, select Yes.



PC Card info
There is no PC card in the PC slot, and the screen should display, PC card is not inserted.

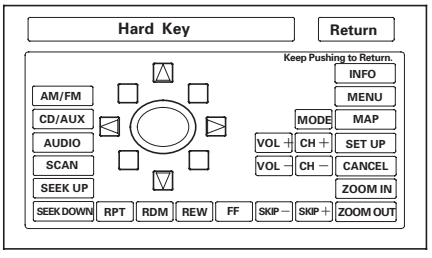


If the factory provides a PC card and instructs you to insert it, the screen displays the Manufacturer, and Product Name as shown in the following screen. Touch the FILES button to see the contents of the card.



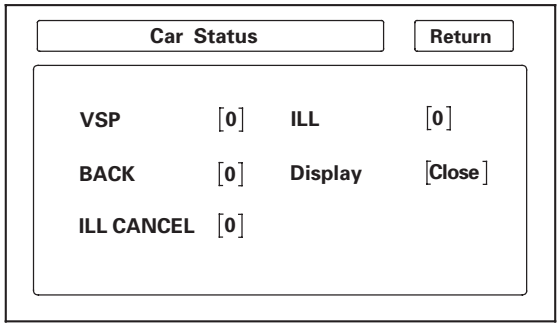
Hard Key
This diagnostic screen checks the status of each of the hard buttons surrounding the navigation display. When you press each hard button, the corresponding item on the screen should flash blue. Touch the return key, or press and hold the joystick to exit.

NOTE: It is normal for the VOL (+, −) CH (+, −) and MODE button to be inactive.



Car Status

Use this screen to confirm that navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.



- VSP-Vehicle Speed Pulse from ECM/PCM connector A (Navigation unit connector A (17P) terminal No. 13)
  a) OFF (0) when vehicle is not moving
  b) ON (1) when vehicle is moving

The VSP comes from the ECM/PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor.

- BACK-Reverse indication from taillight relay (Navigation unit connector C (12P) terminal No. 7)
  a) OFF (0) when shift lever is in any position other than reverse
  b) ON (1) when shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse and to trigger the optional rear view camera. This signal is needed because the Speed Pulse does not provide any directional information to the system.

- ILL CANCEL
  a) OFF (0) when the dash lights brightness control button is less than 90 % brightness with the headlights turned on.
  b) ON (1) when the dash lights brightness control button is more than 90 % brightness with the headlights turned on.

(cont'd)

System Diagnostic Mode (cont'd)

- ILL-Illumination Indication
  (Navigation unit connector A (17P) terminal No. 10)
  a) OFF (0) when parking lights, or headlights are off
  b) ON (1) when parking lights, or headlights are on

The navigation unit uses the signal to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- Display-this displays the current position of the display
  a) (Close) when the display is closed
  b) (Open) when the display is open

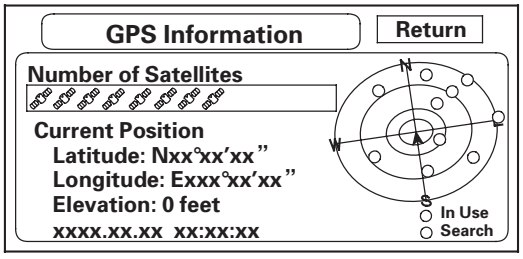
The navigation unit has a micro switch to detect this. If open is indicated when the display is closed, replace the navigation unit.

GPS Information

This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow balls) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represents 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Nearby obstructions, like tall buildings, will block satellites in that direction. That is why it is necessary to be in an open area to effectively troubleshoot GPS reception issues. The satellites shown on the diagram correspond to the PRN number in the GPS Details screen. There are always 24 active GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares are always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

NOTE:

- When you use this screen for troubleshooting, park the vehicle outside, away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.
- Metallic window tinting on the front or side window or after-market electronic accessories mounted near the navigation unit, GPS antenna, or navigation display can interfere with GPS acquisition.
- The Number of Satellites box shows the number of acquired satellites (maximum of 12). It should contain 4 or more icons. If not, troubleshoot for GPS icon is white or not shown (see page 23-122).
- The Current Position shows latitude, longitude, and elevation (in meters). If there are less than 4 satellites, the elevation can be grossly inaccurate.
- The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the client in Setup function Adjust Time Zone/Clock.

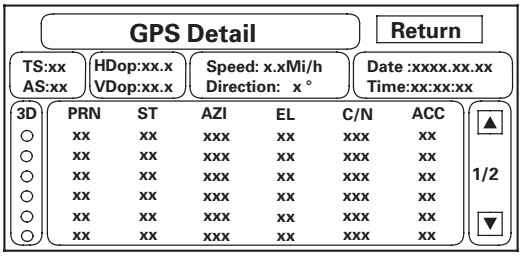


NOTE:
Push and hold the Map/Guide button, and the dots on the diagram are replaced with the PRN # (satellite numbers). These numbers correspond to the numbers in the PRN column on the GPS details screen.

GPS Detail

By pressing and holding the MENU button for 10 seconds, a GPS Detail screen appears. This screen displays real time incoming satellite positional data. Most of the information shown on this screen is for factory use, however some of the data can indicate partial GPS signal interference.

NOTE: The data shown is an example only.



- The box TS/AS and HDop/VDop is for factory use.
- The Speed and Direction information is updated in real time when driving, and can be used to detect intermittent speed sensor problems.
- The Date/Time Information is the same as in Setup screen 2 Adjust Time Zone/Clock.
- If the 3D icon is shown above the yellow dots, this implies that at least 4 satellites are available for map positioning, and the GPS indicator on the map screen will be green. See the Global Positioning System detailed explanation in the System Description (see page 23-106).
- If the row of data in the table below begins with a yellow dot, the AZI and EL fields can be used to locate each satellite PRN # on the circular GPS diagram (see prior screen).

(cont'd)

System Diagnostic Mode (cont'd)

The table of values shown define the terms at the top of the columns in the GPS detail screen.

Column	Description	Problem indication
3D	Active satellites (Yellow Dot)	If 3D is missing follow GPS icon is white or not shown (see page 23-122).
PRN	The satellite ID number	
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, follow GPS icon is white or not shown troubleshooting (see page 23-122).
AZI	Azimuth, the angle (0—360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Healthy signal is 49—52, no signal: 27—33
ACC	N/A	

Yaw Rate

This diagnostic checks the yaw rate sensor in the control unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see the yaw rate sensor theory of operation under System Description (see page 23-105).

- Sensor indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 V when the vehicle is stopped.
- Offset is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 V when the vehicle is stopped.
- A sensor output voltage LOWER than the Offset voltage indicates that the vehicle is turning to the right.
  A sensor output voltage HIGHER than the Offset voltage indicates that the vehicle is turning to the left.
- The yaw rate offset and sensor should both indicate about 2.500 V when the vehicle is stopped. If either reads zero or 5.000 V, replace the navigation unit.

- The yaw rate offset and sensor should be within +/— 0.01 V of each other when the vehicle is stopped. The sensor value should change relative to the offset as the vehicle turns while driving. If not, replace the navigation unit.

Example: Vehicle stopped

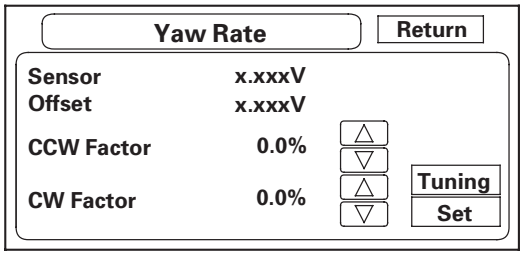
Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.516—2.536 V	Sensor	2.623 V

Example: Vehicle turning

Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.678 V (right turn) 2.478 V (left turn)	Sensor	2.623 V (no change on turns)

The settings CCW Cal Factor, CW Cal Factor, and Set are for factory use only. THIS SHOULD NEVER BE USED.

NOTE: Do not try to adjust the yaw rate sensor without instructions from the factory. See next paragraph for tuning.



Yaw Rate Tuning

This diagnostic allows you to graphically display problems with the yaw rate sensor.

- The ANG-Disp value accumulates any differences between the offset and sensor voltages (see Yaw Rate diagnostic). When the sensor functions properly, the random changes in these two voltages generally cancels out, so the value is 0. However if one voltage is consistently higher than the other, then the ANG-Disp value accumulates the constant change.
- The Reset button temporarily clears the angular accumulation (ANG-Disp), and clears the display dots.
- Do not touch the CCW or CW, or Set buttons. These are used for factory setup only.

For serious problems with the sensor, the stationary test usually confirms whether the sensor is defective. For yaw rate issues related to driving, perform the road test described.

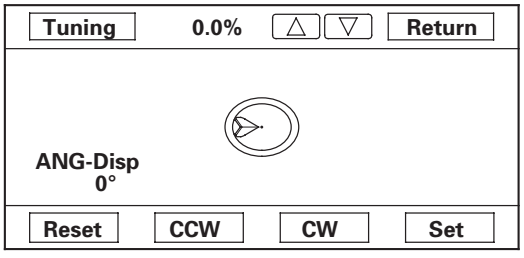
(cont'd)

System Diagnostic Mode (cont'd)

1. Stationary test: If the VP icon spins in place and the ANG-Disp value slowly increases or decreases in value, the yaw rate sensor is defective. Replace the navigation unit.

2. Road test: Drive the vehicle on a very straight road. Enter the diagnostic mode, select Yaw rate, and touch the Tuning button. While driving down a straight road, the white dots should trace a straight line across the screen. However, if you are driving on a straight road, and you notice the dots constantly dropping down or heading up as you drive, the navigation unit's yaw sensor is defective. You can touch Reset to clear ANG-Disp, and dotted line.

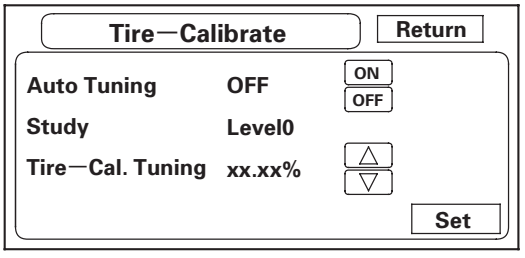
3. If either test fails, please enter ''Yaw rate sensor defective'' for the problem description, on the ''Navigation core return form''.



Tire Calibration

As the vehicle moves, the navigation system receives speed pulses from the ECM/PCM. These pulses are converted using a conversion factor to a mph speed that moves the vehicle position (VP) on the map. The navigation system has an internal tuning function that generates and refines this factor based on actual driving. The Level indicates the status of the tuning. At navigation initialization, it begins at 0, and increases to 10 as the navigation system is used.

- The Auto Tuning is factory set to ON, and should remain on.
- The Study indicates the tuning status. If it is less than 10, the unit is still calibrating.
- The Tire-Cal. Tuning and Set should not be used. It is for factory use only.

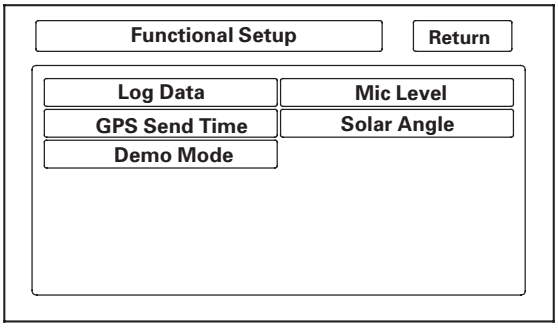


Functional Setup

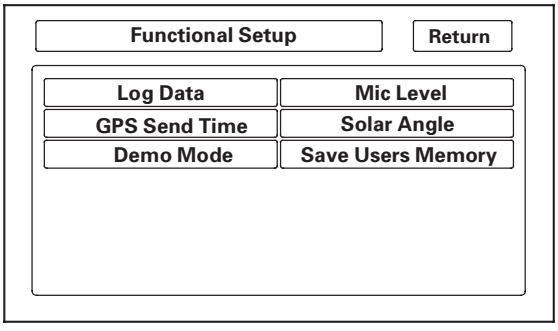
Select the item you want to check.

- Log Data
- GPS Send Time
- Demo Mode
- Mic Level
- Solar Angle
- Save Users Memory ('07-08 models)

'06 model

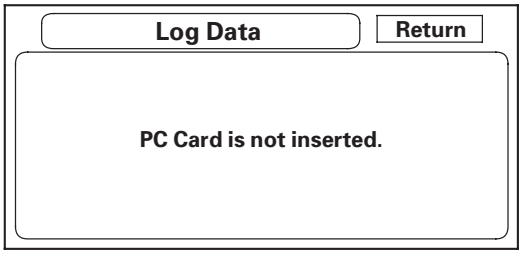


'07-08 models

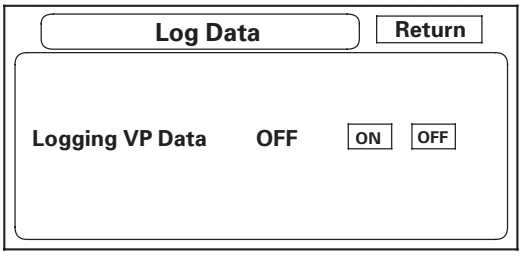


Log Data
This screen allows the factory to collect log data to troubleshoot navigation system issues.

- There is no card in the PC card Slot, the screen appears as:



- However, if the factory provides a PC card, insert it into the card slot (label side up). Follow the factory logging VP data procedure for gathering test data and properly ending the test.

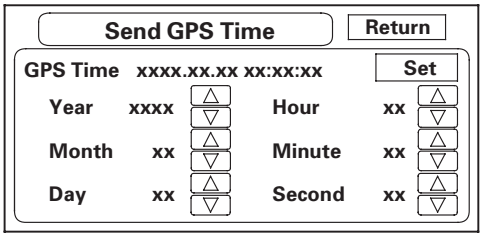


(cont'd)

System Diagnostic Mode (cont'd)

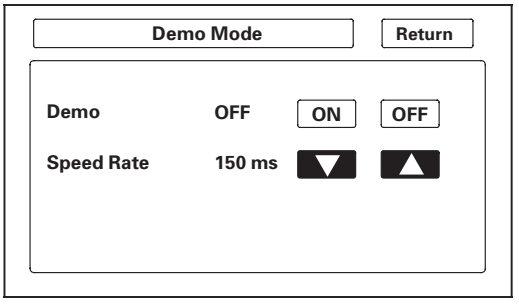
GPS Send Time
This screen is for factory use only. It allows adjustment of the GPS time. This display updates in real time.

- GPS Time is the time as received from the GPS satellites. It is in Greenwich Mean Time (GMT).
- Date, Hour, Minute, and Set should not be used.



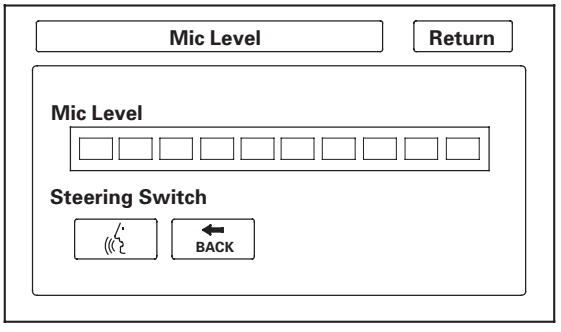
Demo Mode
This screen allows the navigation system to drive a route, when the vehicle is stationary. Typical applications include auto shows, and other events. This feature allows a visitor to enter a destination, and see the system drive to the destination. No speed signal is needed.

- To initiate the mode, select ON.
- Changing the speed rate in ms (milliseconds) is optional, and represents the time between updates of the VP (vehicle position) movement.
  - When you increase the rate, the VP slows down because it is updated (moved) at a slower rate.
  - When you decrease the rate, VP is faster because it is updated (moved) more frequently.
  - 1500 ms is VP at its slowest in demo mode.
  - 150 ms is VP at its fastest in demo mode (Default).
- At key off, the setting automatically returns to the default of Off.



Mic Level
This diagnostic screen allows you to independently test the microphone and the navigation TALK and BACK buttons. They are used to activate the voice control system. The microphone is located near the map light in the ceiling. It is directional, and works best if the voice is coming from the drivers seat.

- Press the navigation TALK button on the steering wheel, wait unit you hear a beep, and in a normal voice say ''testing''. The TALK indicator on the screen should momentarily turn green, and the text ''Now Recording...'' should appear in yellow. If the talk indicator on the screen does not briefly turn green, then check the wiring from the navigation TALK button to the navigation unit.
- If there is no Mic Level movement when you speak, then you should check the wire running from the microphone to the navigation unit.
- If the mic level bar is full or almost full without you speaking or other back ground noise, replace the microphone and recheck.
- Press the navigation BACK button on the steering wheel. The Cancel indicator on the screen should momentarily turn green. If it does not briefly turn green, then check the wiring from the steering wheel navigation BACK button to the navigation unit.



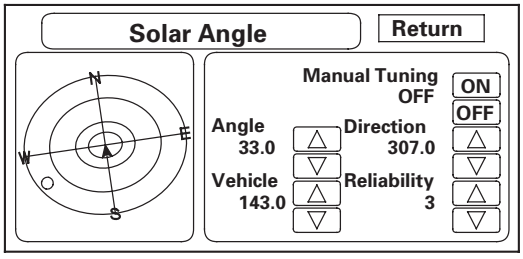
NOTE: The mic level should reach the 6th bar.

Solar angle

This screen graphically displays the sun's position as determined by GPS.

This screen is for factory use only, and allows simulation of this feature for development purposes.

- The manual tuning button should always be OFF
- The Angle is the angle that the sun (shown with the red dot) is above the horizon.
- The vehicle value represents the angle, clockwise from North, to the direction that the vehicle position (VP) icon is pointing (always points straight up).
- The direction value is the angle, measured clockwise from the VP (straight up) to the suns position.
- The reliability ranges from 1 to 3, and represents the accuracy of the Vehicle Position relative to the sun.



Version

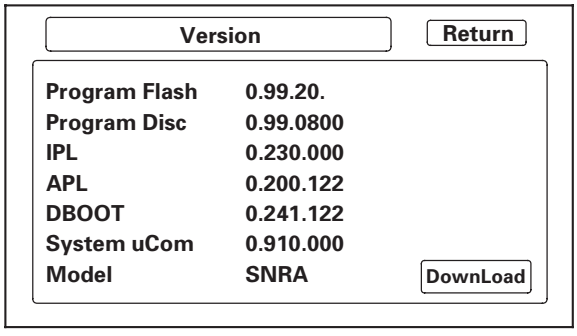
This screen displays the current version of the program, and allows the loading of a new version of the program either from a CD/DVD or from a PC card.

The Program Flash version should always be greater than or equal to the Program Disc version. IPL, APL, DBOOT, and system ucomare for factory use only.

The Model code is SNR and is for factory use only. This code is stored on a chip in the navigation unit. Therefore, every model has a unique part number for the navigation unit.

NOTE: If any model number other than SNR is displayed, replace the navigation unit with the correct part. The model code tells the navigation unit what software to load off the DVD.

Do not use Download, unless instructed to do so by the factory.

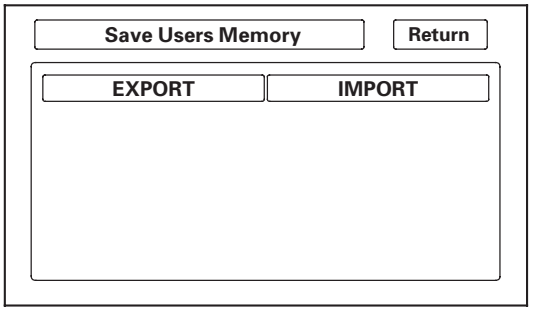


(cont'd)

System Diagnostic Mode (cont'd)

Save Users Memory

When replacing the navigation unit, this function allows the dealer to transfer the client's personal data to the new navigation unit. The transferred information includes their Setup settings, and personal addresses. The dealer inserts a PC card to the navigation unit, and then selects the Save Users Memory function. The two functions in this diagnostic screen are EXPORT and IMPORT. EXPORT saves the client's data to the PC card, and IMPORT moves the PC card files to the new navigation unit.



Before starting this function, see the PC Card FAQs for information regarding PC cards, how to use this function.

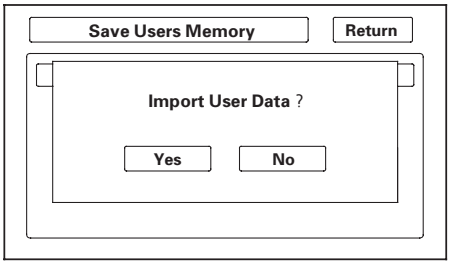
1. Select EXPORT button to move the client's data from the original navigation unit to the PC card. Select YES on the Export User Data Confirmation screen. The process takes only a couple of seconds. The system stores two files on the card.

   NOTE: If the EXPORT button is grayed out, check the PC card's edge connector, and the pins inside the navigation unit (with a flashlight) for damage.

2. After installing the client's original DVD in the new navigation unit, allow the system to boot up. Insert the PC card in the new navigation unit and enter the Save Users Memory in the navigation system diagnostic mode.

3. Select IMPORT button to move the two files stored by the Export process from the PC card to the new navigation unit. Select YES on the Import User Data Confirmation screen. When the transfer is finished (a few seconds) the system automatically reboots. After the system reboots, remove the PC card from the PC card slot.

   NOTE: If the IMPORT button is grayed out, check if the Model and the Program Flash shown on the Version screen are the same for the two navigation units.



PC Card FAQs

Question	Answer
Where do we buy the flash memory or adaptors, and what do we ask for?	You need a PCMCIA type II adaptor and a flash memory chip. You can purchase them at a computer, or office supply store. The card is the same size and shape as the PC card in the HDS. Adaptors that accept multiple flash types are not recommended.
What memory flash chips will work with what adaptors?	The flash memory devices that have been tested include Compact Flash (CF), and ATA style (like the card in the HDS). Other card types and flash memory chips may work, but have not been tested.
What capacity card do I need for this function?	A memory chip with capacity of 64 MB to 2 GB will work. The two files moved to the PC card during export are less than a Megabyte in size.
Should the dealer have a dedicated PC card for the Export and Import navigation function?	Yes, treat the PC card as a dedicated special tool that you can use any time you need to transfer the navigation personal files to a new navigation unit on '07 and later vehicles.
What device can I use to maintain the PC card, and delete files?	Any computer store sells USB style card readers that accept the PC card, and allow you to do file maintenance on your PC card. Most laptops also accept the PC card.
Can we move the client's data to different models?	No, the files are model specific and will only load into a navigation unit with the same part number.
Can we move the client's data to the same vehicle with a different software version (like moving from version 4.41 to version 4.51)?	The client's files can only be transferred to a new navigation unit if the Model and the Program Flash shown on the Version screen are the same. Files cannot be transferred to the different model and different versions.
Will other files on the PC card like images or music files prevent the Export/Import function from working?	No, the system simply adds two small files that are recognized by the new navigation unit when performing the import function. However, it the PC card is full, the Export function won't work correctly.
Do I have to delete the files on the PC card after each transfer of the personal data?	After the transfer of personal data to the new navigation unit, the files remain on the PC card. Since this is confidential information, Acura recommends deleting these files after the transfer. Please note that each time you export navigation files of the same model and version, the files are overwritten. Over time the PC card accumulates two files for each version of the 8 or so Acura navigation models.
If the memory card needs formatting, what format should I use?	It is unlikely that the PC card will ever need formatting, however, if it does, use the FAT (file allocation table) file system.
I can't enter the navigation diagnostic mode to do the Export/Import function. How can I transfer the personal data?	Some internal navigation unit ECU failures may make it impossible to use the Export/Import function.

(cont'd)

System Diagnostic Mode (cont'd)

Question	Answer
Why wont the Export or Import functions work or are grayed out? What do I check as part of troubleshooting?	• The card may not be fully inserted into the slot. Eject the PC card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a PC card. This can result in damage to the pins in the rear of the slot. • The PC card may not contain files that are recognized by the new navigation unit. Navigation data can only be transferred between navigation units with the same Model code, and with the same navi Program flash version. • The flash memory chip type may not be accepted by the system. Only Compact Flash and ATA cards have been tested. • The card's PCMCIA adaptor may prevent a known-good card from being recognized Avoid multi-slot type PCMCIA adaptors that accept several different flash memory types. • The card may be full and as a result the files are stored, but without any data. Export and import appear to function, but move nothing. Delete unused files from the PC card. • There may not be any files on the PC card. If the PC card has a write protection switch, make sure it is turned off before using the Export function. • Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevents them from accepting files. The PC card should be reformatted using the FAT format. • The PC card may have been formatted using the format NTFS. Only the FAT format is accepted by the system. • Hard Disc Drive (HDD) cards may not work properly in the system and can overheat or quit functioning, particularly in a hot vehicle. They are not recommended. • Before performing the Import function, ensure that the original navigation DVD is loaded into the new navigation unit and working properly.

Error Message Table

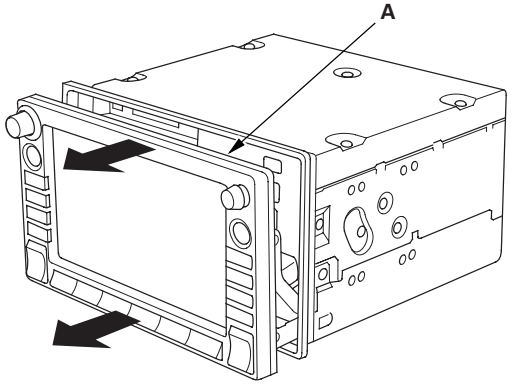
Screen Error Message	Solution
Navigation system is unable to acquire a proper GPS signal.	Make sure there is nothing on the dashboard blocking the GPS antenna. If not, move the vehicle to an open space away from tall buildings, trees, etc. Aftermarket metallic window tinting and other aftermarket devices can affect the GPS reception.
Navigation is open or No DVD disc installed. Please check system.	Make sure the correct white-labeled navigation DVD is installed with the label side up and the navigation display is closed.
DVD reading error (incorrect DVD disc) place consult your dealer.	Verify correct color (white) DVD installed.
Display temp is too high. System will shut down until display cools down.	This message appears briefly when the display temperature is too high, and the display turns off until the temperature cools down. The system turns back on when the display cools down.
Outside temperature is low, system will take a while to start up.	The temperature is below —30 ℃ and the navigation ECU has difficulties reading the navigation DVD. The system will start up when the temperature warms up.
DVD disc reading error (unformatted), please consult your dealer.	Check the navigation DVD source for deep scratches or other damage. Make sure you are using an official Honda navigation DVD (white in color). The system cannot read other mapping databases or video DVDs. Check online for any service publications to update the navigation system.
Route has not been completed. Please try again from a different location.	Routing to or from a place (new area) that is not in the database. Try planning a different route to or from a different location.
No alternate route found. Original route will be guided.	No alternate route method was found. The original route will be used.
This destination cannot be found in database.	The destination was not found in the database. Try another destination nearby, or select the destination with the joystick.

CD, DVD, and PC Card Removal/Installation

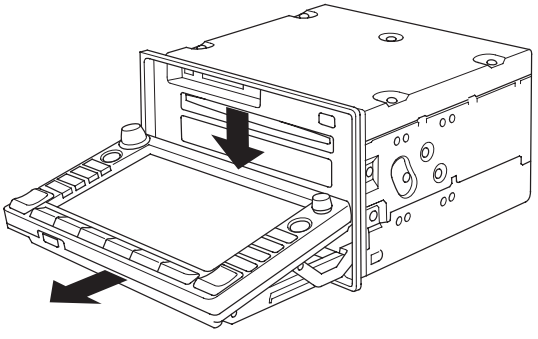
If the displays Open/Close button does not work, you must manually open the display to obtain the client's Navigation DVD, CD and possibly their PC card. Follow the step below:

1. Remove the navigation unit from the vehicle (see page 23-155).

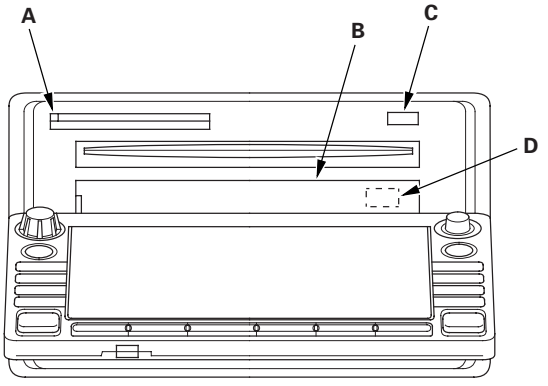
2. On the bench, carefully pull the display (A) straight out (about 1/2 inch).



3. Fold down the display as shown in the diagram below.



4. Push the PC card eject button (A) to eject the client's PC card (if installed). Power is not required for this function.



5. Remove the plastic cover (B) the navigation DVD slot.

6. With the display open, temporarily reconnect the unit in the dash (to power it up).

7. Push the CD eject button (C), and navigation DVD eject button (D) (the button is behind the plastic cover and works only when the unit is powered) and remove the discs (holding the discs by their edges to avoid fingerprints). To avoid scratches, place the navigation DVD, and client's CD in a jewel case if available.

8. Re-attach the plastic cover that hides the navigation DVD slot.

9. Close the display by first returning the display to the upward position, and then pushing the entire display straight back into the unit.

10. After installing the new navigation unit, re-insert the navigation DVD, the client's CD, and PC card.

Navigation Unit Removal/Installation

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

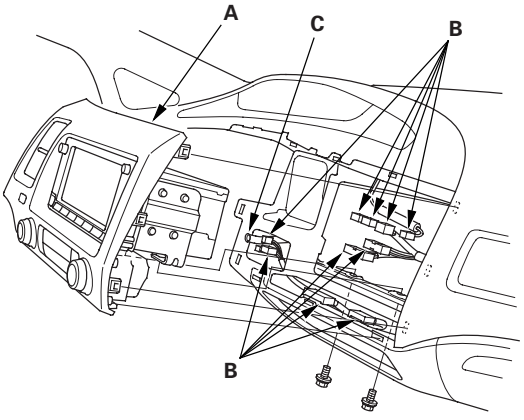
NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board(s) with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)
- Before replacing the navigation unit, make sure to remove the client's navigation DVD, and their audio CD, or PC card. Remanufactured navigation units do not come with a navigation DVD. Re-install the client's navigation DVD, audio CD, and audio PC card into the new Remanufactured unit. If the navigation display won't open, manually remove the navigation DVD, audio CD, and PC card (see page 23-154).
- If you are replacing the navigation unit, write down the audio presets (if possible), then enter then into the new navigation unit.

1. Make sure you have the 4-digit anti-theft code for the navigation system.

2. Eject the DVD from the original navigation unit. To avoid scratching or damaging the DVD, temporarily place the DVD in a jewel case.

3. Remove the meter inner visor (see page 20-100).

4. Remove the center pocket hole lid and bolts, then pull out the center panel (A).

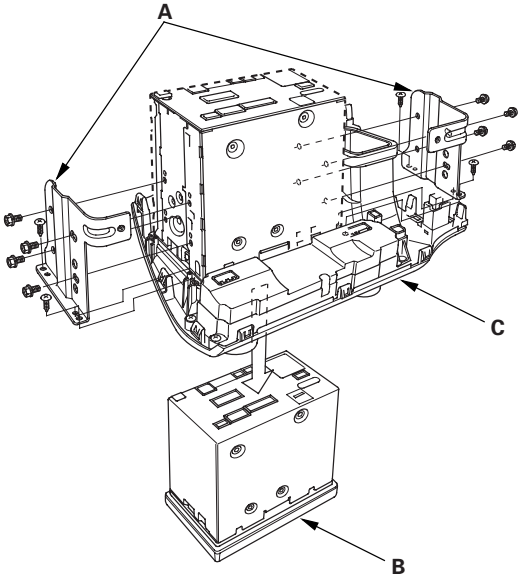


5. Disconnect the connectors (B) and the air hose (C), then remove the center panel.

(cont'd)

Navigation Unit Removal/ Installation (cont'd)

6. Remove the screws, brackets (A), and the navigation unit (B) from the center panel (C).



7. Install the navigation unit in the reverse order of removal, and make sure all connectors are secure.

8. Turn the ignition switch to ON (II), then reinstall the client's original DVD, verifying that the DVD is free of scratches or smudges.

9. Check any official Honda service website for more service information about the navigation system.

   NOTE: Simply transferring the DVD from the original navigation unit to the new navigation unit does not assure the correct software for the vehicle will be loaded into the new navigation unit. Doing the DVD transfer without doing software patches may cause the new navigation unit to appear to be malfunctioning.

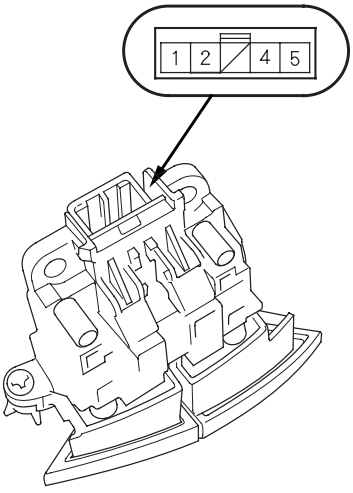
10. Enter the new navigation anti-theft code.

11. Park the vehicle outside, and do the GPS initialization (see page 23-93).

12. Give the new navigation anti-theft code to the client.

Voice Control Switch Test

1. Remove the voice control switch (see page 23-157).



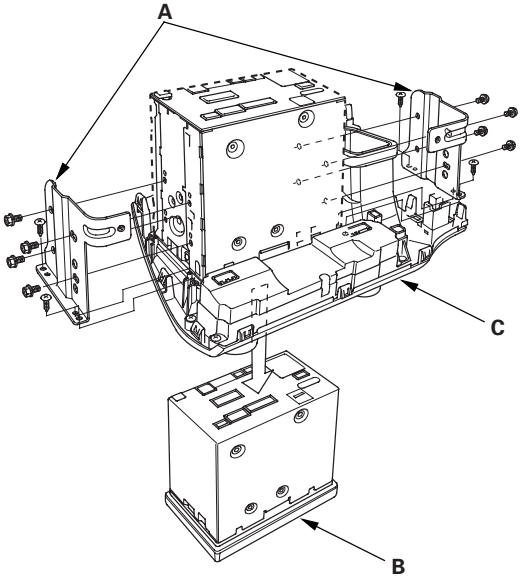
2. Measure the resistance between terminals No. 2 and No. 4 in each switch position according to the table.

Position	Resistance
No button pressed	About 10 kΩ
TALK	About 2.9 kΩ
BACK	About 680 Ω

3. If the resistance is not as specified, replace the voice control switch (see page 23-157).

Navigation Unit Removal/ Installation (cont'd)

6. Remove the screws, brackets (A), and the navigation unit (B) from the center panel (C).



7. Install the navigation unit in the reverse order of removal, and make sure all connectors are secure.

8. Turn the ignition switch to ON (II), then reinstall the client's original DVD, verifying that the DVD is free of scratches or smudges.

9. Check any official Honda service website for more service information about the navigation system.

   NOTE: Simply transferring the DVD from the original navigation unit to the new navigation unit does not assure the correct software for the vehicle will be loaded into the new navigation unit. Doing the DVD transfer without doing software patches may cause the new navigation unit to appear to be malfunctioning.

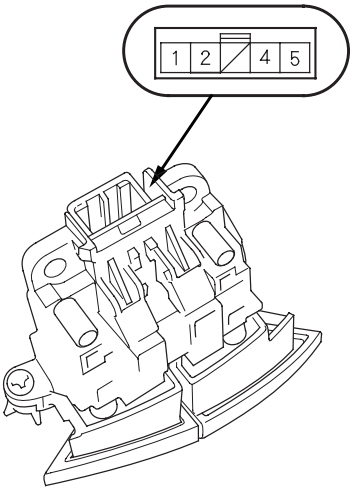
10. Enter the new navigation anti-theft code.

11. Park the vehicle outside, and do the GPS initialization (see page 23-93).

12. Give the new navigation anti-theft code to the client.

Voice Control Switch Test

1. Remove the voice control switch (see page 23-157).



2. Measure the resistance between terminals No. 2 and No. 4 in each switch position according to the table.

Position	Resistance
No button pressed	About 10 kΩ
TALK	About 2.9 kΩ
BACK	About 680 Ω

3. If the resistance is not as specified, replace the voice control switch (see page 23-157).

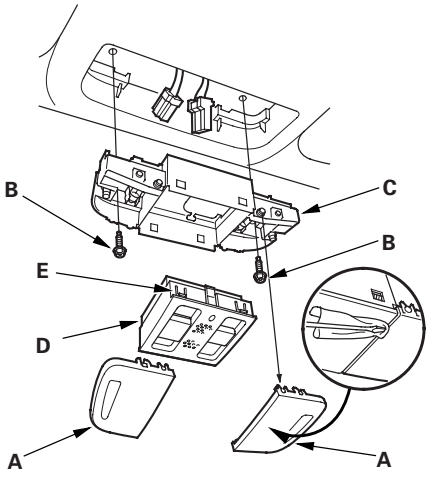
Voice Control Switch Replacement

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

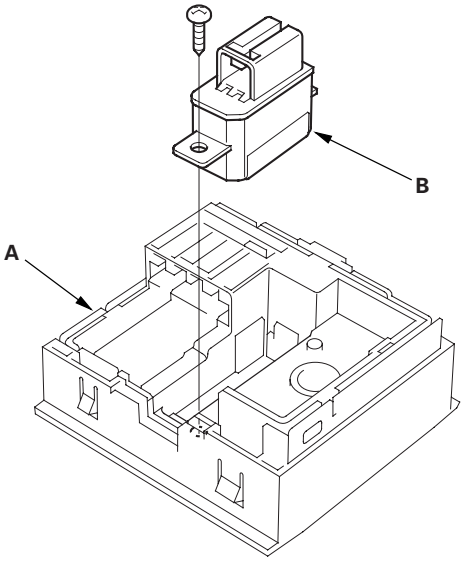
1. Remove the steering wheel (see page 17-6).
2. Remove the voice control switch (see page 17-7).
3. Install the audio remote switch in the reverse order of removal.

Microphone Replacement

1. Remove the front individual map light lens (A).



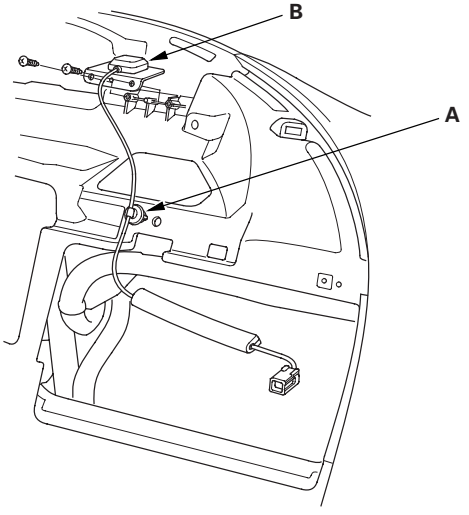
2. Remove the bolts (B), then disconnect the connectors, and remove the map lights housing (C).
3. Carefully pry off the moonroof switch (D) from the map light housing while pressing in on the retaining tabs (E).
4. From the moonroof switch (A), remove the screw and microphone (B).



5. Install the microphone in the reverse order of removal.

GPS Antenna Removal/Installation

1. Remove the navigation unit (see page 23-155).
2. Remove the instrument panel (see page 20-98).
3. Remove the wire harness clip (A), screws, and GPS antenna (B).

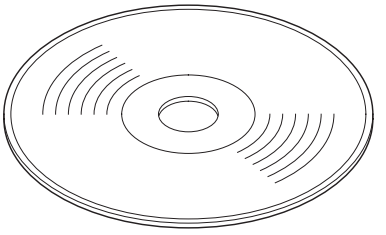


4. Install the antenna in the reverse order of removal.

Audio, Navigation, and Telematics ('09 model)

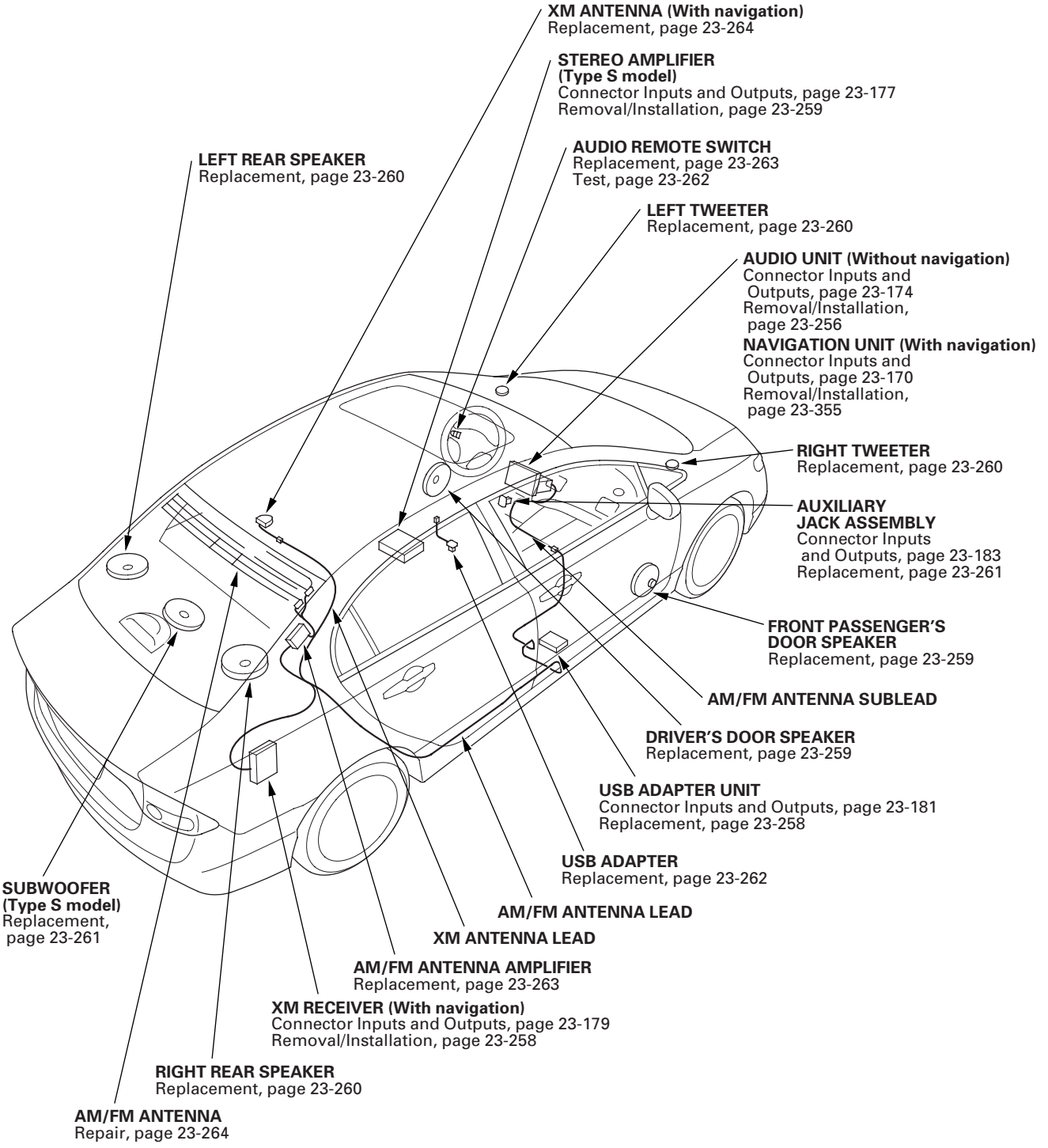
Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAZ-SDBA100	Diagnostics CD	1
②	07AAZ-SDBA200 (ABEX-TCD-725B)	Skip Test CD	1
③	07AAZ-SDBA300 (ABEX-TCD-721)	Skip Test CD	1



①, ②, ③

Component Location Index



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Poor AM or FM radio reception or interference (with navigation)	Symptom Troubleshooting (see page 23-196)	AM/FM antenna lead and/or sublead short or open in the wire
Poor AM or FM radio reception or interference (without navigation)	Symptom Troubleshooting (see page 23-199)	AM/FM antenna lead and/or sublead short or open in the wire
Audio unit power switch will not turn on (No information display and no sound) (with navigation)	Symptom Troubleshooting (see page 23-202)	
Audio unit power switch will not turn on (No information display and no sound) (without navigation)	Symptom Troubleshooting (see page 23-203)	
Audio unit power switch will not turn off (with navigation)	Symptom Troubleshooting (see page 23-205)	
Audio unit power switch will not turn off (without navigation)	Symptom Troubleshooting (see page 23-206)	
No sound is heard from the speaker(s) (display is normal) (with navigation)	Symptom Troubleshooting (see page 23-206)	
No sound is heard from the speaker(s) (display is normal) (without navigation)	Symptom Troubleshooting (see page 23-215)	
Auxiliary input sound is low or cannot be heard	Symptom Troubleshooting (see page 23-217)	
Audio system sound is weak or distorted (display is normal)	Symptom Troubleshooting (see page 23-220)	
Radio preset memory is lost	Symptom Troubleshooting (see page 23-221)	Internal error
Volume does not change	Symptom Troubleshooting (see page 23-221)	
Volume does not increase with speed (with navigation)	Symptom Troubleshooting (see page 23-222)	
Volume does not increase with speed (without navigation)	Symptom Troubleshooting (see page 23-223)	
Volume is too high or too low when driving at freeway speeds	Symptom Troubleshooting (see page 23-224)	
Radio tuner does not change stations	Symptom Troubleshooting (see page 23-224)	

Symptom	Diagnostic procedure	Also check for
Navigation unit button illumination does not work (with navigation)	Symptom Troubleshooting (see page 23-225)	
Audio unit button illumination does not work (without navigation)	Symptom Troubleshooting (see page 23-226)	
Display does not dim or brighten with dimmer (without navigation)	Symptom Troubleshooting (see page 23-227)	
Audio disc does not load	Symptom Troubleshooting (see page 23-228)	
Audio disc does not eject	Symptom Troubleshooting (see page 23-228)	
Audio disc does not play	Symptom Troubleshooting (see page 23-229)	
Audio disc skips	Symptom Troubleshooting (see page 23-229)	
Audio remote switch does not work properly (with navigation)	Symptom Troubleshooting (see page 23-230)	
Audio remote switch does not work properly (without navigation)	Symptom Troubleshooting (see page 23-232)	
Audio disc cannot be inserted and/or ejected (with navigation)	Symptom Troubleshooting (see page 23-233)	
Display can be opened and/or closed even when an audio disc is being inserted or ejected	Replace the navigation unit (see page 23-355)	
PC card will not play/card icon on audio screen cannot be selected (with navigation)	Symptom Troubleshooting (see page 23-234)	
USB input sound is low or cannot be heard (with navigation)	Symptom Troubleshooting (see page 23-235)	Requirement of the USB devices (see Owner's Manual)
USB input sound is low or cannot be heard (without navigation)	Symptom Troubleshooting (see page 23-236)	Requirement of the USB devices (see Owner's Manual)
USB device does not function (with navigation)	Symptom Troubleshooting (see page 23-238)	Requirement of the USB devices (see Owner's Manual)
USB device does not function (without navigation)	Symptom Troubleshooting (see page 23-241)	Requirement of the USB devices (see Owner's Manual)
Error code: XM NO SIGNAL or XM ANTENNA is displayed (with navigation)	Symptom Troubleshooting (see page 23-245)	
XM radio display is blank and no station information is displayed (with navigation)	Symptom Troubleshooting (see page 23-245)	
XM radio preset memory is lost (with navigation)	Symptom Troubleshooting (see page 23-248)	
Poor or no sound with XM radio (Audio unit does display XM channels) (with navigation)	Symptom Troubleshooting (see page 23-249)	

System Description

Overview

The audio unit acts as the processor for all audio functions. Select audio functions from the audio unit, the audio remote (on the steering wheel), or by using the navigation voice control system. The audio display provides the current audio status. For vehicles with navigation, additional audio information is available by touching the audio button on the navigation audio screen (See the owner's manual and the navigation system manual for more details.).

The XM receiver passes its signal to the audio unit. In addition, it communicates with the audio unit via the GA-Net bus. Any open connections in the GA-Net bus circuit causes audio and navigation functions to appear inoperative.

For vehicles with navigation, pressing the open/close switch on the navigation display panel allows access to the CD slot and PC card.

A security signal is daisy-chained between the audio and vehicle components for integration into the vehicle's security system.

Speed-sensitive volume compensation (SVC)
Some audio systems are equipped with speed-sensitive volume compensation (SVC). The navigation or audio unit receives the vehicle speed pulse (VSP) from the ECM/PCM. The system processes the speed input and increases the navigation or audio system volume level as the vehicle speed increases to compensate for the various interior noises that occur at higher speeds. When the vehicle slows down, the volume returns to its normal level. The SVC has four settings: SVC OFF, LOW, MID and HIGH that can be adjusted using the navigation or audio unit. The SVC comes from the factory with the MID setting as the default.

To change the audio unit SVC setting, press the tune folder sound knob repeatedly until the SVC is displayed, rotate the knob to adjust the SVC to the desired setting (SVC OFF, LOW, MID, or HIGH).

To change the navigation unit SVC setting, press the AUDIO button, and then select the SOUND icon on the navigation display. Press the navigation display to select the desired setting (OFF, LOW, MID, HI).

The navigation system allows voice control of the audio, XM, PC card, and CD player. Voice control commands are communicated on the GA-Net (audio unit). When using the navigation TALK/BACK button, the audio is muted on all speakers and you get navigation sound on the front channels. When using the navigation or route guidance (RG), the front speakers give the navigation sound and the rear speakers continue to play. For more information, see the navigation section. The outline of the interruption function is shown in this table.

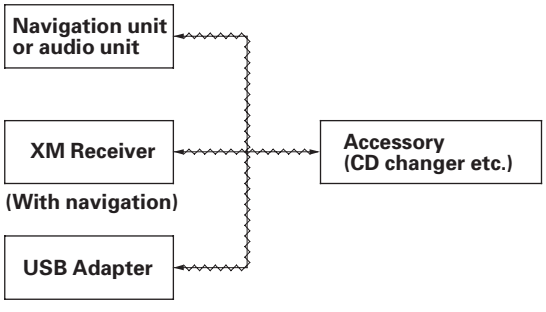
Contents	Audio output				
	Left front CH	Right front CH	Right rear CH	Left rear CH	Subwoofer CH
Navigation TALK /BACK Buttons	Navigation voice output	Navigation voice output	Muted	Muted	Muted
Route guidance	Navigation voice output	Navigation voice output	Audio	Audio	Audio

USB Adapter

The audio unit can play digital music from portable audio players, USB drive, etc. When the device is plugged into the USB adapter. The audio unit uses the GA-NET to allow you to control the device from the audio unit when searching and playing the files. Not all players and player functions work with the USB adapter. Please see the owner's manual for more information.

GA-Net Bus Configuration

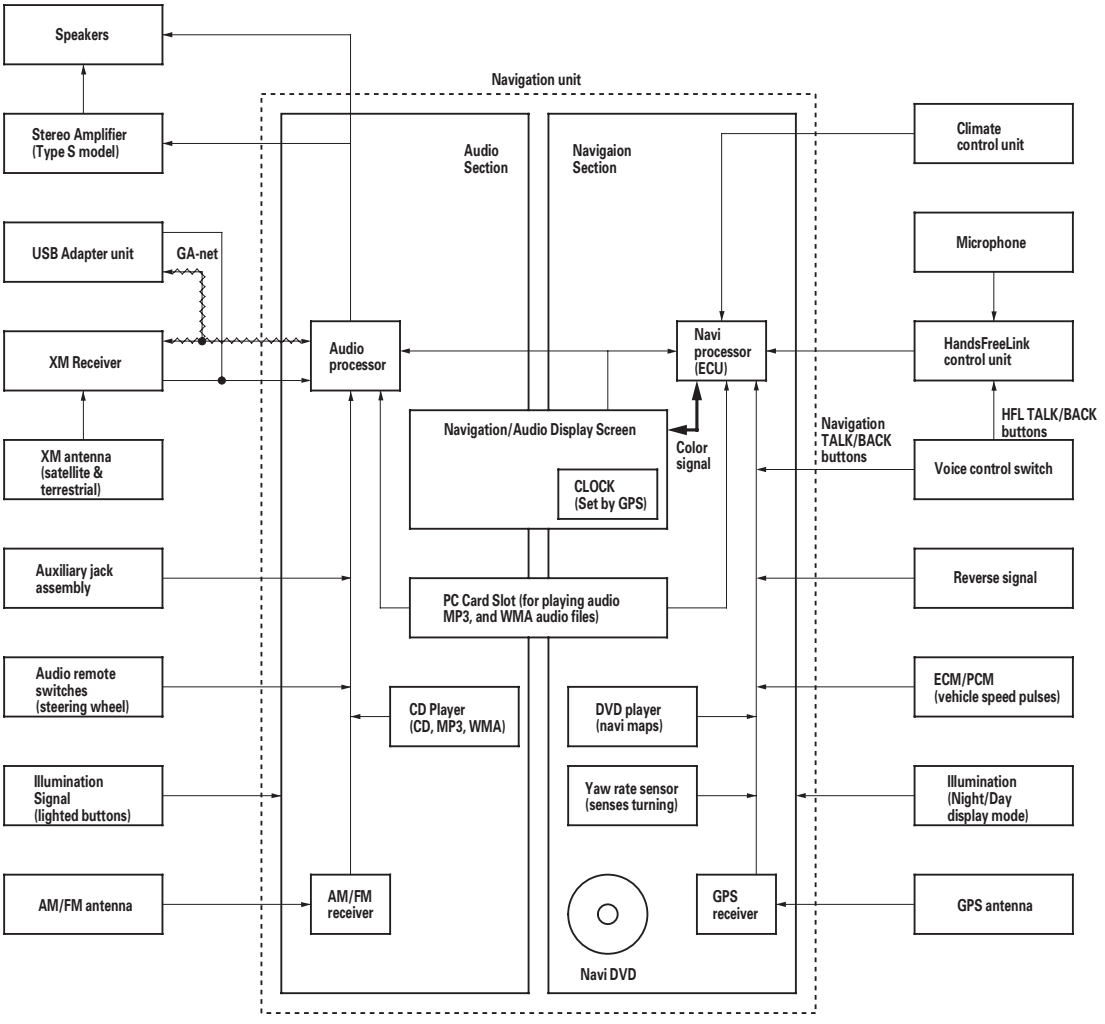
The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include navigation touch screen and hard button signals, audio/XM selections by voice, and XM station and music title names. Because the entire bus is daisy chained between components (see diagram), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. Naturally the addition of any audio accessory must maintain the continuity of the GA-Net bus by installing the Y cable included with the accessory kit.



(cont'd)

System Description (cont'd)

With navigation



NOTE: All items may not apply to this vehicle. See the owner's manual for more information.

Audio Glossary

Item	Definition
Active noise cancellation	The active noise cancellation system cancels some of the vehicle noise. This occurs in the 1,500—2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a canceling sound from the audio speaker.
AM (Amplitude Modulation)	The type of transmission used in the standard radio broadcast band from 530 to 1710 kHz.
Amplifier	A device that increases the level of a signal by increasing the current or voltage.
Antenna	A device used to send or receive electromagnetic waves through the air.
ATA (PC Card)	A type of card that has been tested for use in playing WMA, and MP3 music files in the PC Card slot. Sizes of up to 1 GB have been tested.
Audio remote switch	The switches on the steering wheel that control the audio system.
Auxiliary jack	Allows the customer to use a portable audio device to input audio recordings.
Balance	A control that changes the relative volume of the left and right channels.
Band	A range of frequencies between two definite limits. Bands are assigned by the Federal Communications Commission for specific uses.
Bass	An adjustment for the low frequency sounds of around 160 Hz and below.
Byte	A unit of storage for computer files and memory. A CD holds approximately 700 million bytes.
Cassette	Audio or video magnetic tape container having two reels. Customers can insert it for play back
Compact flash	A standard for small-size (3 x 4 cm), memory cards used in mobile computers, PDAs, digital cameras. Compact flash memory cards are available in size of 32 MB up to 4 GB or more and can be played in the audio PC slot. Sizes above 1 GB have not been tested.
CD (Compact Disc)	A 4.5-inch plastic disc containing digital audio recording that is played optically on a laser equipped player. Never use discs with a paper label. In a hot vehicle, labels can curl up and jam the unit.
CD (audio disc) changer	CD player that can store and play more than one CD. Two types are available. Some units accept CDs fed into the changer one at a time, and others accept a magazine (with CDs stacked in a container).
CD player	A component designed to play compact disc recordings using a laser optical pickup. The signal from a CD player usually requires amplification.
Decibels (db)	A method of measuring sound or radio signal strength received by the audio unit antenna.
Distortion	Inexact reproduction of an audio signal caused by playing music at levels the audio system cannot handle.
Dolby (noise reduction)	A processing system developed by Dolby Laboratories that reduces the background noise on recording media. The result is a cleaner playback from the audio system.
DUET	A serial data communication line used for sub display.
DVD (Digital Versatile Disc)	A 4.5-inch CD-like format used for storing movies with digital audio and video features. The DVD-A format is a DVD format designed for DVD audio systems. Some vehicles can play DVD and DVD-A formats.
Equalizer	A device that changes the relative volume of individual frequency bands to suit personal tastes of the listener.
Fader	The control that adjusts the relative volume levels of front and rear speakers in a four-speaker system.
Format	To prepare a PC Card to receive files this function is done on a PC. Always choose either FAT or FAT32, as the NTFS format is not accepted by the system. Pick the default sectors for the format method selected.
FM (Frequency Modulation)	The form of modulation used for radio and television sound transmission in most of the world. Less prone to interference than AM. The FM broadcast band in North America covers roughly 87.7 to 107.9 MHz.

(cont'd)

System Description (cont'd)

Audio Glossary

Item	Definition
GA-Net	The GA-Net allows the audio unit to communicate with all the audio and navigation components in a vehicle. If there is an open in the GA-Net, or components, components or the entire audio and navigation system may appear inoperative.
GB (Gigabyte)	A unit of memory or disk storage equal to billion bytes (1000 million bytes).
HDD	Abbreviation for hard disc drive. They are sensitive to heat and it is not recommended that they be used in the PC card slot for playing audio files.
Hertz (Hz)	The unit of frequency equal to one cycle per second (cps). One kilohertz (kHz) equals 1,000 cps; one megahertz (MHz) equals 1 million cps.
Integrated amplifier	A component that combines a pre amp and a power amp into a single unit. A receiver combines an integrated amp and a tuner into a single unit.
Jewel case	The hard plastic case that contains a compact disc or DVD. Always use a jewel case to prevent scratches on the underside of a CD or DVD.
LCD (Liquid Crystal Display)	A type of digital display that changes reflectance or transmittance when an electrical field is applied to it.
Memory	Circuitry or devices that hold information in electrical or magnetic form, such as the AM/FM radio presets.
MB (Megabyte)	One million bytes. Written as 1 MB. Megabytes are used as a measure of digital storage space. For example, a CD can hold 650 MB.
Mic	An abbreviation for microphone. For vehicles with navigation, the microphone accepts navigation voice commands to control audio and navigation functions.
MP3 music files	MP3 is an audio coding format. MP3 is a popular audio compression format on the Internet and computers. CDs and PC Cards with these files can be played on some vehicle's audio system.
Mute	When the navigation gives guidance, the front speakers are muted (no music). When you use the voice control system, all of the speakers are muted.
Noise	Unwanted random sounds like buzzing, hiss, pops, static, whine, etc.
PC card	The slot used for playing MP3 and WMA music files. The PC Card is usually a combination of a small flash card in a PCMCIA adaptor that slides into the slot. The ATA, SD, and compact flash types of cards have been tested up to 1 GB.
PCMCIA	A computer standard for the slot that the PC card slides into. Another term for the PC card slot.
Processor	The part of an audio device that performs tasks/calculations. In the audio unit the processor handles muting to allow the navi to speak voice commands, and the decoding/playback of the sound files etc.
Radio	A head unit that combines a tuner, a preamplifier, and often a power-amplifier.
Route guidance (RG)	Spoken voice used for turn-by-turn navigation from the audio speakers.
SCF (Cold Start Fix) screens	These screens are displayed if the system requires a GPS initialization. The vehicle should be moved outside into an open area away from buildings/power lines.
Stereo	A recording of at least two channels where you can hear sound or music from the left or right side.
SD (Secure Digital) card	This compact type of memory card allows for fast data transfer and has built-in security functions. SD cards have a small write-protection switch on the side.
Shield	A metallic foil or braided wire layer surrounding conductors which are designed to prevent electrostatic or electromagnetic interference (noise) from external sources such as buzzing, or popping sounds heard on the speakers.
Speaker (Loudspeaker)	A device that converts electrical energy into acoustical energy (sound).
Speed-sensitive volume compensation (SVC)	The SVC increases the audio volume to compensate for increased interior noise when the vehicle drivers at freeway speeds.
Subwoofer	A loudspeaker made to reproduce the lowest audio frequencies, about 25 Hz to 125 Hz.

Audio Glossary

Item	Definition
Track	A sound recording on a CD, tape, or PC Card.
Treble	An adjustment to control the volume of the high frequency sounds.
Tuner	A component (or part of a component) that receives radio signals and selects one broadcast from many.
Tweeter	A speaker designed to reproduce the higher frequencies (treble) only.
USB	Universal Serial Bus. The USB is used for playing the compressed audio files (MP3, WMA, and AAC) on the external device through the audio unit.
Voice coil	A coil of wire wrapped around a tube and then attached to the speaker cone or diaphragm. When an audio signal is applied, the coil becomes an electromagnet and interacts with the permanent magnet causing the come or diaphragm to vibrate. We interpret this vibrations as sound.
Volume control	Allows you to control the loudness of the music.
WMA music file	Windows Media Audio File. This is an accepted format for music files to be played on either a CD-R, a CD-RW or a PC Card.
Woofer	A speaker that is designed to reproduce low (bass) frequencies only.
XM radio	Satellite based radio transmission, which also uses a ground based repeater network to ensure seamless reception. The channels originate from XM's broadcast center, in Washington, DC, and uplink to two satellites. These satellites transmit the signal across the entire continental United States.
XM receiver	The external component that receives and processes the XM signals from the XM satellites, and terrestrial (land) stations. The audio unit communicates to the XM receiver over the GA-Net bus.

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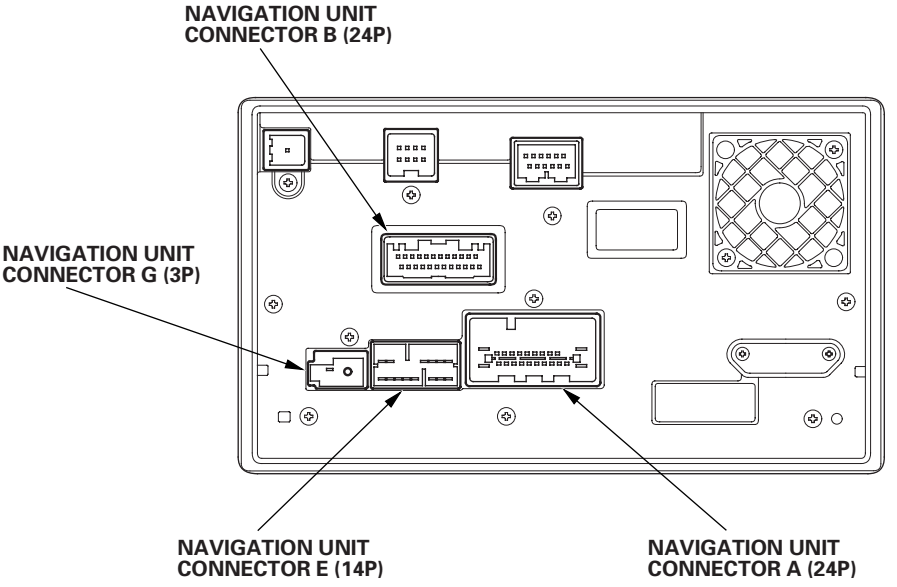
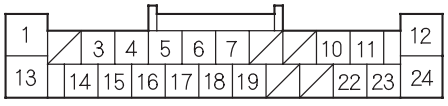
System Description (cont'd)

Audio Unit Connector for Inputs and Outputs

With navigation (Navigation unit)



NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Type S model

Cavity	Wire Color	Connect to
A1	RED	Dash lights brightness controller (ILL−)
A3	LT BLU	Data link connector (DLC) (K-LINE)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A5	BRN	Audio remote switch (AUDIO REMOTE GND)
A6	PUR	Stereo amplifier (RR SIG−)
A7	LT GRN	Stereo amplifier (RR SIG+)
A10	WHT	Stereo amplifier (RL SIG−)
A11	BLK	Stereo amplifier (RL SIG+)
A12	BLK	Body ground to G505 (GND)
A13	GRY	No. 14 (7.5 A) fuse in the under-dash fuse/relay box (ILL+)
A14	PUR	No. 35 (7.5 A) fuse in the under-dash fuse/relay box (ACC RADIO)
A15	BLU	ECM/PCM (VSP)
A16	PNK	Audio remote switch (AUDIO REMOTE SW)
A17	LT BLU	Stereo amplifier (SWD +B)
A18	PNK	Stereo amplifier (FR SIG−)
A19	BLU	Stereo amplifier (FR SIG+)
A22	RED	Stereo amplifier (FL SIG−)
A23	BLU	Stereo amplifier (FL SIG+)
A24	WHT	No. 23 (10 A) fuse in the under-hood fuse/relay box (+B BACK UP)

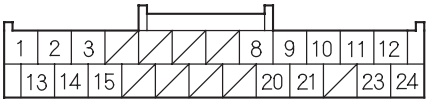
Except Type S model

Cavity	Wire Color	Connect to
A1	RED	Dash lights brightness controller (ILL−)
A3	LT BLU	Data link connector (DLC) (K-LINE)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A5	BRN	Audio remote switch (AUDIO REMOTE GND)
A6	ORN	Right rear speaker (RR R−)
A7	BLU	Right rear speaker (RR R+)
A10	BRN	Left rear speaker (RR L−)
A11	YEL	Left rear speaker (RR L+)
A12	BLK	Body ground to G505 (GND)
A13	GRY	No. 14 (7.5 A) fuse in the under-dash fuse/relay box (ILL+)
A14	PUR	No. 35 (10 A) fuse in the under-dash fuse/relay box (ACC RADIO)
A15	BLU	ECM/PCM (VSP)
A16	PNK	Audio remote switch (AUDIO REMOTE SW)
A18	BRN	Front passenger's door speaker, right tweeter (FR R−)
A19	GRY	Front passenger's door speaker, right tweeter (FR R+)
A22	PNK	Driver's door speaker, left tweeter (FR L−)
A23	LT GRN	Driver's door speaker, left tweeter (FR L+)
A24	WHT	No. 23 (10 A) fuse in the under-hood fuse/relay box (+B BACK UP)

(cont'd)

System Description (cont'd)

NAVIGATION UNIT CONNECTOR B (24P)

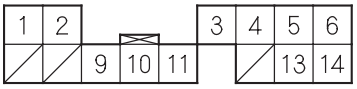


Wire side of female terminals

Cavity	Wire Color	Connect to
B1	BRN	Auxiliary jack assembly (AUX S GND)
B2	GRY*	Shield for terminals No. 1, No. 3, No. 11, No. 12, and No. 13 (AUX SH GND)
B3	BLU	Auxiliary jack assembly (AUX GND)
B8	LT BLU	HandsFreeLink control unit (HFL MUTE)
B9	PNK	HandsFreeLink control unit (TELM SIG−)
B10	GRY*	Shield for terminals No. 11, No. 12, No. 23, and No. 24 (HFL/NAV COMM SH)
B11	GRN	HandsFreeLink control unit (HFL/NAV COMM2)
B12	WHT	HandsFreeLink control unit (HFL/NAV COMM4)
B13	YEL	Auxiliary jack assembly (AUX L)
B14	GRN	Auxiliary jack assembly (AUX R)
B15	WHT	Auxiliary jack assembly (AUX DET)
B20	LT GRN	HandsFreeLink control unit (HFL ICON)
B21	BLU	HandsFreeLink control unit (TELM SIG+)
B23	BLK	HandsFreeLink control unit (HFL/NAV COMM1)
B24	RED	HandsFreeLink control unit (HFL/NAV COMM3)

*: The shielded wires have a heat-shrink tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

NAVIGATION UNIT CONNECTOR E (14P)

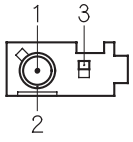


Wire side of female terminals

Cavity	Wire Color	Connect to
E1	BLU	XM receiver, USB adapter unit (+B)
E2	LT BLU	XM receiver, USB adapter unit (SYS ACC)
E3	BRN*	Shield for terminals No. 9 and No. 10 (GA-NET BUS SH)
E4	GRY*	Shield for terminals No. 5, No. 6, No. 13, and No. 14 (SAT SH GND)
E5	WHT	XM receiver, USB adapter unit (AUDIO R+)
E6	RED	XM receiver, USB adapter unit (AUDIO L+)
E9	BLU	XM receiver, USB adapter unit (GA-NET BUS+)
E10	PNK	XM receiver, USB adapter unit (GA-NET BUS−)
E11	BLK	XM receiver, USB adapter unit (GA-NET GND)
E13	BLK	XM receiver, USB adapter unit (AUDIO R−)
E14	GRN	XM receiver, USB adapter unit (AUDIO L−)

*: The shielded wires have a heat-shrink tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

NAVIGATION UNIT CONNECTOR G (3P)



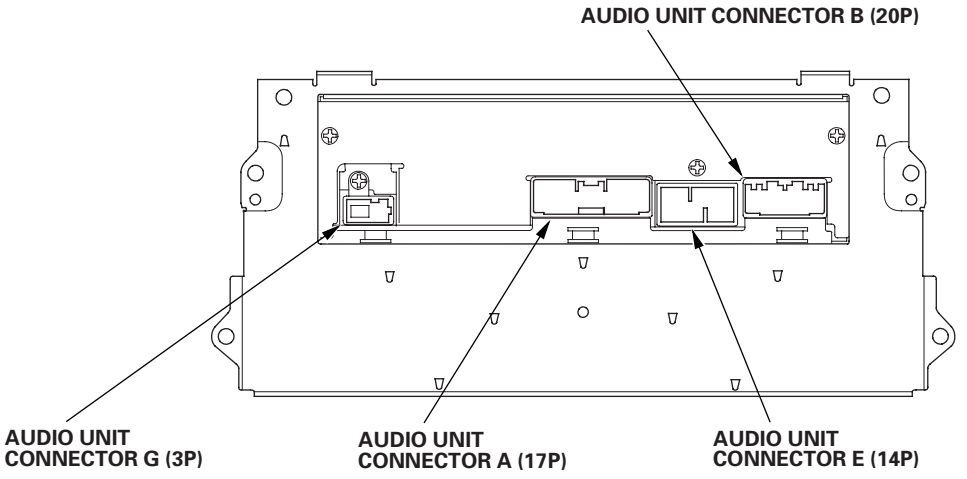
Terminal side of female terminals

Cavity	Wire Color	Connect to
G1	———	AM/FM/XM antenna (RF IN)
G2	———	Shield for terminal No. 1 (RF SH)
G3	———	AM/FM/XM antenna (ANT +B)

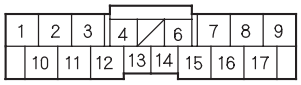
(cont'd)

System Description (cont'd)

Without navigation



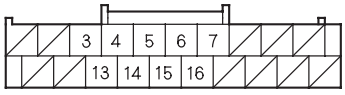
AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Cavity	Wire Color	Connect to
A1	RED	Dash lights brightness controller
A2	BRN	Left rear speaker (−)
A3	PNK	Driver's door speaker (−), Left tweeter (−)
A4	GRN	Multiplex integrated control unit (MICU) (SCTY RADIO)
A6	LT BLU	Multiplex integrated control unit (MICU) (K-LINE)
A7	BRN	Front passenger's door speaker (−), Right tweeter (−)
A8	ORN	Right rear speaker (−)
A9	BLK	Body ground to G505 (GND)
A10	GRY	No. 14 (7.5 A) fuse in the under-dash fuse/relay box (ILL+)
A11	YEL	Left rear speaker (+)
A12	LT GRN	Driver's door speaker (+)
A13	BLU	ECM/PCM (VSP)
A14	PUR	No. 35 (7.5 A) fuse in the under-dash fuse/relay box (ACC RADIO)
A15	GRY	Front passenger's door speaker (+), Right tweeter (+)
A16	BLU	Right rear speaker (+)
A17	WHT	No. 23 (10 A) fuse in the under-hood fuse/relay box (+B BACK UP)

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

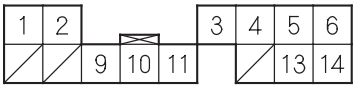
Cavity	Wire Color	Connect to
B3	BRN	Auxiliary jack assembly (AUX S GND)
B4	GRY*	Shield for terminals No. 3, No. 5, No. 13, No. 14, and No.15 (AUX SH GND)
B5	BLU	Auxiliary jack assembly (AUX GND)
B6	BRN	Audio remote switch (AUDIO REMOTE GND)
B7	PNK	Audio remote switch (AUDIO REMOTE SW)
B13	YEL	Auxiliary jack assembly (AUX L)
B14	GRN	Auxiliary jack assembly (AUX R)
B15	WHT	Auxiliary jack assembly (AUX DET)

*: The shielded wires have a heat-shrink tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

(cont'd)

System Description (cont'd)

AUDIO UNIT CONNECTOR E (14P)

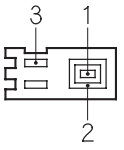


Wire side of female terminals

Cavity	Wire Color	Connect to
E1	BLU	USB adapter unit (+B)
E2	LT BLU	USB adapter unit (SYS ACC)
E3	BRN*	Shield for terminals No. 9 and No. 10 (BUS SH GND)
E4	GRY*	Shield for terminals No. 5, No. 6, No. 13, and No. 14 (SAT SH GND)
E5	WHT	USB adapter unit (SAT R+)
E6	RED	USB adapter unit (SAT L+)
E9	BLU	USB adapter unit (GA-NET BUS+)
E10	PNK	USB adapter unit (GA-NET BUS−)
E11	BLK	USB adapter unit (GND)
E13	BLK	USB adapter unit (SAT R−)
E14	GRN	USB adapter unit (SAT L−)

*: The shielded wires have a heat-shrink tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

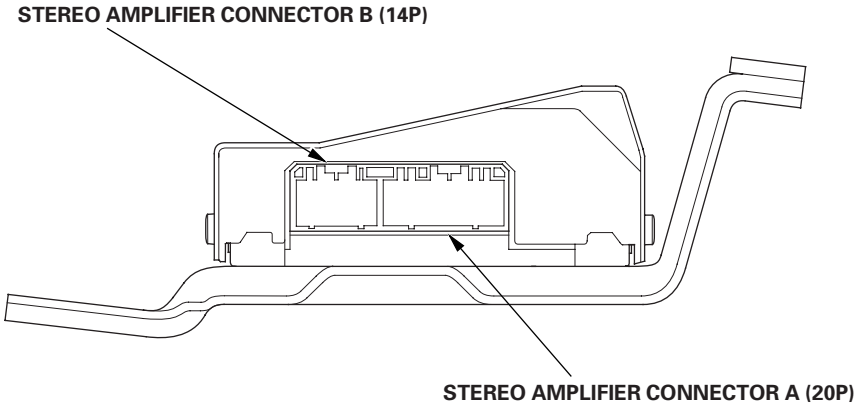
AUDIO UNIT CONNECTOR G (3P)



Terminal side of female terminals

Cavity	Wire Color	Connect to
G1	———	AM/FM antenna (RF IN)
G2	———	Shield for terminal No. 1 (RF SH)
G3	———	AM/FM antenna (ANT +B)

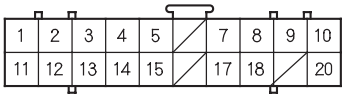
Stereo Amplifier Connector for Inputs and Outputs (Type S model)



(cont'd)

System Description (cont'd)

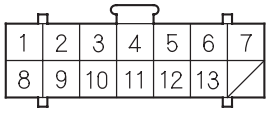
STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Cavity	Wire Color	Connects to
A1	PNK	Right tweeter (+)
A2	GRY	Front passenger's door speaker (+)
A3		Driver's door speaker (+)
A4	RED	Left tweeter (+)
A5	GRN	Subwoofer (+)
A7	BLU	Right rear speaker (+)
A8	GRY	Left rear speaker (+)
A9	PUR	Multiplex integrated control unit (MICU) (ACC RADIO)
A10	LT GRN	+B (Main stereo power supply)
A11	BLU	Right tweeter (−)
A12	BRN	Front passenger's door speaker (−)
A13	PNK	Driver's door speaker (−)
A14	GRN	Left tweeter (−)
A15	RED	Subwoofer (−)
A17	ORN	Right rear speaker (−)
A18	BRN	Left rear speaker (−)
A20	BLK	Ground (G601)

STEREO AMPLIFIER CONNECTOR B (14P)

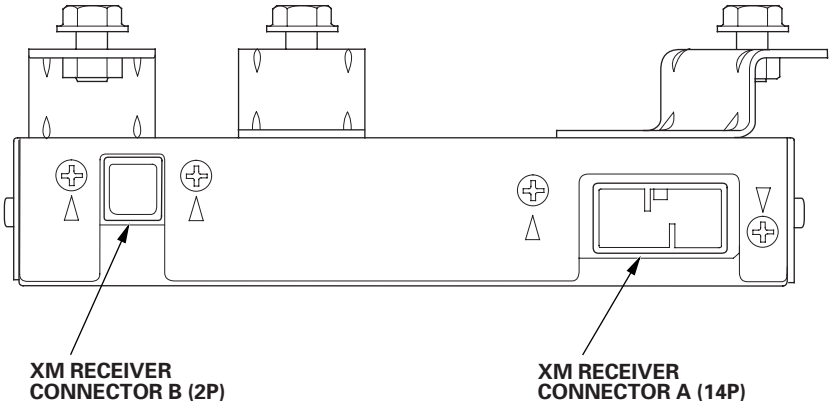


Wire side of female terminals

Cavity	Wire Color	Connects to
B1	BLU	Navigation unit (FL SIG+)
B2	BRN*	Shield for terminals No. 1 and No. 8 (FL SH GND)
B3	BLK	Navigation unit (RL SIG+)
B4	BLU	Navigation unit (FR SIG+)
B5	GRY*	Shield for terminals No. 4 and No. 11 (FR SH GND)
B6	LT GRN	Navigation unit (RR SIG+)
B7	LT BLU	Navigation unit (AMP ON)
B8	RED	Navigation unit (FL SIG−)
B9	GRN*	Shield for terminals No. 3 and No. 10 (RL SH GND)
B10	WHT	Navigation unit (RL SIG−)
B11	PNK	Navigation unit (FR SIG−)
B12	YEL*	Shield for terminals No. 6 and No. 13 (RR SH GND)
B13	PUR	Navigation unit (RR SIG−)

*: The shielded wires have a heat-shrink tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

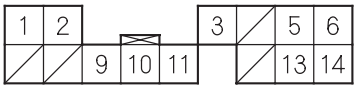
XM Receiver Connector for Inputs and Outputs (With navigation)



(cont'd)

System Description (cont'd)

XM RECEIVER CONNECTOR A (14P)

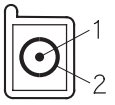


Wire side of female terminals

Cavity	Wire Color	Connect to
A1	BLU	Navigation unit, USB adapter unit (+B)
A2	LT BLU	Navigation unit, USB adapter unit (SYS ACC)
A3	BRN*	Shield for terminals No. 9 and No. 10 (GA-NET SH GND)
A5	WHT	Navigation unit, USB adapter unit (SAT R+)
A6	RED	Navigation unit, USB adapter unit (SAT L+)
A9	BLU	Navigation unit, USB adapter unit (GA-NET BUS+)
A10	PNK	Navigation unit, USB adapter unit (GA-NET BUS−)
A11	BLK	Navigation unit, USB adapter unit (GND)
A13	BLK	Navigation unit, USB adapter unit (SAT R−)
A14	GRN	Navigation unit, USB adapter unit (SAT L−)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

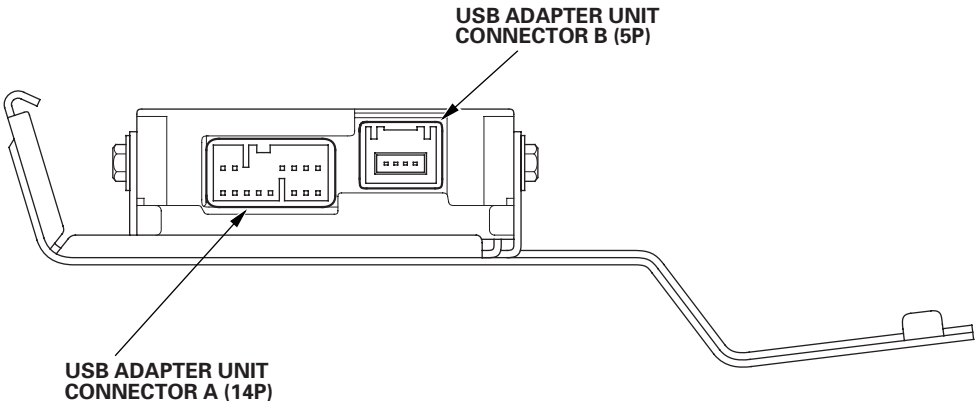
XM RECEIVER CONNECTOR B (2P)



Terminal side of female terminals

Cavity	Wire Color	Connect to
B1	———	Satellite signal antenna (SAT/TER)
B2	———	Shield for terminal No. 1 (GND SH)

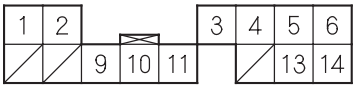
USB Adapter Unit Connector for Inputs and Outputs



(cont'd)

System Description (cont'd)

USB ADAPTER UNIT CONNECTOR A (14P)

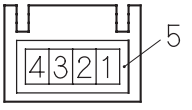


Wire side of female terminals

Cavity	Wire Color	Connect to
A1	BLU	Navigation unit*2, audio unit*3, XM receiver (+B)
A2	LT BLU	Navigation unit*2, audio unit*3, XM receiver (SYS ACC)
A3	BRN*1	Shield for terminals No. 9 and No. 10 (GA-NET BUS SH)
A4	GRY*1	Shield for terminals No. 5, No. 6, No. 13, and No. 14 (AUDIO SH)
A5	WHT	Navigation unit*2, audio unit*3, XM receiver (AUDIO R+)
A6	RED	Navigation unit*2, audio unit*3, XM receiver (AUDIO L+)
A9	BLU	Navigation unit*2, audio unit*3, XM receiver (GA-NET BUS+)
A10	PNK	Navigation unit*2, audio unit*3, XM receiver (GA-NET BUS−)
A11	BLK	Navigation unit*2, audio unit*3, XM receiver (GND)
A13	BLK	Navigation unit*2, audio unit*3, XM receiver (AUDIO R−)
A14	GRN	Navigation unit, XM receiver (AUDIO L−)

* 1: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.
* 2: With navigation
* 3: Without navigation

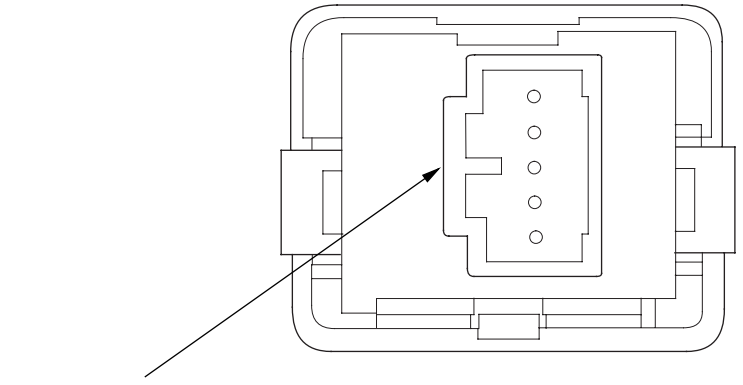
USB ADAPTER UNIT CONNECTOR B (5P)



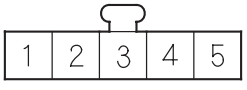
Terminal side of female terminals

Cavity	Wire Color	Connect to
B1	———	USB adapter (USB VBUS)
B2	———	USB adapter (USB DATA−)
B3	———	USB adapter (USB DATA+)
B4	———	USB adapter (USB GND)
B5	———	Shield for terminals No. 1, No. 2, No. 3, and No. 4 (USB SH)

Auxiliary Jack Assembly Connector for Inputs and Outputs



AUXILIARY JACK ASSEMBLY 5P CONNECTOR



Wire side of female terminals

With navigation

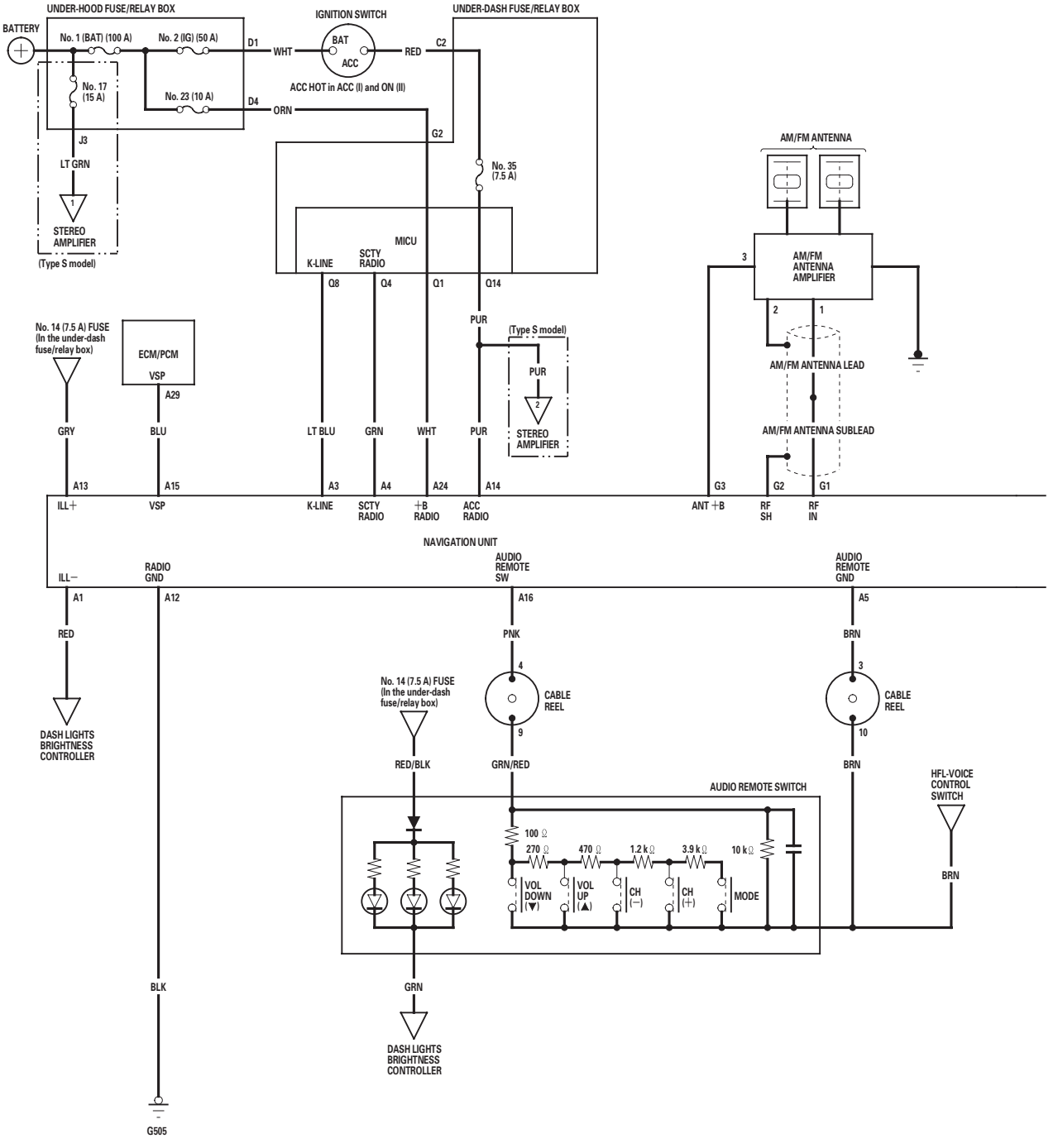
Cavity	Wire Color	Connect to
1	WHT	Navigation unit (AUX DET)
2	BLU	Navigation unit (AUX GND)
3	BRN	Navigation unit (AUX S GND)
4	YEL	Navigation unit (AUX L)
5	GRN	Navigation unit (AUX R)

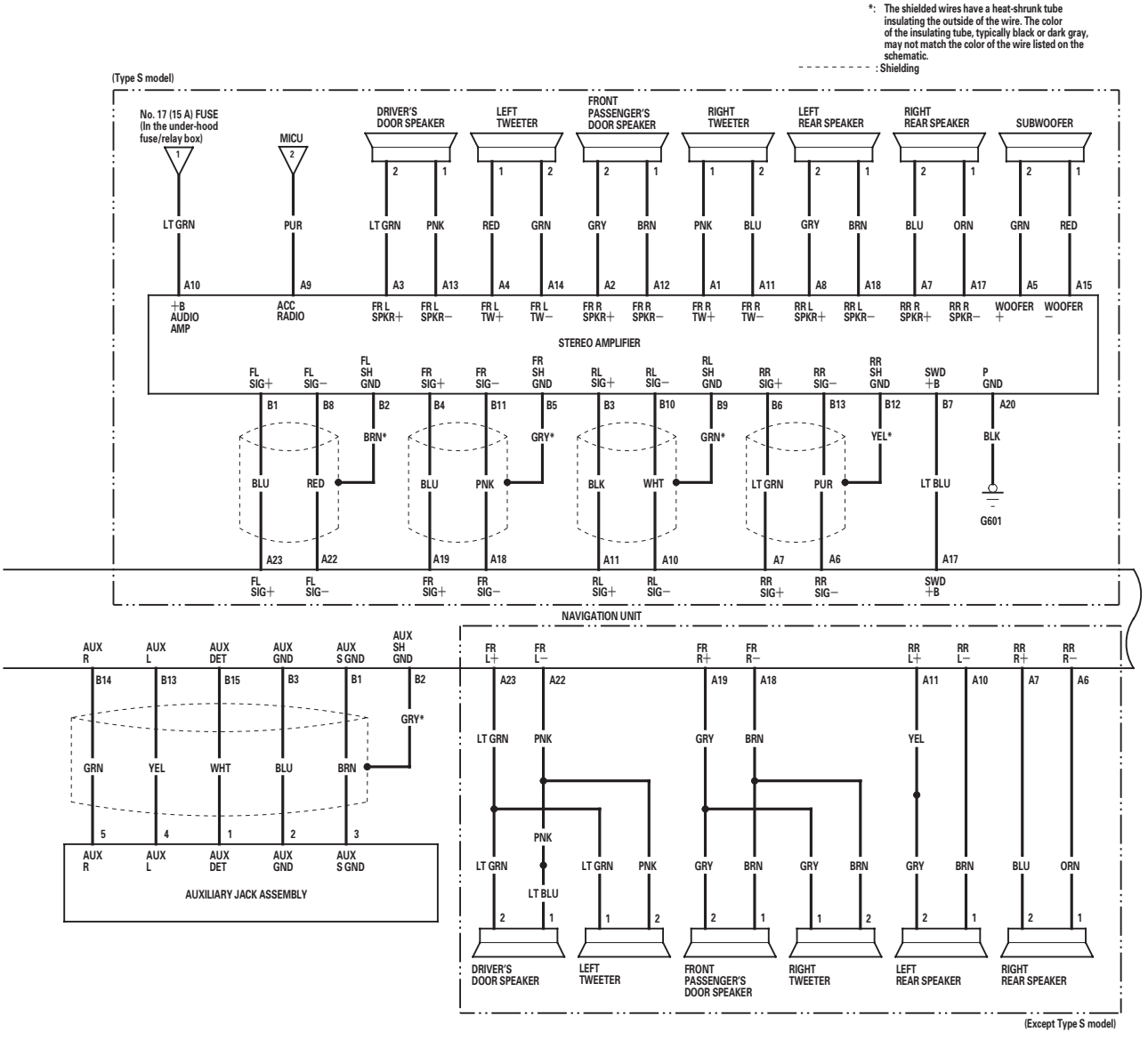
Without navigation

Cavity	Wire Color	Connect to
1	WHT	Audio Unit (AUX DET)
2	BLU	Audio Unit (AUX GND)
3	BRN	Audio Unit (AUX S GND)
4	YEL	Audio Unit (AUX L)
5	GRN	Audio Unit (AUX R)

Circuit Diagram

With Navigation




*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.
: Shielding
(Type S model)
No. 17 (15 A) FUSE (In the under-hood fuse/relay box)
MICU
DRIVER'S DOOR SPEAKER
LEFT TWEETER
FRONT PASSENGER'S DOOR SPEAKER
RIGHT TWEETER
LEFT REAR SPEAKER
RIGHT REAR SPEAKER
SUBWOOFER
LT GRN
PUR
LT GRN
PNK
RED
GRN
GRY
BRN
PNK
BLU
GRY
BRN
BLU
ORN
GRN
RED
A10
A9
A3
A13
A4
A14
A2
A12
A1
A11
A8
A18
A7
A17
A5
A15
+B AUDIO AMP
ACC RADIO
FR L SPKR+
FR L SPKR−
FR L TW+
FR L TW−
FR R SPKR+
FR R SPKR−
FR R TW+
FR R TW−
RR L SPKR+
RR L SPKR−
RR R SPKR+
RR R SPKR−
WOOFER +
WOOFER −
STEREO AMPLIFIER
FL SIG+
FL SIG−
FL SH GND
FR SIG+
FR SIG−
FR SH GND
RL SIG+
RL SIG−
RL SH GND
RR SIG+
RR SIG−
RR SH GND
SWD +B
P GND
B1
B8
B2
B4
B11
B5
B3
B10
B9
B6
B13
B12
B7
A20
BRN*
GRY*
GRN*
YEL*
BLK
BLU
RED
BLU
PNK
BLK
WHT
LT GRN
PUR
LT BLU
G601
A23
A22
A19
A18
A11
A10
A7
A6
A17
NAVIGATION UNIT
AUX R
AUX L
AUX DET
AUX GND
AUX S GND
AUX SH GND
FR L+
FR L−
FR R+
FR R−
RR L+
RR L−
RR R+
RR R−
B14
B13
B15
B3
B1
B2
A23
A22
A19
A18
A11
A10
A7
A6
GRY*
LT GRN
PNK
GRY
BRN
YEL
GRN
YEL
WHT
BLU
BRN
PNK
LT GRN
PNK
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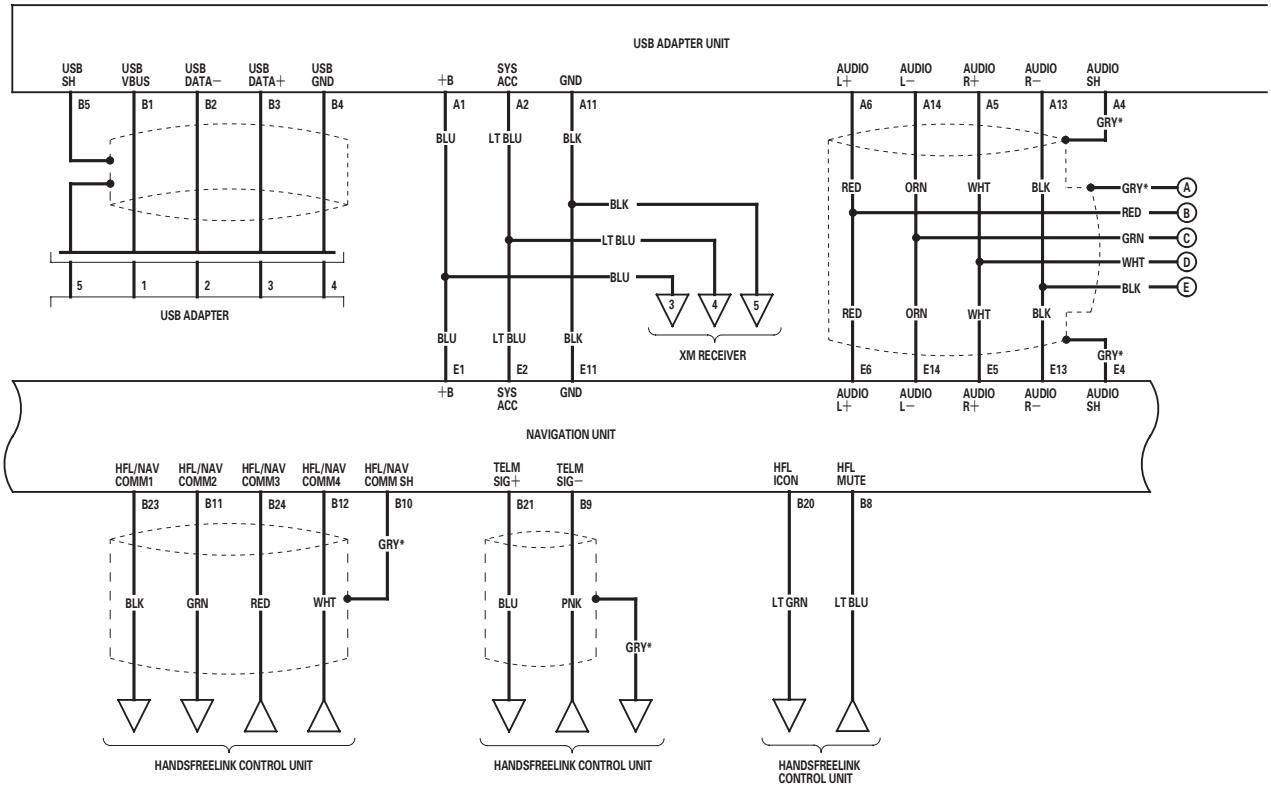
2
AUXILIARY JACK ASSEMBLY
DRIVER'S DOOR SPEAKER
LEFT TWEETER
FRONT PASSENGER'S DOOR SPEAKER
RIGHT TWEETER
LEFT REAR SPEAKER
RIGHT REAR SPEAKER
(Except Type S model)

(cont'd)

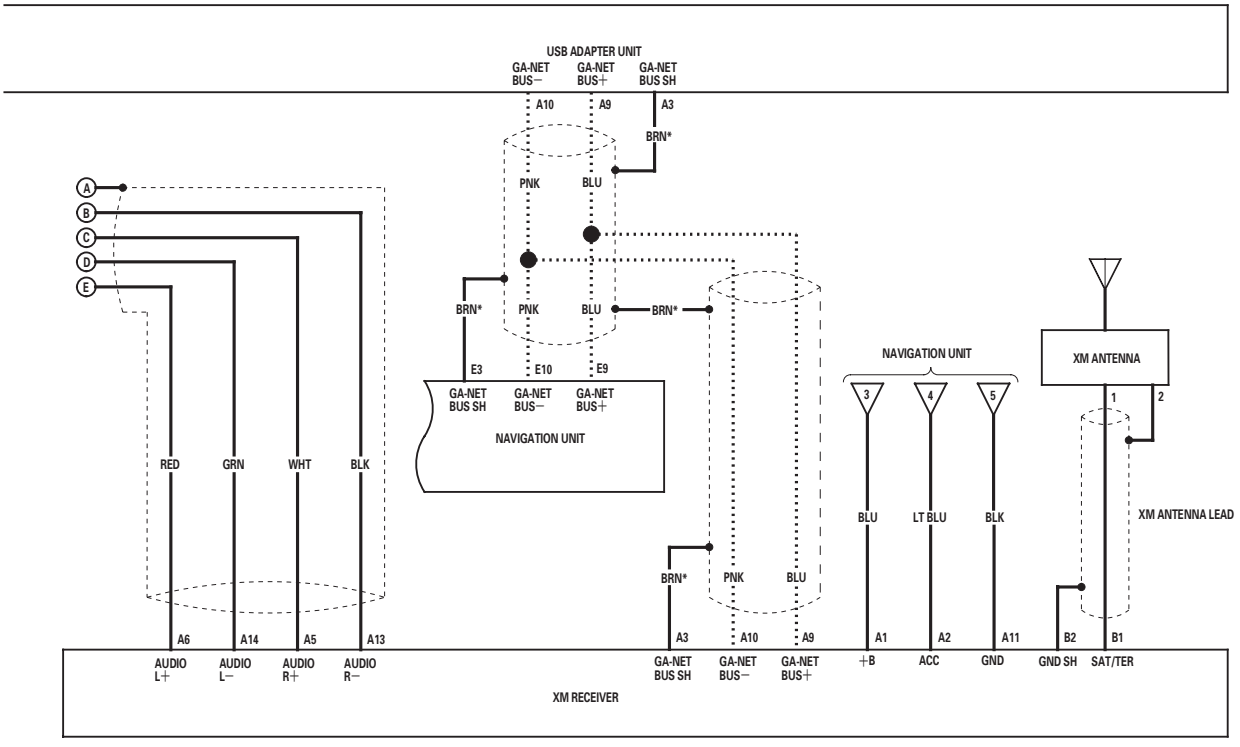
Circuit Diagram (cont'd)



*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

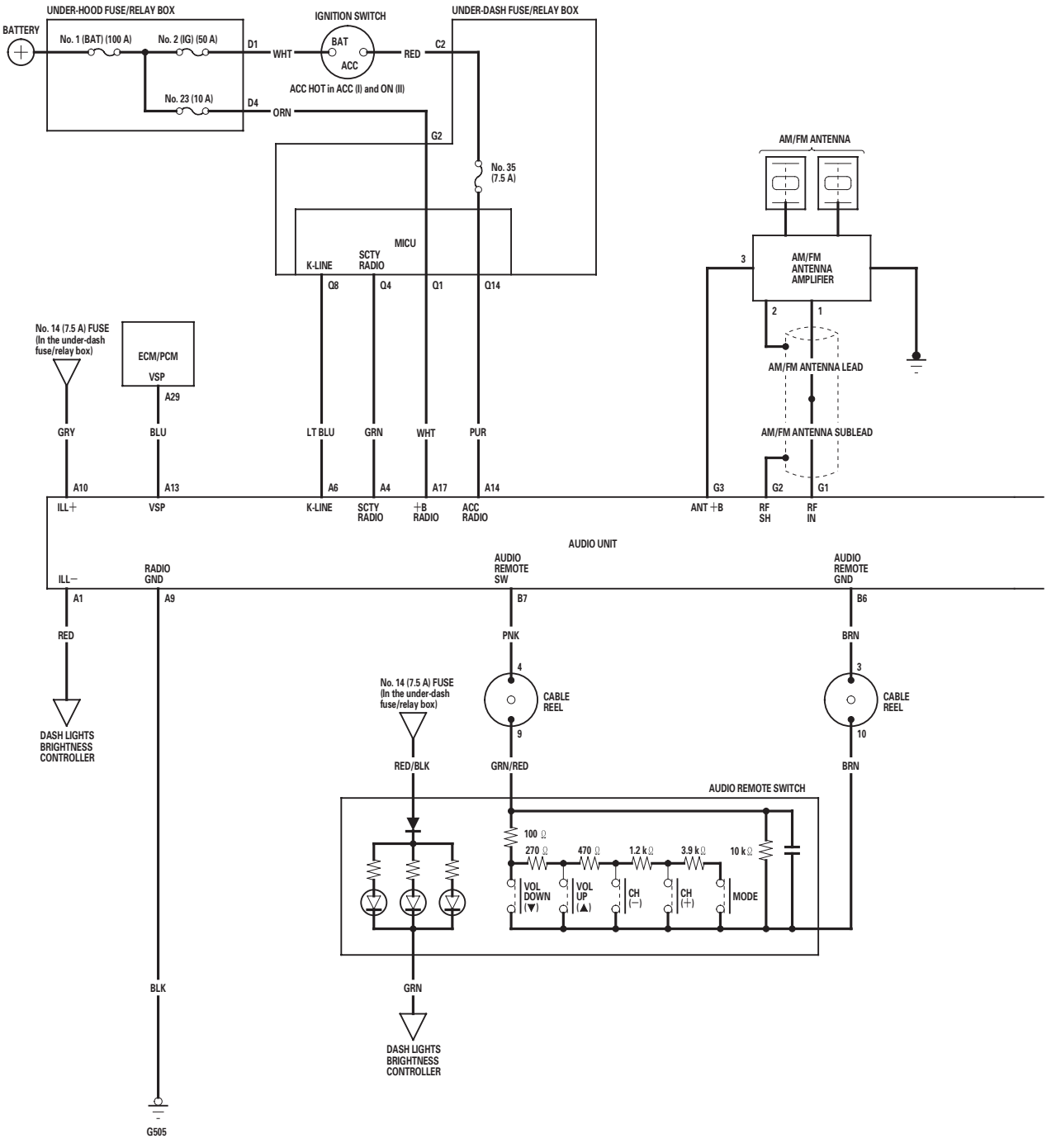
: GA-NET

: Shielding



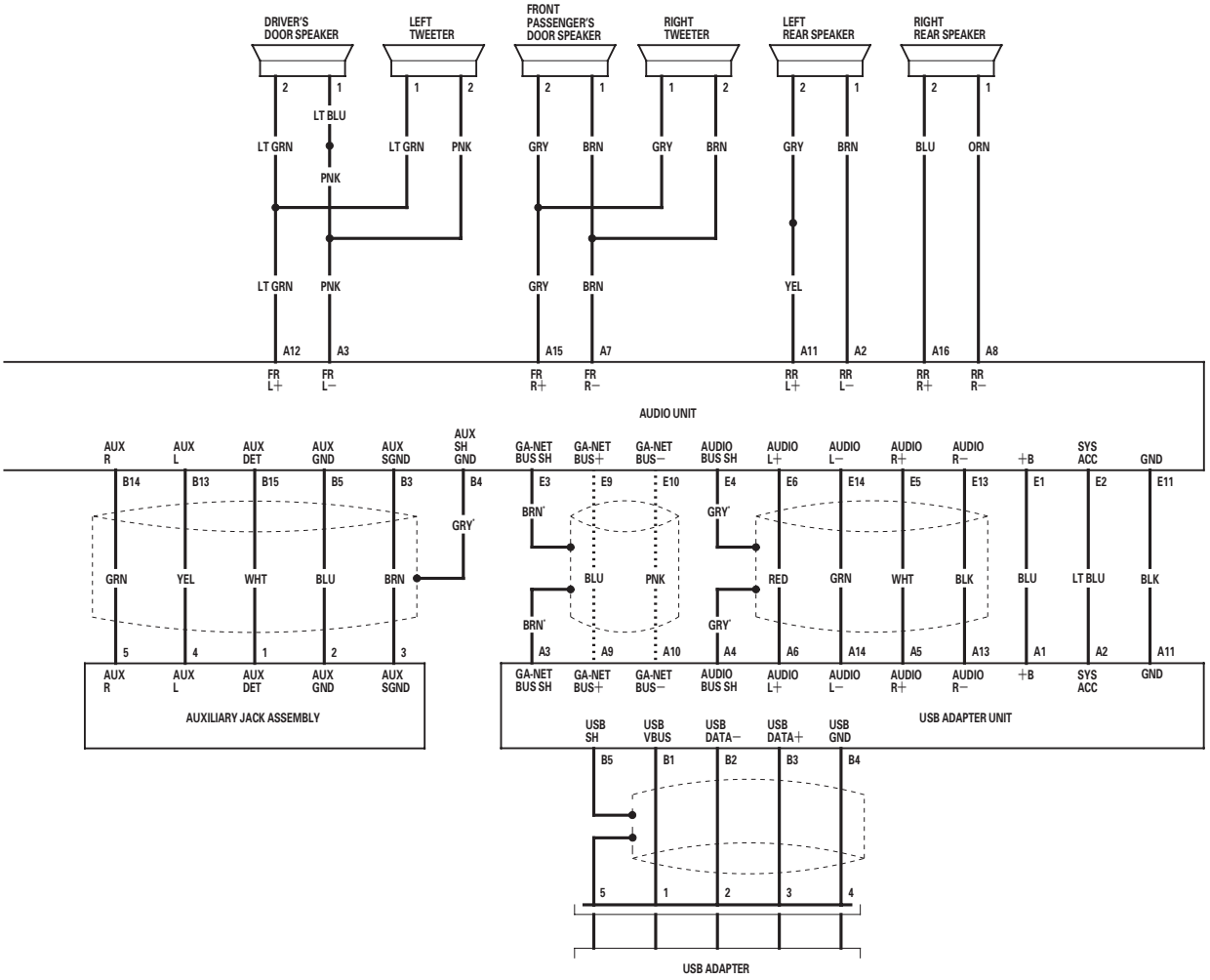
Circuit Diagram (cont'd)

Without Navigation



*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

: GA-NET
: Shielding



Self-diagnostic Function

Without Navigation

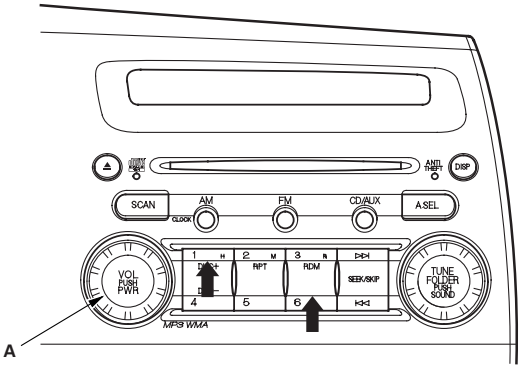
The audio system has a self-diagnostic function.

Serial Number Display Mode

To obtain the audio unit serial number on a vehicle, do the following:

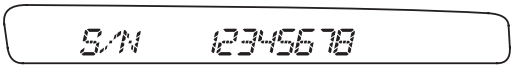
NOTE:
- This procedure can only be performed when the battery power is disconnected from the audio unit and the audio unit displays CODE.
- To obtain the navigation unit serial number, refer to ECU Info. in the navigation system diagnostic mode (see page 23-305).

1. Turn the ignition switch to ON (II).
2. Make sure the audio system is turned off.
3. Push and hold the preset No. 1 and No. 6 buttons.
4. While holding the buttons, push the VOL PUSH PWR knob (A) to ON.
5. Release the buttons and the self-diagnostic begins.



6. The display shows a 8 digit serial number.

   Eight digits of the serial number (example 12345678)

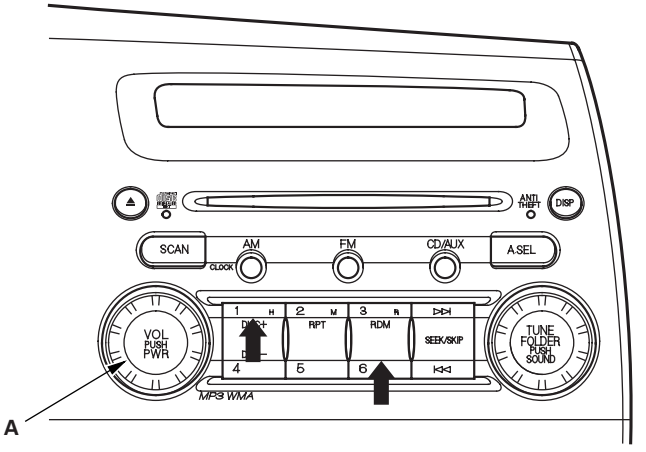


7. Use all 8 numbers as the serial number when using the Interactive Network (iN) to retrieve the 5 digit anti-theft code.
8. To end the self-diagnostic function, turn the audio unit off, or turn the ignition switch to LOCK (0).

How to check for audio system condition

NOTE:
- The audio unit must be in the code enter screen before performing the self-diagnostic function.
- The self diagnostic function does not find every problem with the audio system. Check any official Honda service website for more information about the audio system.

1. Turn the ignition switch to ON (II).
2. Make sure the audio system is turned off.
3. Push and hold the preset No. 1 and No. 6 buttons.
4. While holding the buttons, push the VOL PUSH PWR knob (A) to ON.
5. Release the buttons and the self-diagnostic begins.



6. When you are in the self-diagnostic mode, pressing a preset button starts.

No. 3 button
Entire LCD lighting/light-out mode: Turns on/off the entire LCD to show the presence or absence of an LCD failure. The entire display must appear. If there are dead segments, replace the audio unit.

No. 4 button
Duty indication mode (for the Illumination dim): Indicates the duty for the Illumination dim when the dash lights are on.

No. 5 button
Vehicle speed pulse indication mode: Indicates the vehicle speed pulse.

FM button (Push and hold 5 sec.)
Reception level check mode: Indicates the reception level (dB). When entering the reception level check mode, the AM/FM button is used to change the main/sub antenna. See Reception level indication for more information.

CD button (Push and hold 5 sec.)
DRAM residual quantity indication mode: Indicates the DRAM residual quantity.

(cont'd)

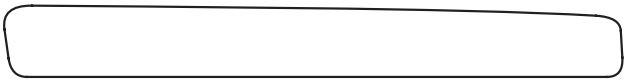
Self-diagnostic Function (cont'd)

7. The end the self-diagnostic function, turn the audio unit off, or turn the ignition switch to LOCK (0).

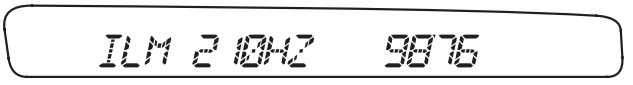
Display Specifications

Entry LCD Lighting
No. 3 button

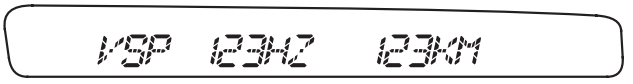
Entry LCD Lights-outs
No. 3 button



Duty (for the illumination) indication
No. 4 button



Vehicle speed pulse indication
No. 5 button



Reception level indication
FM button

DRAM residual quantity indication
CD button

Speaker check mode

8. Turn off the audio unit.
9. Push and hold the No. 1 and No. 3 buttons. While holding the buttons, push the VOL push PWR knob to ON. Release the buttons and the speaker check mode begins. A low-frequency hum should sound for about one minute. Change the test speaker by pushing the SKIP button. If you find a speaker(s) with no sound, check the speaker and harness connections. If the connections are good, replace the speaker, and retest.
10. To end the self-diagnostic function, turn the audio unit off, or turn the ignition switch to LOCK (0).

Reception level indication mode

This diagnostic screen checks the audio unit's reception level. This level then can be used in the diagnosis of audio unit reception quality. The reception level is displayed in decibels (dB)

Preperation:
- Pank the vehicle putdoors in an appropriate location for good radio reception.
- Tune to a powerful local FM radio station then write down the radio station number.

1. Enter the reception level indication mode in the self-diagnostic function. The AM/FM antenna amplifier is on (A. SEL or TP is not displayed in the audio-HVAC display).

2. Tune to the FM radio station you wrote down preperation using the TUNING knob, and note the decibel level of that station when you release the button.

3. Press and release the A. SEL button to turn the AM/FM antenna amplifier off (A. SEL or TP is now displayed in the audio-HVAC display).

4. Tune to the FM radio station you wrote down in preperation using the TUNING knob, and note the decibel level of that station when you release the button.

5. Press and release the A. SEL button to turn the AM/FM antenna amplifier back on (A. SEL or TP is not displayed in the audio-HVAC display.

6. Turn the ignition switch to LOCK (0) or audio unit off to exit the test mode.

7. Compare your results to a known-good, (make sure it is the same year and trim level) in the same location and direction, and under the same environmental conditions.

Error Codes

The audio system displays error codes when a problem is detected with the disc changer, the disc, the tape player, the XM radio, or the anti-theft code.

This is not a complete list of audio error codes. Refer to symptom troubleshooting, or go to any official Honda service website for more service information.

CD Error Codes (with navigation)

Error Code Displayed	Possible Cause	Solution
DISC ERROR	The system cannot read the disc because an audio or video DVD is inserted into the unit. The CD may be inserted upside down.	Verify that the unit functions with a standard mass production CD.
MECH ERROR	There is a problem with the mechanism A CD label may be jammed in the mechanism.	Replace the navigation unit.

CD Error Codes (without navigation)

Error Code Displayed	Possible Cause	Solution
BAD DISC-PLEASE CHECK OWNERS MANUAL PUSH EJECT	• CD label jammed in the mechanism. • CD eject mechanism or motor is inoperative. • CD spindle motor won't spin up the CD. • The wrong type disc is inserted.	Press the EJECT button and hold it for 5 seconds. If the disc does not eject, try again. If the disc still won't eject, replace the unit.

CD Error Codes

Error Code Displayed	Possible Cause	Solution
HEAT ERROR	CD player is too hot. This can happen if the vehicle is parked in the sunlight all day.	The unit should function normally when it cools off.
FORMAT	Audio unit cannot read the files on the CD or CD-R.	Current track is skipped. The next supported track or file plays automatically. • Verify that CD, CD-R or CD-RW file names end in CD-A or WMA. • Verify that CD, CD-R or CD-RW with compressed music formats end in MP3 or WMA. • Other file formats like I-tunes or Ogg are not recognized. • WMA files may have (DRM) copy protection and cannot be read.

USB Error Codes

Error Code Displayed	Possible Cause	Solution
FILE ERROR	The audio unit cannot read the file(s).	Check the files in the USB device. There is a possibility that the files have been damaged.
MEDIA ERROR	Unsupported USB device is connected.	Connect the applicable USB device. (see Owner's Manual)
USB NO DATA	USB device is not connected.	If the code appears when the USB devices is connected, go to USB device does not function: • With navigation (see page 23-238) • Without navigation (see page 23-241)

XM Error Codes

Error Code Displayed	Possible Cause	Solution
LOADING	XM radio is acquiring audio or program information.	Wait until the radio receives the information.
(XM) OFF AIR	XM channel not in service.	Try another XM channel.
(XM) NO SIGNAL	Loss of signal.	Both terrestrial and satellite antennas have lost signal. Park the vehicle outside with a clear view of the southern horizon.
(XM) UPDATING	XM radio is receiving information update from the network.	This message disappears once the update finishes.
(XM) CHECK ANTENNA (XM) ANTENNA ERROR	XM antenna error.	Repair open or short in the satellite antenna. Substitute the XM antenna with a known-good one, and recheck. If the error is gone, replace the original XM antenna. If the error is still present, replace the antenna lead.
———	No signal from XM.	Check a known-good vehicle with XM radio. If the known-good vehicle has the same symptoms, contact XM Satellite Radio at 800-852-9696.

Audio Unit Error Codes

Error Code Displayed	Possible Cause	Solution
CODE ERROR 1	Anti-theft code mismatch (1st try).	Enter the correct anti-theft code.
CODE ERROR E	Anti-theft code mismatch (10th try).	Remove the No. 23 (10 A) fuse in the under-hood fuse/relay box, then reinsert it. You will have 10 more tries to enter the correct anti-theft code.

NOTE: Do XM error codes checks with the vehicle parked outside with a clear view of the southern horizon.

Symptom Troubleshooting

Poor AM or FM radio reception or interference (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check for aftermarket accessories plugged into the vehicle accessory power sockets (including cell phones).
- Check the connectors for poor connections or loose terminals.
- Check the radio reception in an open area. Compare it to a known-good vehicle whenever possible. Poor reception/interference can be caused by the following:
  – The radio station is far away.
  – Atmospheric conditions are unfavorable.
  – Tall buildings, mountains, or high-voltage power lines are nearby.
  – Aftermarket metallic wi ndow tint.

1. Turn the ignition switch to ON (II).

2. Do the seek stop test (see page 23-255).

   Is the test vehicle within 10 % of the known-good vehicle?

   YES—Multipath interference or weak station. Operation is normal. ■
   NO—Go to step 3.

3. Check if the radio reception/interference is the same in several locations.

   Is the reception/interference the same?

   YES—Go to step 4.
   NO—Multipath interference or weak station. Operation is normal. ■

4. Start the engine.

5. Check the reception/interference.

   Is there noise (static or whine) only with the engine running?

   YES—Check the antenna and radio grounds. If OK, check the charging system and the ignition system. ■
   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Remove the right side C-pillar trim (see page 20-75).

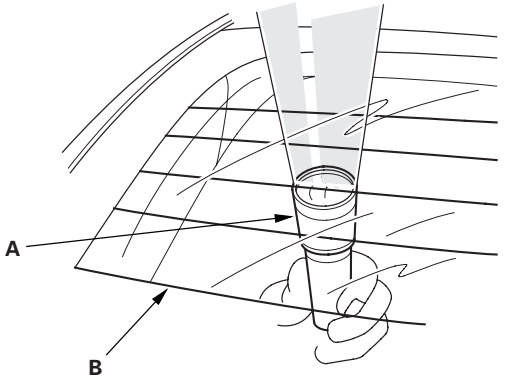
8. Check the connections from the AM/FM antenna amplifier to the window antenna.

   Are there any loose or damaged connections?

   YES—Repair the connections, or substitute a known-good AM/FM antenna amplifier and retest. If the symptom/condition goes away, replace the original AM/FM antenna amplifier (see page 23-263). ■

   NO—Go to step 9.

9. With the help of an assistant inside the vehicle, have the assistant shine a flashlight (A) along each antenna wire (B). Check from the outside of the vehicle for any breaks or openings in the antenna wires (the light shines through).



   Are there any breaks or cuts in the antenna?

   YES—Repair the window antenna. Go to AM/FM antenna repair (see page 23-264), or replace the rear window (see page 20-47) if the damaged section is too long. ■

   NO—Go to step 10.

10. Remove the navigation unit (see page 23-355). Check that the antenna lead is properly connected.

    Is it connected properly?

    YES—Go to step 11.

    NO—Reconnect the connector, and recheck the function. ■

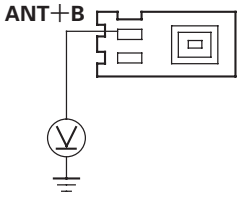
11. Disconnect the AM/FM antenna lead 3P connector from the AM/FM antenna amplifier (see page 23-263).

12. Turn the ignition switch to ON (II).

13. Turn on the navigation unit.

14. Measure the voltage between the AM/FM antenna lead connector terminal No. 3 at the AM/FM antenna amplifier and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 19.

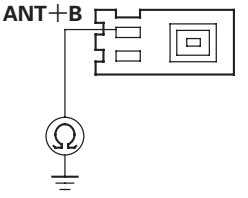
NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).

16. Disconnect navigation unit connector G (3P).

17. Check for continuity between the AM/FM antenna amplifier 3P connector terminal No. 3 and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

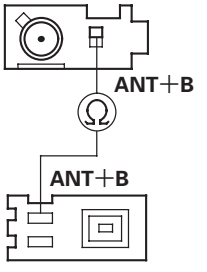
Is there continuity?

YES—Repair short to body ground in the wire between the navigation unit and the AM/FM antenna amplifier. ■

NO—Go to step 18.

18. Check for continuity between navigation unit connector G (3P) terminal No. 3 and the AM/FM antenna amplifier 3P connector terminal No. 3.

NAVIGATION UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good navigation unit (see page 23-355), and recheck. ■

NO—Repair open in the wire between the navigation unit and the AM/FM antenna amplifier. ■

(cont'd)

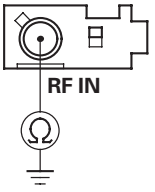
Symptom Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0).

20. Disconnect navigation unit connector G (3P).

21. Check for continuity between navigation unit connector G (3P) terminal No. 1 and body ground.

NAVIGATION UNIT CONNECTOR G (3P)



Terminal side of female terminals

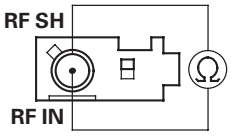
Is there continuity?

YES—Replace the AM/FM antenna lead and/or sublead. ■

NO—Go to step 22.

22. Check for continuity between navigation unit connector G (3P) terminals No. 1 and No. 2.

NAVIGATION UNIT CONNECTOR G (3P)



Terminal side of female terminals

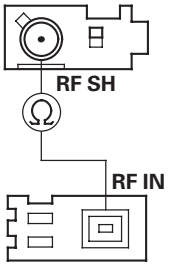
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 23.

23. Check for continuity between navigation unit connector G (3P) terminal No. 2 and the AM/FM antenna amplifier 3P connector terminal No. 2.

NAVIGATION UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

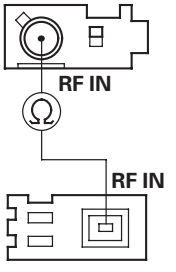
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 24.

24. Check for continuity between navigation unit connector G (3P) terminal No. 1 and AM/FM antenna amplifier 3P connector terminal No. 1.

NAVIGATION UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Replace the AM/FM antenna amplifier (see page 23-263), and recheck. If the reception is still poor, replace the navigation unit (see page 23-355). ■

NO—Replace the AM/FM antenna lead and/or sublead. ■

Poor AM or FM radio reception or interference (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check for aftermarket accessories plugged into the vehicle accessory power sockets (including cell phones).
- Check the connectors for poor connections or loose terminals.
- Check the radio reception in an open area. Compare it to a known-good vehicle whenever possible. Poor reception/interference can be caused by the following:
  – The radio station is far away.
  – Atmospheric conditions are unfavorable.
  – Tall buildings, mountains, or high-voltage power lines are nearby.
  – Aftermarket metallic wi ndow tint.

1. Turn the ignition switch to ON (II).

2. Do the seek stop test (see page 23-255).

   Is the test vehicle within 10 % of the known-good vehicle?

   YES—Multipath interference or weak station. Operation is normal. ■
   NO—Go to step 3.

3. Check if the radio reception/interference is the same in several locations.

   Is the reception/interference the same?

   YES—Go to step 4.
   NO—Multipath interference or weak station. Operation is normal. ■

4. Start the engine.

5. Check the reception/interference.

   Is there noise (static or whine) only with the engine running?

   YES—Check the antenna and radio grounds. If OK, check the charging system and the ignition system. ■
   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Remove the right side C-pillar trim (see page 20-75).

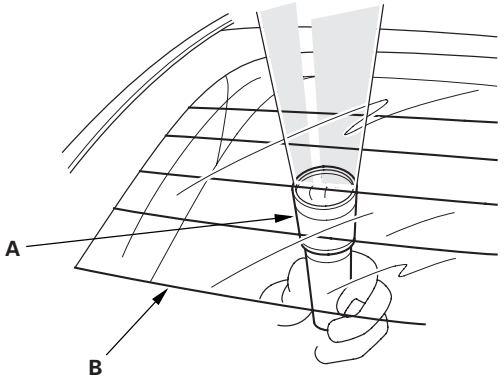
8. Check the connections from the AM/FM antenna amplifier to the window antenna.

   Are there any loose or damaged connections?

   YES—Repair the connections, or substitute a known-good AM/FM antenna amplifier and retest. If the symptom/condition goes away, replace the original AM/FM antenna amplifier (see page 23-263). ■

   NO—Go to step 9.

9. With the help of an assistant inside the vehicle, have the assistant shine a flashlight (A) along each antenna wire (B). Check from the outside of the vehicle for any breaks or openings in the antenna wires (the light shines through).



   Are there any breaks or cuts in the antenna?

   YES—Repair the window antenna. Go to AM/FM antenna repair (see page 23-264), or replace the rear window (see page 20-47) if the damaged section is too long. ■

   NO—Go to step 10.

(cont'd)

Symptom Troubleshooting (cont'd)

10. Remove the audio unit (see page 23-256). Check that the antenna lead is properly connected.

    Is it connected properly?

    YES—Go to step 11.

    NO—Reconnect the connector, and recheck the function. ■

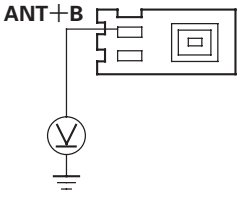
11. Disconnect the antenna cable 3P connector from the AM/FM antenna amplifier (see page 23-263).

12. Turn the ignition switch to ON (II).

13. Turn on the audio unit.

14. Measure the voltage between the AM/FM antenna lead connector terminal No. 3 at the AM/FM antenna amplifier and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 19.

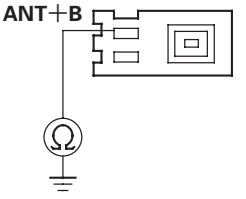
NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).

16. Disconnect audio unit connector G (3P).

17. Check for continuity between the AM/FM antenna amplifier 3P connector terminal No. 3 and body ground.

AM/FM ANTENNA AMPLIFIER 3P CONNECTOR



Terminal side of female terminals

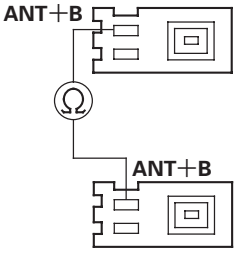
Is there continuity?

YES—Repair short to body ground in the wire between the audio unit and the AM/FM antenna amplifier. ■

NO—Go to step 18.

18. Check for continuity between audio unit connector G (3P) terminal No. 3 and the AM/FM antenna amplifier 3P connector terminal No. 3.

AUDIO UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good audio unit (see page 23-256), and recheck. ■

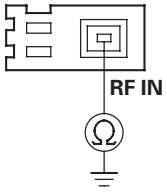
NO—Repair open in the wire between the audio unit and the AM/FM antenna amplifier. ■

19. Turn the ignition switch to LOCK (0).

20. Disconnect audio connector G (3P).

21. Check for continuity between audio unit connector G (3P) terminal No. 1 and body ground.

AUDIO UNIT CONNECTOR G (3P)



Terminal side of female terminals

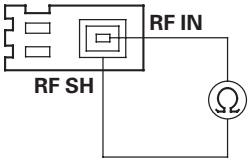
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 22.

22. Check for continuity between audio unit connector G (3P) terminals No. 1 and No. 2.

AUDIO UNIT CONNECTOR G (3P)



Terminal side of female terminals

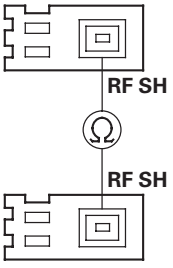
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 23.

23. Check for continuity between audio unit connector G (3P) terminal No. 2 and the AM/FM antenna amplifier 3P connector terminal No. 2.

AUDIO UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

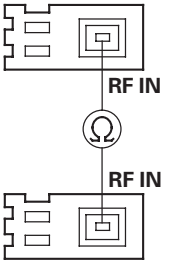
Is there continuity?

YES—Replace the antenna lead and/or sublead. ■

NO—Go to step 24.

24. Check for continuity between audio unit connector G (3P) terminal No. 1 and the AM/FM antenna amplifier 3P connector terminal No. 1.

AUDIO UNIT CONNECTOR G (3P)
Terminal side of female terminals



AM/FM ANTENNA AMPLIFIER 3P CONNECTOR
Terminal side of female terminals

Is there continuity?

YES—Replace the AM/FM antenna amplifier (see page 23-263), and recheck. If the reception is still poor, replace the audio unit (see page 23-256). ■

NO—Replace the antenna lead and/or sublead. ■

Symptom Troubleshooting (cont'd)

Audio unit power switch will not turn on (No information display and no sound) (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Push the power switch ON to see if the navigation unit turns ON.

   Does the navigation unit display operate properly, and does the audio sound normal?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 5.

   NO—Replace the fuse(s), and recheck. ■
5. Remove the navigation unit (see page 23-355). Check that the navigation unit is properly connected.

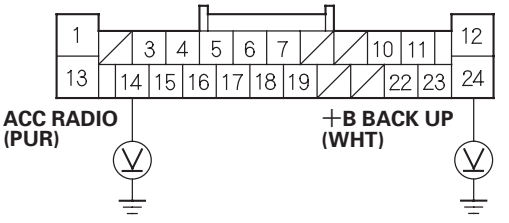
   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.

   Is it connected properly?

   YES—Go to step 6.

   NO—Reconnect the connector, and recheck the function. ■
6. Disconnect navigation unit connector A (24P)
7. Turn the ignition switch to ON (II).
8. Measure the voltage between body ground and navigation unit connector A (24P) terminals No. 14 and No. 24 individually.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there battery voltage on both terminals?

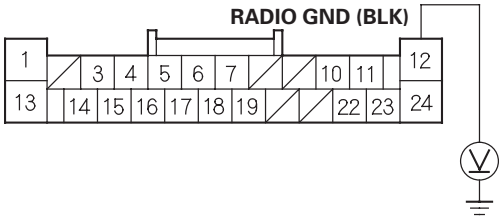
YES—Go to step 9.

NO—Repair open in the wire(s) between the No. 23 (10 A) fuse in the under-hood fuse/relay box and the No. 35 (7.5 A) in the under-dash fuse/relay box and the navigation unit. ■
9. Turn the ignition switch to LOCK (0).
10. Reconnect navigation unit connector A (24P).

11. Turn the ignition switch to ON (II).

12. Measure the voltage between navigation unit connector A (24P) terminal No. 12 and body ground.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there less than 0.1 V on both terminals?

YES—Replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between navigation unit connector A (24P) terminal No. 12 and body ground (G505) (see page 22-32). ■

Audio unit power switch will not turn on (No information display and no sound) (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).

2. Push the power switch ON to see if audio unit turns ON.

   Does the audio unit operate properly, and does the audio sound normal?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and the No. 35 (7.5 A) fuse in the under-dash fuse/relay box.

   Are the fuses OK?

   YES—Go to step 5.

   NO—Replace the fuse(s), and recheck. ■

5. Remove the audio unit (see page 23-256). Check that the audio unit is properly connected.

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

   Is it connected properly?

   YES—Go to step 6.

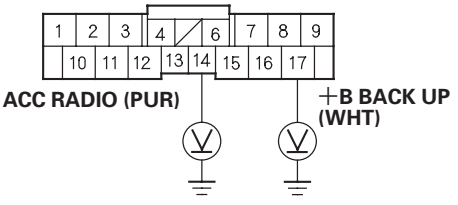
   NO—Reconnect the connector, and recheck the function. ■

(cont'd)

Symptom Troubleshooting (cont'd)

6. Disconnect audio unit connector A (17P).
7. Turn the ignition switch to ON (II).
8. Measure the voltage between audio unit connector A (17P) terminal No. 14 and body ground, and between terminal No. 17 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

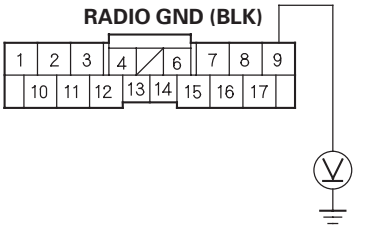
Is there battery voltage on the both terminals?

YES—Go to step 9.

NO—Repair open in the wire(s) between the No. 23 (10 A) fuse in the under-hood fuse/relay box and No. 35 (7.5 A) in the under-dash fuse/relay box and the audio unit. ■

9. Turn the ignition switch to LOCK (0).
10. Reconnect audio unit connector A (17P).
11. Turn the ignition switch to ON (II).
12. Measure the voltage between audio unit connector A (17P) terminal No. 9 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the audio unit (see page 23-256). ■

NO—Repair open in the wire between audio unit connector A (17P) terminal No. 9 and body ground (G505) (see page 22-38). ■

Audio unit power switch will not turn off (with navigation)

NOTE:
- Check for aftermarket accessories plugged into the vehicle's accessory power sockets.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Push the power switch OFF or turn the ignition switch to LOCK (0) to see if the navigation unit turns OFF.

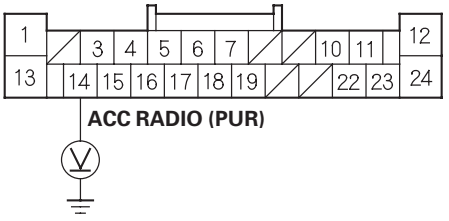
   Is the navigation unit OFF?

   YES—Operation is normal. ■

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Remove the navigation unit (see page 23-355).
5. Disconnect navigation unit connector A (24P).

   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.
6. Measure the voltage between navigation unit connector A (24P) terminal No. 14 and body ground.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there battery voltage?

YES—Check for short to power on PUR wire. ■

NO—Replace the navigation unit (see page 23-355). ■

Symptom Troubleshooting (cont'd)

Audio unit power switch will not turn off (without navigation)

NOTE:
- Check for aftermarket accessories plugged into the vehicle's accessory power sockets.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Push the power switch OFF or turn the ignition switch to LOCK (0) to see if the audio unit turns OFF.

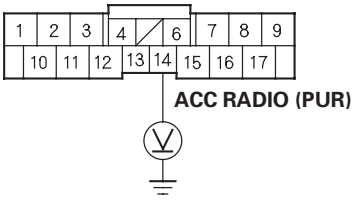
   Is the audio unit OFF?

   YES—Operation is normal. ■

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Remove the audio unit (see page 23-256).
5. Disconnect audio unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
6. Measure the voltage between audio unit connector A (17P) terminal No. 14 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there voltage?

YES—Check for short to power on PUR wire. ■

NO—Replace the audio unit (see page 23-256). ■

No sound is heard from the speaker(s) (display is normal) (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Set the fader and balance positions to the center.
- Before performing symptom troubleshooting, do the power switch will not turn on troubleshooting (see page 23-202).

1. Turn the ignition switch to ON (II).
2. Check for sound in each mode (AM, FM, XM, and CD).

   Is the sound OK in each mode?

   YES—Intermittent failure. The system is OK at this time. Check for loose connections at the navigation unit and speaker(s). ■

   NO—Go to step 3.
3. Check that the volume button is not set to the min level.

   Is it at the MIN level?

   YES—Raise the volume level, and recheck the function. ■

   NO—Go to step 4.
4. On the steering wheel, check the navigation talk command.

   Is the navigation talk command function set?

   YES—Cancel the navigation talk command by pressing the navigation BACK button, then recheck the function. ■

   NO—Go to step 5.

5. Check to see if there is a specific speaker that has no sound.

   Do any or all of the speakers fail to sound?

   YES—Speaker(s) failed the test:

   - If at least one speaker is OK, go to step 6.
   - If all speakers fail to sound:
     – Type S model: Go to step 14.
     – Except Type S model: Go to step 9.

   NO—Speakers all work, but sound quality is poor in step 1.

   - If sound is poor only with XM radio, or the XM radio does not function, go to poor or no sound with XM radio (see page 23-249). ■
   - If the sound is poor only with AM or FM, go to poor AM or FM radio reception or interference (see page 23-196). ■
   - If the sound is poor only with disc. ■
     – Try several known- good disc in the navigation unit.
     – If the sound quality is normal, the original disc is faulty.
     – If the sound quality is still poor, replace the navigation unit.
   - If the sound is poor in all modes, go to sound quality diagnosis (see page 23-251). ■

6. Turn the ignition switch to LOCK (0).

7. Remove the speaker(s) with no sound (see page 23-259), and disconnect its connector.

8. Check the speaker 2P connector for a loose or poor connection.

   Reconnect the speaker 2P connector, and recheck the symptom; does it still fail?

   YES—Go to step 9.

   NO—Operation is normal. ■

9. Make sure the ignition switch is in LOCK (0).

10. Measure the resistance between terminals No. 1 and No. 2 of the speaker connector.

    Is there about 4 Ω ?

    YES—
    - Type S model: Go to step 20.
    - Except Type S model: Go to step 11.

    NO—Faulty speaker(s). ■

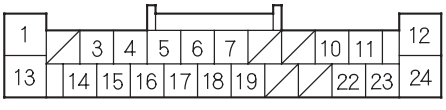
11. Remove the navigation unit (see page 23-355). Disconnect navigation unit connector A (24P).

    NOTE:
    - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
    - Remove the PC card before removing the navigation unit.

12. Measure the resistance between the following terminals of navigation unit connector A (24P) according to the table.

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A23 (+)	LT GRN
	A22 (−)	PNK
Front passenger's door speaker, Right tweeter	A19 (+)	GRY
	A18 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A10 (−)	BRN
Right rear speaker	A7 (+)	BLU
	A6 (−)	ORN

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there about 4 Ω ?

YES—Go to step 13.

NO—Repair open or short in the wires between navigation unit and the speaker(s). ■

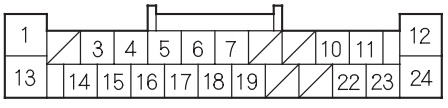
(cont'd)

Symptom Troubleshooting (cont'd)

13. Check for continuity between body ground and the following terminals of navigation unit connector A (24P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A23 (+)	LT GRN
	A22 (−)	PNK
Front passenger's door speaker, Right tweeter	A19 (+)	GRY
	A18 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A10 (−)	BRN
Right rear speaker	A7 (+)	BLU
	A6 (−)	ORN

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

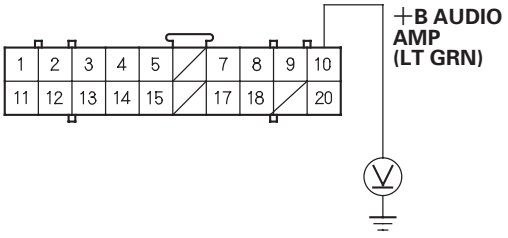
Is there continuity?

YES—Repair short to body ground in the wire(s) between the navigation unit and the speaker(s). ■

NO—Substitute a known-good navigation unit (see page 23-355), and recheck. If the symptom/indication goes away, replace the original navigation unit. ■

14. Measure the voltage between stereo amplifier connector A (20P) terminal No. 10 and body ground.

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

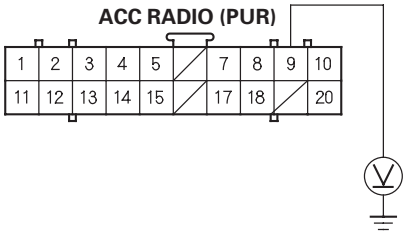
YES—Go to step 15.

NO—Repair open in the wire between the No. 17 (15 A) fuse in the under-hood fuse/relay box and stereo amplifier connector A (20P) terminal No. 10. ■

15. Turn the ignition switch to ON (II).

16. Measure the voltage between stereo amplifier connector A (20P) terminal No. 9 and body ground.

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

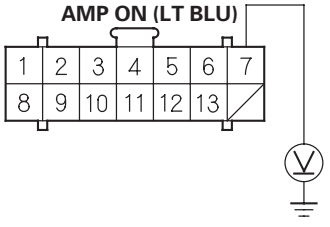
Is there battery voltage?

YES—Go to step 17.

NO—Repair open in the wire between the No. 35 (7.5 A) fuse in the under-dash fuse/relay box and stereo amplifier connector A (20P) terminal No. 9. ■

17. Measure the voltage between stereo amplifier connector B (14P) terminal No. 7 and body ground.

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

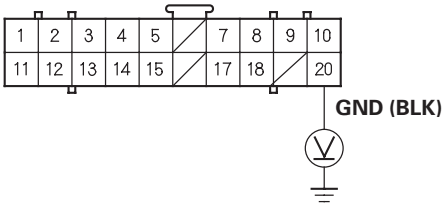
Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the stereo amplifier connector B (14P) terminal No. 7 and navigation unit connector A (24P) terminal No. 17. ■

18. Measure the voltage between stereo amplifier connector A (20P) terminal No. 20 and body ground.

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there less than 0.1 V on both terminals?

YES—Go to step 19.

NO—Repair open in the wire between stereo amplifier connector A (20P) terminal No. 20 and body ground (G601). ■

19. Turn the ignition switch to LOCK (0).

(cont'd)

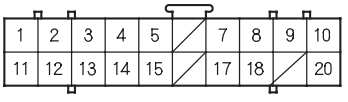
Symptom Troubleshooting (cont'd)

20. Disconnect stereo amplifier connector A (20P).

21. Measure the resistance between the following terminals of stereo amplifier connector A (20P) according to the table.

Speaker	Terminal	Wire color
Driver's door speaker	A3 (+)	LT GRN
	A13 (−)	PNK
Left tweeter	A4 (+)	RED
	A14 (−)	GRN
Front passenger's door speaker	A2 (+)	GRY
	A12 (−)	BRN
Right tweeter	A1 (+)	PNK
	A11 (−)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (−)	BRN
Right rear speaker	A7 (+)	BLU
	A17 (−)	ORN
Subwoofer	A5 (+)	GRN
	A15 (−)	RED

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there about 4 Ω ?

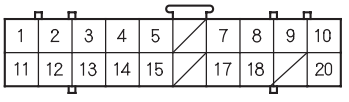
YES—Go to step 22.

NO—Repair open or short in the wires between the stereo amplifier and speaker(s). ■

22. Check for continuity between body ground and the following terminals of stereo amplifier connector A (20P).

Speaker	Terminal	Wire color
Driver's door speaker	A3 (+)	LT GRN
	A13 (−)	PNK
Left tweeter	A4 (+)	RED
	A14 (−)	GRN
Front passenger's door speaker	A2 (+)	GRY
	A12 (−)	BRN
Right tweeter	A1 (+)	PNK
	A11 (−)	BLU
Left rear speaker	A8 (+)	YEL
	A18 (−)	BRN
Right rear speaker	A7 (+)	BLU
	A17 (−)	ORN
Subwoofer	A5 (+)	GRN
	A15 (−)	RED

STEREO AMPLIFIER CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the stereo amplifier and the speaker(s). ■

NO—Go to step 23.

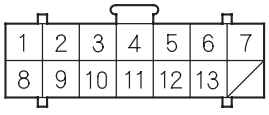
23. Disconnect stereo amplifier connector B (14P).

24. Disconnect navigation unit connector A (24P).

25. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 2 (the harness shield).

Stereo amplifier connector	Wire color
B1	BLU
B8	RED

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

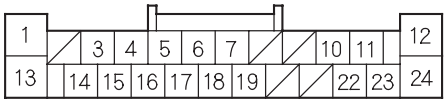
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 26.

26. Check for continuity between navigation unit connector A (24P) and stereo amplifier connector B (14P) according to the table.

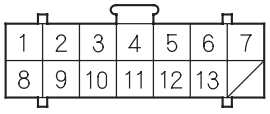
Navigation unit connector	Stereo amplifier connector	Wire color
A22	B8	RED
A23	B1	BLU

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

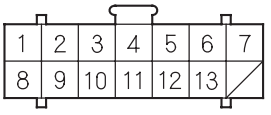
(cont'd)

Symptom Troubleshooting (cont'd)

27. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 5 (the harness shield).

Stereo amplifier connector	Wire color
B4	BLU
B11	PNK

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

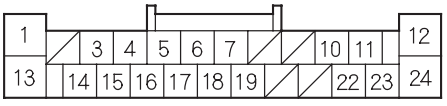
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 28.

28. Check for continuity between navigation unit connector A (24P) and stereo amplifier connector B (14P) according to the table.

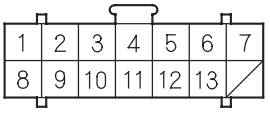
Navigation unit connector	Stereo amplifier connector	Wire color
A16	B11	PNK
A19	B4	BLU

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

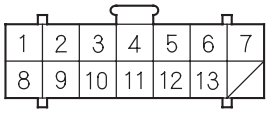
YES—Go to step 29.

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

29. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 9 (the harness shield).

Stereo amplifier connector	Wire color
B3	BLK
B10	WHT

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

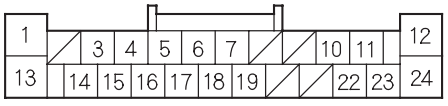
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 30.

30. Check for continuity between navigation unit connector A (24P) and stereo amplifier connector B (14P) according to the table.

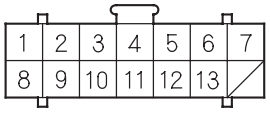
Navigation unit connector	Stereo amplifier connector	Wire color
A10	B10	WHT
A11	B3	BLK

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 31.

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

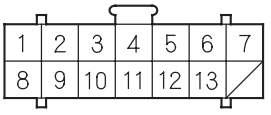
(cont'd)

Symptom Troubleshooting (cont'd)

31. Check for continuity between stereo amplifier connector B (14P) and body ground according to the table. Then check for continuity between the same terminals listed in the table and stereo amplifier connector B (14P) terminal No. 12 (the harness shield).

Stereo amplifier connector	Wire color
B6	LT GRN
B13	PUR

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

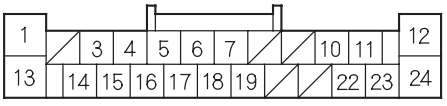
YES—Short in the wire between the stereo amplifier and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 32.

32. Check for continuity between navigation unit connector A (24P) and stereo amplifier connector B (14P) according to the table.

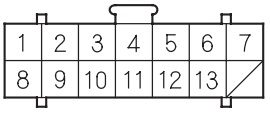
Navigation unit connector	Stereo amplifier connector	Wire color
A6	B13	PUR
A7	B6	LT GRN

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

STEREO AMPLIFIER CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good navigation unit (see page 23-355), and recheck. If the symptom/indication goes away, replace the original navigation unit. If the symptom is still present, substitute a known-good stereo amplifier, and recheck. If the symptom/indication goes away, replace the original stereo amplifier (see page 23-259). ■

NO—Open in the wire between the navigation unit and the stereo amplifier. Replace the affected shielded harness. ■

No sound is heard from the speaker(s) (display is normal) (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Set the fader and balance positions to the center.
- Before performing symptom troubleshooting, do the power switch will not turn on troubleshooting (see page 23-203).
- For vehicles with factory installed audio, do the self-diagnostic function, speaker check (see page 23-192) to help isolate the speaker.

1. Turn the ignition switch to ON (II).

2. Check that the volume button is not set to the MIN level.

   Is it at MIN level?

   YES—Raise the volume level, and recheck the function. ■

   NO—Go to step 3.

3. Do the speaker check mode in the self-diagnostic function (see page 23-192).

   Do any or all of the speakers fail to sound?

   YES—Speaker(s) failed the test:

   - If at least one speaker is OK, go to step 4.
   - If all speakers fail to sound, go to step 7.

   NO—Speakers all work, but sound quality is poor:

   - If the sound is poor only with AM or FM, go to poor AM or FM radio reception or interference (see page 23-199). ■
   - If the sound is poor only with disc. ■
     – Try several known- good disc in the audio unit.
     – If the sound quality is normal, the original disc is faulty.
     – If the sound quality is still poor, replace the audio unit.
   - If the sound is poor in all modes, go to sound quality diagnosis (see page 23-251). ■

4. Turn the ignition switch to LOCK (0).

5. Remove the speaker(s) with no sound (see page 23-259), and disconnect its connector.

6. Check the speaker 2P connector for a loose or poor connection.

   Reconnect the speaker 2P connector and recheck the symptom; does it still fail?

   YES—Go to step 7.

   NO—Operation is normal. ■

7. Make sure the ignition switch is in LOCK (0).

8. Remove the speaker(s) with no sound (see page 23-259), and disconnect its connector.

9. Measure the resistance between terminals No. 1 and No. 2 of the speaker connector.

   Is there about 4 Ω ?

   YES—Go to step 10.

   NO—Faulty speaker(s). ■

10. Remove the audio unit (see page 23-256). Disconnect audio unit connector A (17P).

    NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

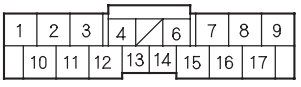
(cont'd)

Symptom Troubleshooting (cont'd)

11. Measure the resistance between following terminals of audio unit connector A (17P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (−)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (−)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (−)	ORN

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there about 4 Ω ?

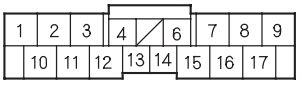
YES—Go to step 12.

NO—Repair open or short in the wires between the audio unit and the speaker(s).■

12. Check for continuity between body ground and the following terminals of audio unit connector A (17P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A12 (+)	LT GRN
	A3 (−)	PNK
Front passenger's door speaker, Right tweeter	A15 (+)	GRY
	A7 (−)	BRN
Left rear speaker	A11 (+)	YEL
	A2 (−)	BRN
Right rear speaker	A16 (+)	BLU
	A8 (−)	ORN

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the audio unit and the speaker(s).■

NO—Substitute a known-good audio unit (see page 23-256), and recheck. If the symptom/indication goes away, replace the original audio unit.■

Auxiliary input sound is low or cannot be heard

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Use auxiliary stereo cables with 3.5 mm ends only.
- Auxiliary accessories may be played on the audio unit using the auxiliary input.

1. Turn the ignition switch to ON (II).

2. Turn on the audio unit or navigation unit and connect an auxiliary accessory to the auxiliary input jack.

3. Check the volume operation.

   Is the sound normal?

   YES—Operation is normal at this time. ■

   NO—Go to step 4.

4. Make sure the auxiliary accessory volume to max.

   Is the volume set to high?

   YES—Go to step 5.

   NO—Raise the auxiliary accessory volume is set to high. Make sure the audio unit volume is turned down before retesting. ■

5. Substitute a known-good auxiliary audio accessory and/or auxiliary stereo cable, and recheck.

   Does the auxiliary audio accessory operate properly?

   YES—Original auxiliary audio accessory or auxiliary stereo cable is faulty. ■

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Remove the auxiliary jack assembly (see page 23-261), and check that the auxiliary jack assembly is properly connected.

   Is the auxiliary jack assembly connected properly?

   YES—
   - With navigation: go to step 8.
   - Without navigation: go to step 13.

   NO—Reconnect the connector, and recheck the function. ■

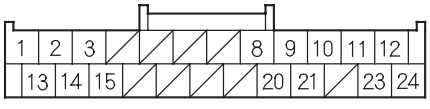
8. Disconnect auxiliary jack assembly 5P connector.

9. Disconnect navigation unit connector B (24P).

10. Check for continuity between body ground and navigation unit connector B (24P) according to the table.

Navigation unit connector	Wire color
B1	BRN
B3	BLU
B13	YEL
B14	GRN
B15	WHT

NAVIGATION UNIT CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the navigation unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

NO—Go to step 11.

(cont'd)

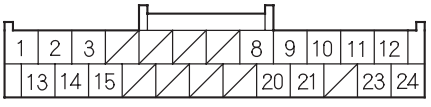
Symptom Troubleshooting (cont'd)

11. Check for continuity between navigation unit connector B (24P) according to the table.

From terminal	To terminals
B1	B2*, B3, B13, B14, B15
B2*	B3, B13, B14, B15
B3	B13, B14, B15
B13	B14, B15
B14	B15

*: Shielded wire

NAVIGATION UNIT CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

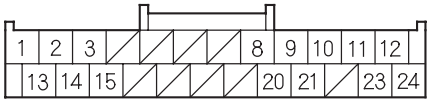
YES—Short in the wire(s) between the navigation unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

NO—Go to step 12.

12. Check for continuity between navigation unit connector B (24P) and auxiliary jack assembly 5P connector according to the table.

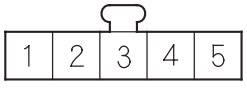
Navigation unit connector	Auxiliary jack assembly connector	Wire color
B1	3	BRN
B3	2	BLU
B13	4	YEL
B14	5	GRN
B15	1	WHT

NAVIGATION UNIT CONNECTOR B (24P)



Wire side of female terminals

AUXILIARY JACK ASSEMBLY 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good auxiliary jack assembly (see page 23-261), and recheck. If the symptom/indication goes away, replace the original auxiliary jack assembly. If the symptom/indication is still present, replace the navigation unit (see page 23-355). ■

NO—Open in the wire(s) between the navigation unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

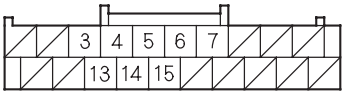
13. Disconnect auxiliary jack assembly 5P connector.

14. Disconnect audio unit connector B (20P).

15. Check for continuity between body ground and audio unit connector B (20P) according to the table.

Audio unit connector	Wire color
B3	BRN
B5	BLU
B13	YEL
B14	GRN
B15	WHT

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the audio unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

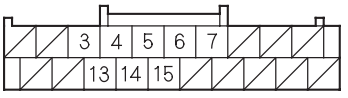
NO—Go to step 16.

16. Check for continuity between audio unit connector B (20P) according to the table.

From terminal	To terminals
B3	B4*, B5, B13, B14, B15
B4*	B5, B13, B14, B15
B5	B13, B14, B15
B13	B14, B15
B14	B15

*: Shielded wire

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

Is there continuity?

YES—Short in the wire(s) between the audio unit and the auxiliary jack assembly. Replace the affected shielded harness. ■

NO—Go to step 17.

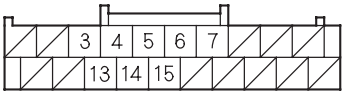
(cont'd)

Symptom Troubleshooting (cont'd)

17. Check for continuity between audio unit connector B (20P) and auxiliary jack assembly 5P connector according to the table.

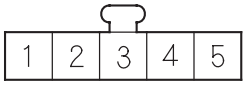
Audio unit connector	Auxiliary jack assembly connector	Wire color
B3	3	BRN
B5	2	BLU
B13	4	YEL
B14	5	GRN
B15	1	WHT

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

AUXILIARY JACK ASSEMBLY 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good auxiliary jack assembly (see page 23-261), and recheck. If the symptom/indication goes away, replace the original auxiliary jack assembly. If the symptom/indication is still present, replace the audio unit (see page 23-256). ■

NO—Open in the wire(s) between the audio unit and the auxiliary jack assembly. Replace affected shielded harness. ■

Audio system sound is weak or distorted (display is normal)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Check for sound in each mode (AM, FM, XM, and CD).

   Is there sound from the speakers, and is the sound quality normal in each mode?

   YES—Intermittent failure. The system is OK at this time. Check for loose connections at the navigation unit, audio unit, amplifier, and each speaker. ■

   NO—Speakers all work, sound quality is poor. ■

   - If the sound quality is poor only with the XM radio, or the XM radio does not function, go to poor or no sound with XM radio (see page 23-249).
   - If the sound quality is poor only with AM or FM radio, go to poor AM or FM radio reception or interference (see page 23-196).
   - If sound is poor in all modes, go to sound quality diagnosis (see page 23-251).

Radio preset memory is lost

NOTE: If only the XM stations are lost, go to XM radio preset memory is lost (see page 23-248).

1. Set each of the radio station preset buttons.

   Do each of the buttons set properly?

   YES—Go to step 2.

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

2. Turn the ignition switch to LOCK (0) for 1 minute, then turn it back to ON (II).

3. Test the preset buttons for proper recall operation.

   Do the preset buttons recall the set radio stations?

   YES—System is normal at this time. Check the connections at the navigation unit or audio unit. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

Volume does not change

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Set the fader and balance positions to the center.

1. Listen for sound from the speakers.

   Is the sound normal?

   YES—Go to step 2.

   NO—Go to audio system sound is weak or distorted, or no sound is heard from speaker(s) (see page 23-206). ■

2. Operate the volume knob to see if the volume changes.

   Does the volume change?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

Symptom Troubleshooting (cont'd)

Volume does not increase with speed (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Verify the SVC mode setting in the navigation unit sound set-up.

   Is the SVC set to off?

   YES—Change the setting to Mid and retest (see page 23-164). ■

   NO—Go to step 2.

2. Do the self-diagnostic function for the vehicle speed pulse indication (see page 23-190).

   Does the self-diagnostic function indicate a VSP signal?

   YES—Substitute a known-good navigation unit (see page 23-355), and retest. If the symptom/indication goes away, replace the original navigation unit. ■

   NO—Go to step 3.

3. Test-drive the vehicle at highway speeds, and monitor if the volume increases.

   Do the volume increase?

   YES—Intermittent failure, the system is OK at this time. ■

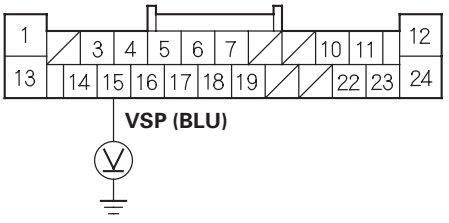
   NO—Go to step 4.

4. Remove the navigation unit (see page 23-355) and disconnect navigation unit connector A (24P).

   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.

5. Drive the vehicle, and have an assistant measure voltage at navigation unit connector A (24P) terminal No. 15.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there a 0—5 V Pulse?

YES—Replace the navigation unit (see page 23-355). ■

NO—Repair open or shorts in the wire between navigation unit connector A (24P) terminal No. 15 and ECM/PCM connector A (44P) terminal No. 29. If no opens or shorts are found, Update the ECM/PCM (see page 11-227) if it does not have the latest software or substitute a known-good ECM/PCM (see page 11-228). ■

Volume does not increase with speed (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Test-drive the vehicle at highway speeds, and monitor if the volume increases.

   Do the volume increase?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 2.

2. Verify the SVC mode setting in the audio unit sound set-up.

   Is the SVC set to off?

   YES—Change the setting to Mid, and retest (see page 23-164). ■

   NO—Go to step 3.

3. Do the self-diagnostic function for the vehicle speed pulse indication (see page 23-190).

   Does the self-diagnostic function indicate a VSP signal?

   YES—Substitute a known-good audio unit (see page 23-256), and retest. If the symptom/indication goes away, replace the original audio unit. ■

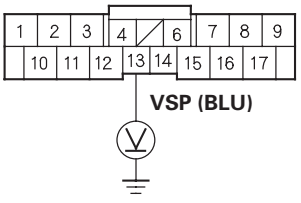
   NO—Go to step 4.

4. Remove the audio unit (see page 23-256) and disconnect audio unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

5. Drive the vehicle, and have an assistant measure voltage at audio unit connector A (17P) terminal No. 13.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there a 0—5 V Pulse?

YES—Replace the audio unit (see page 23-256). ■

NO—Repair open or shorts in the wire between audio unit connector A (17P) terminal No. 13 and ECM/PCM connector A (44P) terminal No. 29. If no opens or shorts are found, Update the ECM/PCM (see page 11-227) if it does not have the latest software or substitute a known-good ECM/PCM (see page 11-228). ■

Symptom Troubleshooting (cont'd)

Volume is too high or too low when driving at freeway speeds

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Test-drive the vehicle at highway speeds, and monitor volume level.

   Is the volume level too high, or too low?

   YES—Go to step 2.

   NO—Intermittent failure, the system is OK at this time. ■

2. Change the SVC mode setting in sound set-up to Mid (see page 23-164).

   Is the volume level still too high, or too low?

   YES—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

   NO—Improper SVC setting for customers sound taste. ■

Radio tuner does not change stations

1. Check the audio information on the display panel.

   Does the audio information display properly?

   YES—Go to step 2.

   NO—Go to power switch will not turn ON (see page 23-202). ■

2. Operate the tuning knob to see if the radio station changes.

   Does the radio station change?

   YES—Intermittent failure: the tuning knob is OK at this time. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

Navigation unit button illumination does not work (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Turn the combination lighting switch to the parking light position.
3. Check the illumination of the navigation unit buttons.

   Are the buttons illuminated?

   YES—Intermittent problem: the navigation unit is OK at this time. Check for loose or poor connections at the navigation unit connector A (24P). ■

   NO—Go to step 4.
4. Check the illumination of several other buttons not related to navigation system.

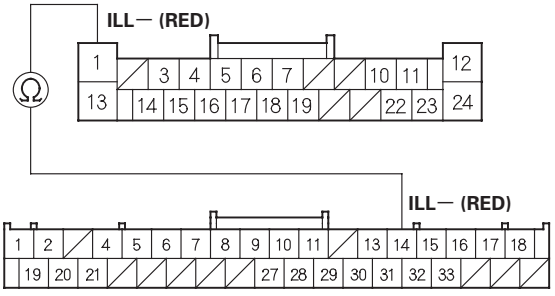
   Are the buttons illuminated?

   YES—Go to step 5.

   NO—Troubleshoot the interior lights. Start by checking the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the navigation unit. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect navigation unit connector A (24P).

   NOTE:
   - Eject all the discs before removing the navigation unit to prevent damaging the CD player's load mechanism.
   - Remove the PC card before removing the navigation unit.
7. Disconnect gauge control module (tach) 36P connector.
8. Check for continuity between navigation unit connector A (24P) terminal No. 1 and gauge control module (tach) 36P connector terminal No. 14.

NAVIGATION UNIT CONNECTOR A (24P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

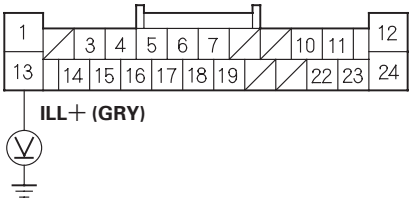
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the gauge control module and the navigation unit. ■

9. Turn the ignition switch to ON (II).
10. With the headlight switch still on, measure the voltage between navigation unit connector A (24P) terminal No. 13 and body ground.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there battery voltage?

YES—Check the connections at navigation unit connector A (24P). If all connections are OK, replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

Symptom Troubleshooting (cont'd)

Audio unit button illumination does not work (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Turn the combination lighting switch to the parking light position.
3. Check the illumination of the audio unit buttons.

   Are the buttons illuminated?

   YES—Intermittent problem: the audio unit is OK at this time. Check for loose or poor connections at the audio unit connector A (17P). ■

   NO—Go to step 4.
4. Check the illumination of several other buttons not related to the audio system.

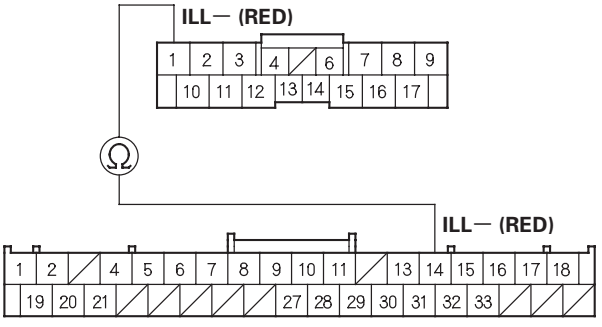
   Are the buttons illuminated?

   YES—Go to step 5.

   NO—Troubleshoot the interior lights. Start by checking the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the under-dash fuse/relay box and the audio unit. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect audio unit connector A (17P).

   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.
7. Disconnect gauge control module (tach) 36P connector.
8. Check for continuity between audio unit connector A (17P) terminal No. 1 and gauge control module (tach) 36P connector terminal No. 14.

AUDIO UNIT CONNECTOR A (17P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

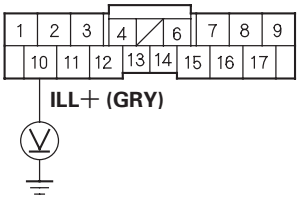
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the gauge control module and the audio unit. ■

9. Turn the ignition switch to ON (II).
10. With the headlight switch still on, measure the voltage between audio unit connector A (17P) terminal No. 10 and body ground.

AUDIO UNIT CONNECTOR A (17P)



Wire side of female terminals

Is there battery voltage?

YES—Check the connections at audio unit connector A (17P). If all the connections are OK, replace the audio unit (see page 23-256). ■

NO—Repair open in the wire between the under-dash fuse/relay box and the audio unit. ■

Display does not dim or brighten with dimmer (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Turn the combination light switch ON and OFF to see if the symptom can be duplicated.

   Is it duplicated?

   YES—Go to step 3.

   NO—Operation is normal.
3. Turn the combination light switch to OFF.
4. Rotate the illumination control dial.

   Does the illumination dim and brighten normally as you rotate the dial?

   YES—Operation is normal. ■

   NO—Go to step 5.
5. Disconnect, and check audio unit connector A (17P) for a loose or a poor connection. ■

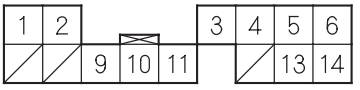
   NOTE: Eject all the discs before removing the audio unit to prevent damaging the CD player's load mechanism.

   Reconnect audio unit connector A (17P), and recheck the symptom; does it still appear?

   YES—Go to step 6.

   NO—Operation is normal. ■
6. Turn the ignition switch to LOCK (0).
7. Remove the audio unit (see page 23-256).
8. Turn the ignition switch to ON (II).
9. Measure the voltage between audio unit connector A (17P) terminals No. 1 and No. 10. Rotate the dash brightness controller buttons to see if the voltage changes.

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

Does the voltage change?

YES—Substitute a known-good audio unit (see page 23-256), and recheck. If the symptom/indication goes away, replace the original audio unit. If symptom is still present, substitute a known-good center panel display and recheck. If the symptom/indication goes away, replace the original center panel display (see page 23-256). ■

NO—Repair open in the wire between the under-dash fuse/relay box and the gauge control module. ■

Symptom Troubleshooting (cont'd)

Audio disc does not load

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.
- Make sure the disc is compatible with the system (see the owner's manual for more information).

1. Insert a known-good disc to see if the symptom can be duplicated.

   Does the disc load?

   YES—Operation is normal. If the disc loads normally, but will not play, go to audio disc does not play (see page 23-229). ■

   NO—Go to step 2.

2. Insert another disc.

   Does the disc load?

   YES—The original disc is faulty. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

Audio disc does not eject

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.

1. Turn on the audio system.

   Does the system turn on?

   YES—Go to step 2.

   NO—Go to power switch will not turn ON (see page 23-202). ■

2. Check to see if the disc ejects correctly with no binding by pushing the EJECT button.

   Does the disc eject normally?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Audio disc does not play

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Try loading a known-good disc.

   Does the disc load?

   YES—Go to step 2.

   NO—Go to audio disc does not load (see page 23-228). ■

2. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) in the navigation unit or audio unit.

   Does the disc play?

   YES—The original disc is faulty, or has an unreadable format. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

Special Tools Required
- Diagnostics CD 07AAZ-SDBA100
- Skip test CD 07AAZ-SDBA200 (ABEX-TCD-725B)
- Skip test CD 07AAZ-SDBA300 (ABEX-TCD-721)

Audio disc skips

1. Confirm the vehicles tires are properly inflated.

2. Check the client's CD for scratches, fingerprints, and marks.

   NOTE: Do this following test with audio unit bass and treble set to clients listening performance. When comparing to known-good vehicles, comparison should be performed on same model and trim level.

3. Test drive to identify when the CD skips. The diagnostics CD (T/N: 07AAZ-SDBA100) can be used if clients CD is not available. Use tracks 10 to 12.

   Does the CD skip?

   YES—Go to step 4.

   NO—Operation is normal. ■

4. Compare the clients CD that skips in a known-good vehicle under the same conditions.

   Does the CD skip in the known-good vehicle under the same conditions?

   YES—Operation is normal. ■

   NO—Go to step 5.

   NOTE: Do this following test with vehicle parked and engine running.

(cont'd)

Symptom Troubleshooting (cont'd)

5. Insert the skip test CD (T/N: 07AAZ-SDBA300) (ABEX-TCD-721). Play tracks 2 to 11 and note the track number(s) where the CD starts skipping. Do the same test on a known-good vehicle.

   Does the CD skip on the same track number(s) as the known-good vehicle?

   YES—Operation is normal. ■

   NO—Go to step 6.

6. Insert the skip test CD (T/N: 07AAZ-SDBA200) (ABEX-TCD-725B), and play tracks 7 to 11 and tracks 13 to 15 and note the track number(s) where the CD starts skipping. Perform the same test on a known-good vehicle.

   Does the CD skip on same track number(s) as the known-good vehicle?

   YES—Operation is normal. ■

   NO—
   - With navigation: Replace the navigation unit (see page 23-355). ■
   - Without navigation: Replace the audio unit (see page 23-256). ■

Audio remote switch does not work properly (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Check the audio unit operation.

   Is the audio unit operation OK?

   YES—Go to step 2.

   NO—Replace the navigation unit (see page 23-355). ■

2. Test the audio remote switch (see page 23-262).

   Is the audio remote switch OK?

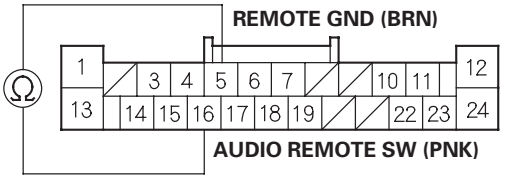
   YES—Go to step 3.

   NO—Replace the audio remote switch (see page 23-263). ■

3. Remove the navigation unit (see page 23-355).

4. Measure the resistance between navigation unit connector A (24P) terminals No. 5 and No. 16 as specified in the table.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

AUDIO REMOTE SWITCH TABLE

Button held down	VOL DOWN	VOL UP	CH (−)	CH (+)	MODE	No button pressed
Resistance	about 100 Ω	about 357 Ω	about 775 Ω	about 1.7 kΩ	about 3.7 kΩ	about 10 kΩ

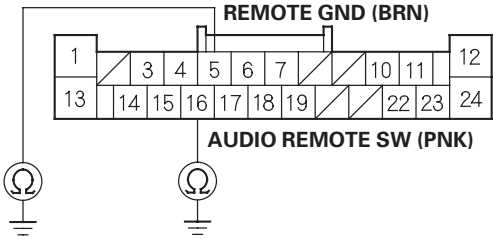
Is the resistance OK?

YES—Go to step 5.

NO—Repair open or high resistance in the circuit between the navigation unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

5. Check for continuity between navigation unit connector A (24P) terminals No. 5 and No. 16 and body ground individually.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the circuit between the navigation unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

NO—Replace the navigation unit (see page 23-355). ■

Symptom Troubleshooting (cont'd)

Audio remote switch does not work properly (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Check the audio unit operation.

   Is the audio unit operation OK?

   YES—Go to step 2.

   NO—Replace the audio unit (see page 23-256). ■

2. Test the audio remote switch (see page 23-262).

   Is the audio remote switch OK?

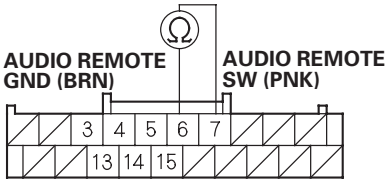
   YES—Go to step 3.

   NO—Replace the audio remote switch (see page 23-263). ■

3. Remove the audio unit (see page 23-256).

4. Measure the resistance between audio unit connector B (20P) terminals No. 6 and No. 7 as specified in the table.

AUDIO UNIT CONNECTOR B (20P)



Wire side of female terminals

AUDIO REMOTE SWITCH TABLE

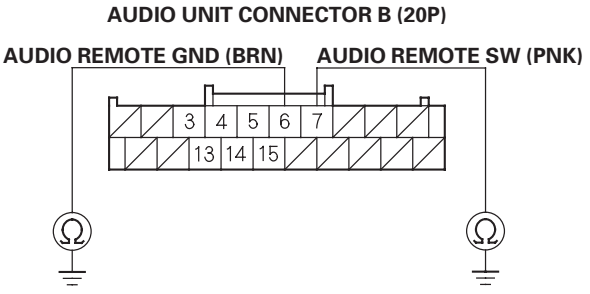
Button held down	VOL DOWN	VOL UP	CH (−)	CH (+)	MODE	No button pressed
Resistance	about 100 Ω	about 370 Ω	about 840 Ω	about 2.0 KΩ	about 6.0 KΩ	about 10 kΩ

Is the resistance OK?

YES—Go to step 5.

NO—Repair open or high resistance in the circuit between the audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

5. Check for continuity between audio unit connector B (20P) terminals No. 6 and No. 7 and body ground individually.



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the circuit between audio unit and the audio remote switch. If the wires are OK, replace the cable reel (see page 24-200). ■

NO—Replace the audio unit (see page 23-256). ■

Audio disc cannot be inserted and/or ejected (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Disc labels should not be used in the navigation unit or audio unit. They may damage the player mechanism.
- Make sure the disc is compatible with the system (see the owner's manual for more information).

1. Press the OPEN/CLOSE button to open the navigation display.

2. Try inserting an audio CD.

   Does the player accept the CD?

   YES—The system is OK at this time. ■

   NO—Go to step 3.

3. Press the CD eject button.

   Does the player eject the CD?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-355). ■

Symptom Troubleshooting (cont'd)

PC card will not play/card icon on audio screen cannot be selected (with navigation)

Unfortunately there are no error messages, and no diagnostics for the PC card. There are many reasons why a card won't play audio files in the audio unit.

- The card may not be fully inserted into the slot. Eject the card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a card. This can result in damage to the pins in the rear of the slot.
- The client's card may contain audio files that are not recognized by the system. Only MP3, and WMA music files are played.
- The flash card type may not be accepted by the system. Only Compact Flash and ATA cards have been tested.
- The card's PCMCIA adaptor may be preventing a known-good card from playing. New PCMCIA adaptors are constantly being released, and have not been tested.
- The card's capacity may exceed 1 GB. Only cards with capacities of up to 1 GB (1000 MB) have been tested.
- There may not be any files on the card. Some cards have write protection, make sure it is turned off before putting files on the card.
- Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevents them from playing. The client should re-format the card using the FAT, or FAT32 format.
- The card may have been damaged by heat. Suggest that the client remove their card when exiting the vehicle.
- The client may have formatted the card using the format NTFS. Only the formats FAT, and FAT32 are accepted by the system.
- Hard Disc Drive (HDD) cards may not work properly in the system and can overheat and quit functioning, particularly in a hot vehicle. They are not recommended.
- The filing structure of the card may exceed the specification of 8 folder levels deep, 99 folders maximum, and 999 total tracks maximum. If any of these limitations is exceeded, the system may not properly display or play the tracks.

NOTE: A delay when first inserting a card is normal. The system is reading the File Tag information for album names, artist, and song titles and there is no hour glass, The delay length depends on the number of tracks, and the complexity of the folder structure. See the audio section glossary for an explanation of the terms used above.

USB input sound is low or cannot be heard (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).
2. Do the speaker check mode with the self-diagnostic mode.

   Do all speakers make a sound?

   YES—Go to step 3.
   NO—Go to no sound is heard from speaker(s). ■
3. Turn the ignition switch to LOCK (0).
4. Connect the client's USB device to a known-good vehicle that equipped with the USB adapter, and check the USB device operation.

   Is the USB device working properly?

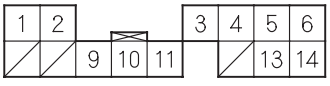
   YES—Go to step 5.
   NO—USB device is faulty. Also check the USB cable and USB adapter connector condition. ■
5. On the client's vehicle, connect the client's USB device to the USB adapter.
6. Turn the ignition switch to ON (II) and turn on the navigation unit.
7. Check if the USB device can be operated with the navigation unit (Folders or Files UP/DOWN, etc.).

   Can you operate the USB device, but there is no sound heard?

   YES—Go to step 8.
   NO—If the sound is normal, the USB device is OK at this time. If the USB device cannot be operated, go to USB audio device does not work. ■
8. Turn the ignition switch to LOCK (0).
9. Disconnect navigation unit connector E (14P).
10. Disconnect USB adapter unit connector A (14P).
11. Disconnect XM receiver connector A (14P).
12. Check for continuity between the terminal of navigation unit connector E (14P) and body ground according to the table.

Navigation unit connector	Wire color
E5	WHT
E6	RED
E13	BLK
E14	GRN

NAVIGATION UNIT CONNECTOR E (14P)



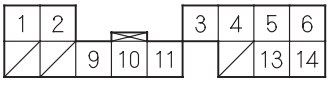
Wire side of female terminals

Is there continuity?
YES—Short to body ground in the wire(s) between the navigation unit and the USB adapter unit. Replace the affected shielded harness. ■
NO—Go to step 13.

13. Check for continuity between terminals of navigation unit connector E (14P) according to the table.

From terminal	To terminals
E4 (GRY)	E5 (WHT), E6 (RED), E13 (BLK), E14 (GRN)
E5 (WHT)	E6 (RED), E13 (BLK), E14 (GRN)
E6 (RED)	E13 (BLK), E14 (GRN)
E13 (BLK)	E14 (GRN)

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity between any of the terminals?
YES—Short in the wires between the navigation unit and the USB adapter unit. Replace the affected shielded harness. ■
NO—Go to step 14.

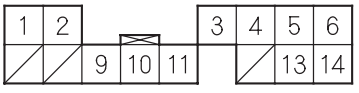
(cont'd)

Symptom Troubleshooting (cont'd)

14. Check for continuity between navigation unit connector E (14P) and USB adapter unit connector A (14P) according to the table.

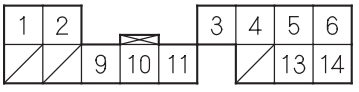
Navigation unit connector	USB adapter unit connector	Wire color
E5	A5	WHT
E6	A6	RED
E13	A13	BLK
E14	A14	GRN

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good USB adapter unit (see page 23-258), then reconnect all of the connectors and recheck. If the symptom/indication goes away, replace the original USB adapter unit. If the symptom/indication is still present, replace the navigation unit (see page 23-355). ■

NO—Open in the wire(s) between the navigation unit and the USB adapter unit. Replace affected shielded harness. ■

USB input sound is low or cannot be heard (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Turn the ignition switch to ON (II).

2. Do the speaker check mode with the self-diagnostic mode.

   Do all speakers make a sound?

   YES—Go to step 3.
   NO—Go to no sound is heard from speaker(s). ■

3. Turn the ignition switch to LOCK (0).

4. Connect the client's USB device to a known-good vehicle that equipped with the USB adapter and check the USB device operation.

   Is the USB device working properly?

   YES—Go to step 5.
   NO—USB device is faulty. Also check the USB cable and USB adapter connector condition. ■

5. On the client's vehicle, connect the client's USB device to the USB adapter.

6. Turn the ignition switch to ON (II), and turn on the audio unit.

7. Check if the USB device can be operated with the audio unit (Folders or Files UP/DOWN, etc.).

   Can you operate the USB device, but there is no sound heard?

   YES—Go to step 8.
   NO—If the sound is normal, the USB device is OK at this time. If the USB device cannot be operated, go to USB audio device does not work. ■

8. Turn the ignition switch to LOCK (0).

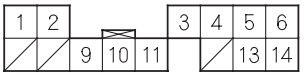
9. Disconnect audio unit connector E (14P).

10. Disconnect USB adapter unit connector A (14P).

11. Check for continuity between the terminals of audio unit connector E (14P) and body ground according to the table.

Audio unit connector	Wire color
E5	WHT
E6	RED
E13	BLK
E14	GRN

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity?

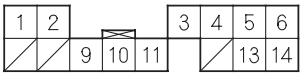
YES—Short to body ground in the wire(s) between the audio unit and the USB adapter unit. Replace the affected shielded harness. ■

NO—Go to step 12.

12. Check for continuity between the terminals of audio unit connector E (14P) according to the table.

From terminal	To terminals
E4 (GRY)	E5 (WHT), E6 (RED), E13 (BLK), E14 (GRN)
E5 (WHT)	E6 (RED), E13 (BLK), E14 (GRN)
E6 (RED)	E13 (BLK), E14 (GRN)
E13 (BLK)	E14 (GRN)

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

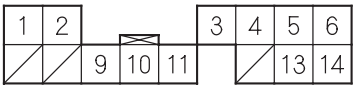
YES—Short in the wires between the audio unit and the USB adapter unit. Replace the affected shielded harness. ■

NO—Go to step 13.

13. Check for continuity between audio unit connector E (14P) and USB adapter unit connector A (14P) according to the table.

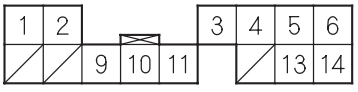
Audio unit connector	USB adapter unit connector	Wire color
E5	A5	WHT
E6	A6	RED
E13	A13	BLK
E14	A14	GRN

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good USB adapter unit (see page 23-258), then reconnect all of the connectors, and recheck. If the symptom/indication goes away, replace the original USB adapter unit. If the symptom/indication is still present, replace the audio unit (see page 23-256). ■

NO—Open in the wire(s) between the audio unit and the USB adapter unit. Replace the affected shielded harness. ■

Symptom Troubleshooting (cont'd)

USB device does not function (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Check the USB device requirement:
  – Mass-storage class ready digital audio player with USB 2.0 port
  – More than 256 MB of RAM
  – Supports MP3, WMA, and AAC (encoded with the i-Tunes) files, DRM files are not supported

1. Turn the ignition switch to ON (II) and turn on the navigation unit.

2. Push the AUX button to select USB mode.

   Is USB NO DATA displayed?

   YES—Go to step 3.

   NO—Go to step 7.

3. Turn the ignition switch to LOCK (0).

4. Connect the client's USB device to a known-good vehicle that is equipped with the USB adapter and check the USB device operation.

   Is the USB device working properly?

   YES—Go to step 5.

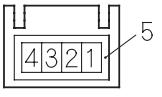
   NO—USB device is faulty. Also check the USB cable and USB adapter connector condition. ■

5. Disconnect USB adapter unit connector B (5P).

6. Check for continuity between terminals of USB adapter connector B (5P) and the USB adapter 5P connector according to the table.

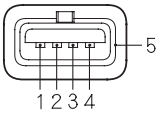
USB adapter unit connector	USB adapter connector
B1	1
B2	2
B3	3
B4	4

USB ADAPTER UNIT CONNECTOR B (5P)



Terminal side of female terminals

USB ADAPTER 5P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the USB adapter unit (see page 23-258). ■
NO—Open in the wire(s) between the USB adapter unit and the USB adapter. Replace the affected shielded harness. ■

7. Check the XM operation on the navigation display.

   Are the system working properly on the navigation screen?

   YES—Go to step 8.
   NO—Go to XM radio display is blank and no station information is displayed troubleshooting. ■

8. Turn the ignition switch to LOCK (0).

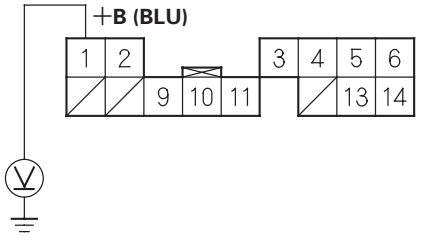
9. Check that the navigation unit connectors and the USB adapter unit connectors properly connected.

   Is the connectors properly connected?

   YES—Go to step 10.
   NO—Connect the connectors, and recheck. ■

10. Measure the voltage between body ground and USB adapter unit connector A (14P) terminal No. 1.

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

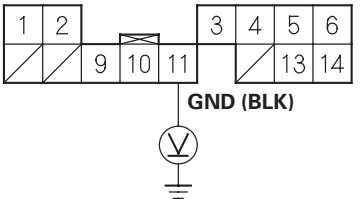
YES—Go to step 11.

NO—Repair open in the wire between the navigation unit and the USB adapter unit. ■

11. Turn the ignition switch to ON (II).

12. Measure the voltage between body ground and USB adapter unit connector A (14P) terminal No. 11.

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

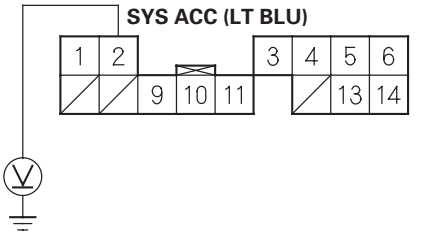
YES—Go to step 13.

NO—Repair open or high resistance in the wire between the navigation unit and the USB adapter unit. ■

13. Turn the ignition switch to LOCK (0).

14. Measure the voltage between body ground and USB adapter unit connector A (14P) terminal No. 2.

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

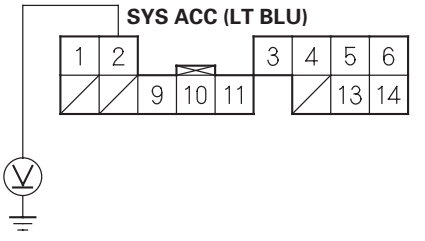
Is there 10 V or more present?

YES—Go to step 16.

NO—Go to step 15.

15. Measure the voltage between body ground and navigation unit connector E (14P) terminal No. 2.

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there 10 V or more present?

YES—Repair open or short in the wire(s) between the navigation unit and the USB adapter unit. ■

NO—Substitute a known-good navigation unit (see page 23-355), and recheck. If 10 V or more are present, replace the original navigation unit. ■

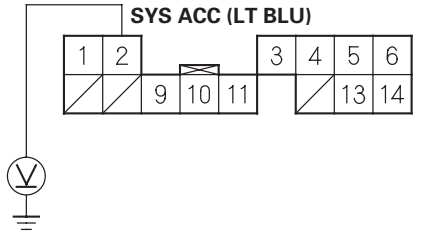
(cont'd)

Symptom Troubleshooting (cont'd)

16. Turn the ignition switch to ON (II).

17. Measure the voltage between body ground and navigation unit connector E (14P) terminal No. 2.

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there 10 V or more present?

YES—Substitute a known-good navigation unit (see page 23-355), and recheck. If 10 V or more are present, replace the original navigation unit. ■

NO—Go to step 18.

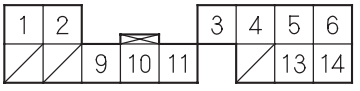
18. Turn the ignition switch to LOCK (0).

19. Disconnect navigation unit connector E (14P) and USB adapter unit connector A (14P).

20. Check for continuity between terminals of navigation unit connector E (14P) and USB adapter unit connector A (14P) according to the table.

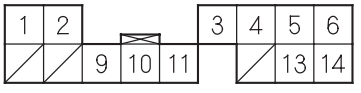
Navigation unit connector	USB adapter unit connector	Wire color
E9	A9	BLU
E10	A10	PNK

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good USB adapter unit (see page 23-258), then reconnect all of the connectors and recheck. If the symptom/indication goes away, replace the original USB adapter unit. If the symptom/indication is still present, replace the navigation unit (see page 23-355). ■

NO—Open in the wire(s) between the navigation unit and the USB adapter unit. Replace the affected shielded harness. ■

USB device does not function (without navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Check the USB device requirement:
  – Mass-storage class ready digital audio player with USB 2.0 port
  – More than 256 MB of RAM
  – Supports MP3, WMA, and AAC (encoded with the i-Tunes) files, DRM files are not supported

1. Turn the ignition switch to ON (II) and turn on the audio unit.

2. Push the AUX button to select USB mode.

   Is USB NO DATA displayed?

   YES—Go to step 3.

   NO—Go to step 7.

3. Turn the ignition switch to LOCK (0).

4. Connect the client's USB device to a known-good vehicle that equipped with the USB adapter and check the USB device operation.

   Is the USB device working properly?

   YES—Go to step 5.

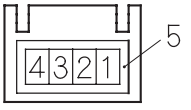
   NO—USB device is faulty. Also check the USB cable and USB adapter connector condition. ■

5. Disconnect USB adapter unit connector B (5P).

6. Check for continuity between terminals of USB adapter connector B (5P) and the USB adapter 5P connector according to the table.

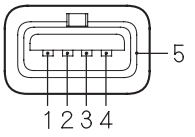
USB adapter unit connector	USB adapter connector
B1	1
B2	2
B3	3
B4	4

USB ADAPTER UNIT CONNECTOR B (5P)



Terminal side of female terminals

USB ADAPTER 5P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the USB adapter unit (see page 23-258). ■

NO—Open in the wire(s) between the USB adapter unit and the USB adapter. Replace the affected shielded harness. ■

7. Turn the ignition switch to LOCK (0).

8. Check that the audio unit connectors and the USB adapter unit connectors properly connected.

   Are the connectors properly connected?

   YES—Go to step 9.

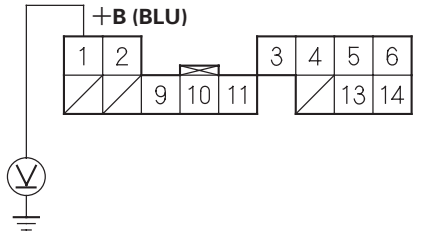
   NO—Connect the connectors and recheck. ■

(cont'd)

Symptom Troubleshooting (cont'd)

9. Measure the voltage between body ground and USB adapter unit connector A (14P) terminal No. 1.

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

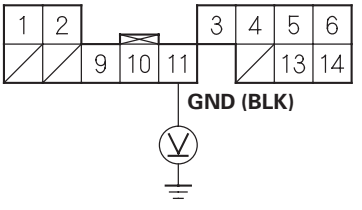
YES—Go to step 10.

NO—Repair open in the wire between the audio unit and the USB adapter unit. ■

10. Turn the ignition switch to ON (II).

11. Measure the voltage between body ground and USB adapter unit connector A (14P) terminal No. 11.

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

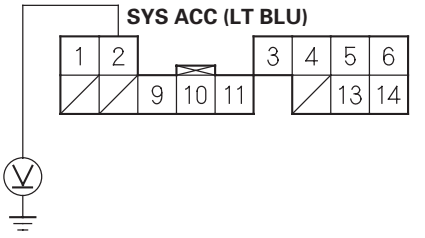
YES—Go to step 12.

NO—Repair open or high resistance in the wire between the audio unit and the USB adapter unit. ■

12. Turn the ignition switch to LOCK (0).

13. Measure the voltage between body ground and USB adapter unit connector A (14P) terminal No. 2.

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

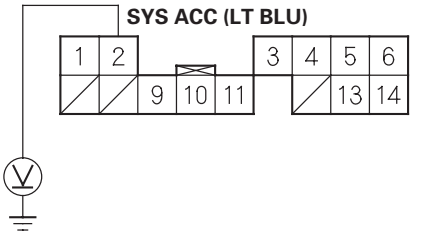
Is there 10 V or more present?

YES—Go to step 15.

NO—Go to step 14.

14. Measure the voltage between body ground and audio unit connector E (14P) terminal No. 2.

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there 10 V or more present?

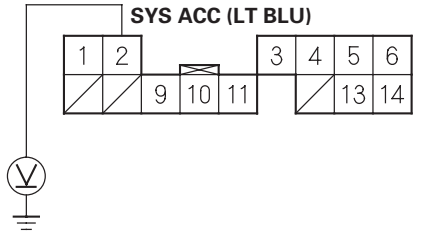
YES—Repair open or short in the wire(s) between the audio unit and the USB adapter unit. ■

NO—Substitute a known-good audio unit (see page 23-256), and recheck. If 10 V or more are present, replace the original audio unit. ■

15. Turn the ignition switch to ON (II).

16. Measure the voltage between body ground and audio unit connector E (14P) terminal No. 2.

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there 10 V or more present?

YES—Substitute a known-good audio unit (see page 23-256), and recheck. If 10 V or more are present, replace the original audio unit. ■

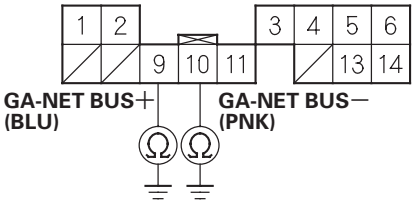
NO—Go to step 17.

17. Turn the ignition switch to LOCK (0).

18. Disconnect audio unit connector E (14P) and USB adapter unit connector A (14P).

19. Check for continuity between body ground and audio unit connector E (14P) terminals No. 9 and No. 10 individually.

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wires between the audio unit and the USB adapter unit. Replace the affected shielded harness. ■

NO—Go to step 20.

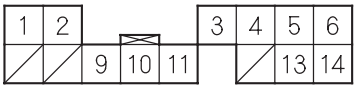
(cont'd)

Symptom Troubleshooting (cont'd)

20. Check for continuity between the terminals of audio unit connector E (14P) according to the table.

From terminal (wire color)	To terminals (wire color)
E3 (BRN)	E9 (BLU), E10 (PNK)
E9 (BLU)	E10 (PNK)

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

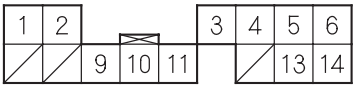
YES—Short in the wires between the audio unit and the USB adapter unit. Replace the affected shielded harness. ■

NO—Go to step 21.

21. Check for continuity between the terminals of audio unit connector E (14P) and USB adapter unit connector A (14P) according to the table.

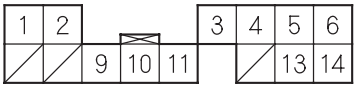
Audio unit connector	USB adapter unit connector	Wire color
E9	A9	(BLU)
E10	A10	(PNK)

AUDIO UNIT CONNECTOR E (14P)



Wire side of female terminals

USB ADAPTER UNIT CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good USB adapter unit (see page 23-258), then reconnect all of the connectors and recheck. If the symptom/indication goes away, replace the original USB adapter unit. If the symptom/indication is still present, replace the audio unit (see page 23-256). ■

NO—Open in the wire(s) between the audio unit and the USB adapter unit. Replace the affected shielded harness. ■

Error code: XM NO SIGNAL or XM ANTENNA is displayed (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Check XM radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines.

1. Check that the XM receiver connectors properly connected.

   Is the connector connected?

   YES—Go to step 2.

   NO—Reconnect the connector. If the error message does not go away, go to step 2.

2. Check the connector at the XM antenna and XM antenna lead.

   Is the connector connected?

   YES—Go to step 3.

   NO—Reconnect the connector. If the error message does not go away, go to step 3.

3. Substitute known-good XM antenna (see page 23-264).

   Is the error message gone?

   YES—Replace the XM antenna (see page 23-264). ■

   NO—Go to step 4.

4. Substitute known-good XM receiver (see page 23-258).

   Is the error message gone?

   YES—Replace the XM receiver (see page 23-258). ■

   NO—Replace the XM antenna lead. ■

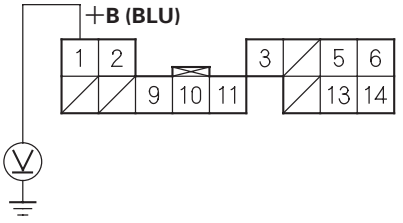
XM radio display is blank and no station information is displayed (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.

1. Disconnect XM receiver connector A (14P).

2. Measure the voltage between XM receiver connector A (14P) terminal No. 1 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 3.

NO—Repair open in the wire between the XM receiver and the navigation unit connector. ■

3. Reconnect XM receiver connector A (14P).

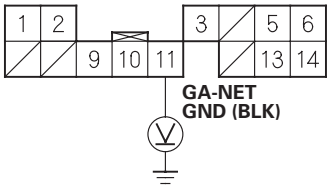
(cont'd)

Symptom Troubleshooting (cont'd)

4. Turn the ignition switch to ON (II).

5. Measure the voltage between XM receiver connector A (14P) terminal No. 11 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

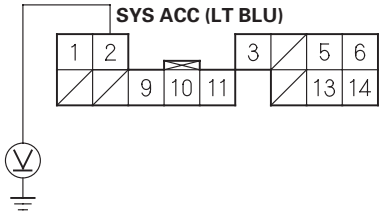
YES—Go to step 6.

NO—Repair open in the wire between the XM receiver and the navigation unit. ■

6. Turn the ignition switch to LOCK (0).

7. Measure the voltage between XM receiver connector A (14P) terminal No. 2 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there 10 V or more present?

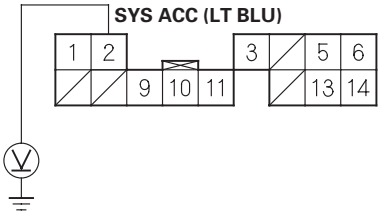
YES—Go to step 8.

NO—Substitute known-good XM receiver (see page 23-258), and recheck. If 10 V or more are present, replace the original XM receiver. ■

8. Turn the ignition switch to ON (II).

9. Measure the voltage between XM receiver connector A (14P) terminal No. 2 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.5 V?

YES—Go to step 10.

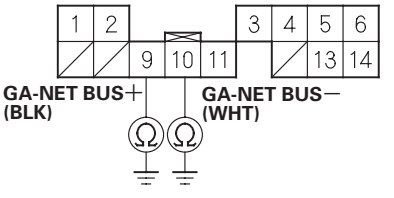
NO—Substitute a known-good navigation unit (see page 23-355), and recheck. If 0.5 V or less are present, replace the original navigation unit. ■

10. Turn the ignition switch to LOCK (0).

11. Disconnect navigation unit connector E (14P), USB adapter unit connector A (14P), and XM receiver connector A (14P).

12. Check for continuity between navigation unit connector E (14P) terminals No. 9 and No. 10 and body ground individually.

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity?

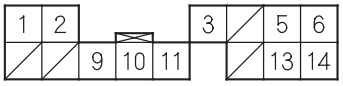
YES—Go to step 13.

NO—Short to body ground in the wire between the XM receiver and the navigation unit. Replace the affected shielded harness. ■

13. Check for continuity between XM receiver connector A (14P) according to the table.

From terminal	To terminals
A3 (BRN)	A9 (BLU), A10 (PNK)
A9 (BLU)	A10 (PNK)

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

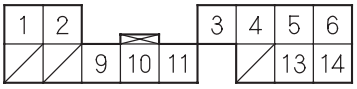
YES—Short in the wire(s) between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

NO—Go to step 14.

14. Check for continuity between navigation unit connector E (14P) and XM receiver connector A (14P) according to the table.

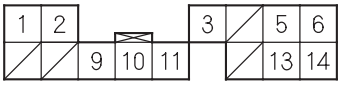
Navigation unit connector	XM receiver connector	Wire color
E9	A9	BLU
E10	A10	PNK

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver (see page 23-258), then reconnect all connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If symptom/indication is still present, replace the navigation unit (see page 23-355). ■

NO—Open in the wire(s) between the navigation unit and the XM receiver. Replace affected shielded harness. ■

Symptom Troubleshooting (cont'd)

XM radio preset memory is lost (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- If you can only tune to channel 000, 001, 174, and 247, make sure the navigation unit is set to channel mode (see owner's manual), if it is set to channel mode, call XM Satellite Radio customer support, and check the account activation status.

1. Turn the ignition switch to ON (II).
2. Turn on the navigation unit, and set each of the XM radio channel preset buttons.

   Do each of the XM radio channel preset buttons set properly?

   YES—Go to step 3.

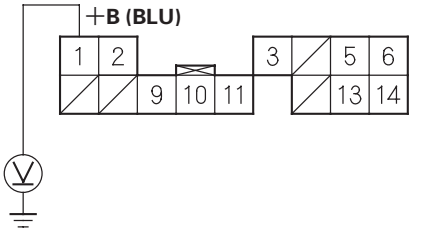
   NO—Go to step 7.
3. Turn the ignition switch to LOCK (0) for 1 minute, then turn it back to ON (II).
4. Test all of the XM radio channel preset buttons for proper recall operation.

   Do the preset buttons recall the radio stations?

   YES—System is normal at this time. Check connections at the navigation unit. ■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect XM receiver connector A (14P).
7. Measure the voltage between XM receiver connector A (14P) terminal No. 1 and body ground.

XM RECEIVER CONNECTOR A (14P)



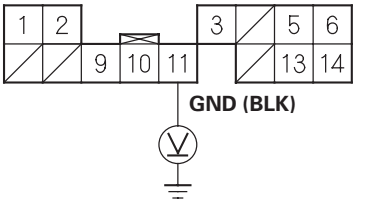
Wire side of female terminals

Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire between the navigation unit and the XM receiver. ■
8. Reconnect XM receiver connector A (14P).
9. Measure the voltage between XM receiver connector A (14P) terminal No. 11 and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Substitute a known-good navigation unit (see page 23-355), and recheck. If the symptom/indication goes away, replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between the XM receiver connector and the navigation unit. ■

Poor or no sound with XM radio (Audio unit does display XM channels) (with navigation)

NOTE:
- Check the vehicle battery condition first.
- Check the XM radio reception in an open area. Poor reception/interference can be caused by nearby tall buildings, mountains, or high-voltage power lines.
- Check the connectors for poor connections or loose terminals.
- If you can only tune to channel 000, 001, 174, and 247, make sure the navigation unit is set to channel mode (see owner's manual), if it is set to channel mode, call XM Satellite Radio customer support, and check the account activation status.

1. Turn the ignition switch to ON (II).
2. Turn on the navigation unit and select XM radio.
3. Check for an error message on the display.

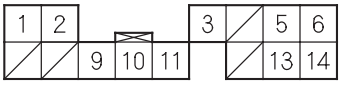
   Are there any messages displayed?

   YES—Go to error code list (see page 23-194). ■

   NO—Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Disconnect navigation unit connector E (14P), USB adapter unit connector A (14P), and XM receiver connector A (14P).
6. Check for continuity between XM receiver connector A (14P) and body ground according to the table.

XM receiver connector	Wire color
A5	WHT
A6	RED
A13	BLK
A14	GRN

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

NO—Go to step 7.

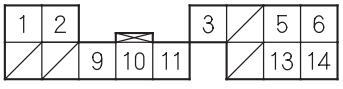
(cont'd)

Symptom Troubleshooting (cont'd)

7. Check for continuity between terminals of XM receiver connector A (14P) according to the table.

From terminal	To terminals
A4 (GRY)	A5 (WHT), A6 (RED), A13 (BLK), A14 (GRN)
A5 (WHT)	A6 (RED), A13 (BLK), A14 (GRN)
A6 (RED)	A13 (BLK), A14 (GRN)
A13 (BLK)	A14 (GRN)

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity between any of the terminals?

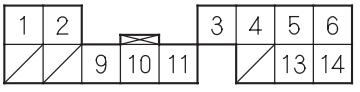
YES—Short in the wires between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

NO—Go to step 8.

8. Check for continuity between navigation unit connector E (14P) and XM receiver connector A (14P) according to the table.

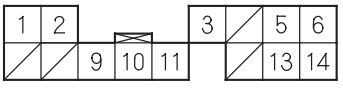
Navigation unit connector	XM receiver connector	Wire color
E5	A5	WHT
E6	A6	RED
E13	A13	BLK
E14	A14	GRN

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good XM receiver (see page 23-258), then reconnect all of the connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If the symptom/indication is still present, replace the navigation unit (see page 23-355). ■

NO—Open in the wire(s) between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

Sound Quality Diagnosis

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Use the following tests to check sound quality.

NOTE: Before beginning the following tests, write down the client's bass, treble, fader and balance settings, and then set them to their center positions for testing.

Left/Right Channel ID

Do this test to confirm proper channel routing.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.

2. Play track No. 1 (left, both, right channel ID) at a normal, or slightly higher than normal, volume level.

3. The voice should be audible only from the channel or channels when indicated.

   - If the channel ID is correct for each side, go to the phase test.
   - If the channel ID is not correct, check for;
     – Shorted speaker wire
     – Faulty amplifier (Type S model)
     – Faulty navigation unit
     – Faulty audio unit

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Phase Test

Do this test to confirm proper speaker phasing.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.

2. Play track No. 2 (phase) at a normal, or slightly higher than normal, volume level.

3. The voice should sound centered and focused when it is in-phase.

4. The voice should sound diffused, and have less bass when it is out of phase.

   - If the voice changes from in-phase to out of phase as indicated by the prompt, the phasing is correct. Go to electrical noise test.
   - If the voice always sounds out of phase, phasing is not correct. Check for;
     – Crossed speaker wires
     – Faulty amplifier (Type S model)
     – Faulty navigation unit
     – Faulty audio unit

Sound Quality Diagnosis (cont'd)

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Electrical Noise Test

Do this test to check for electrical noise being induced into the audio system.

NOTE: Electrical noise may be caused by outside sources that cannot be handled by the audio system. Make sure you remove any cell phones and/or turn off any aftermarket device before beginning this test.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 4 (digital zero) at a normal, or slightly higher than normal, volume level.
3. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
4. Play track No. 5 (near digital zero) at a normal, or slightly higher than normal, volume level.
5. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.
6. Play track No. 6 (SNR) at a normal, or slightly higher than normal, volume level.
7. Operate any electrical device that may create electrical noise in the audio system, including starting the engine.

   - If no abnormal noise is heard, go to individual speaker test.
   - If the noise is present only during the SNR track, replace the navigation unit or audio unit.
   - If the noise is heard during the digital zero or near digital zero track, check for;
     – Poor ground for the audio unit, amplifier, engine or battery cable
     – Pinched or shorted speaker or amplifier wire
     – Faulty amplifier (Type S model)
     – Faulty navigation unit
     – Faulty audio unit
     – Other faulty components causing excessive electrical noise (ignition coils, alternator, door lock actuators, etc.). Disconnect any suspect components, and then replay the tracks that were originally noisy. If the noise is gone, check the component's circuit and the component.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Individual Speaker Test

Do this test to identify a faulty speaker.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 30 (steady 300 Hz tone) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound compared to the other speakers. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
   - If the sound quality produced by a specific speaker is poor, substitute it with a known-good speaker. If the poor sound quality continues, go to the sound balance test.
   - If the sound quality is OK, go to the sound balance test.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Sound Balance Test

Perform this test to identify a faulty channel or speaker.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Confirm the bass and treble are set to the center positions.
3. Play track No. 3 (pink noise) at a normal, or slightly higher then normal, volume level.
4. A static type sound should be heard through all speakers.
5. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit of a known-good vehicle.
6. Set the bass and treble to the center position.
7. Play track No. 3 (pink noise) all the same level as was played in step 3.
8. Compare the sounds made by the two vehicles.
   - If the noise sounds made by the two vehicles are very similar, go to the Frequency Sweep Test (see page 23-254).
   - If the sound does not have as much bass, check the subwoofer and circuit.
   - If the sound does not have enough hiss, check the tweeters and their circuits.

Sound Quality Diagnosis (cont'd)

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Frequency sweep

Do this test to find rattles or reverberation that may cause a perception of poor sound quality.

1. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
2. Play track No. 13 (sweep from 500 Hz to 35 Hz) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound quality or reverberations caused by specific frequencies. Use the voice-over to estimate the frequency that causes the vibration. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
   - If vibrations or poor sound quality are heard, go to step 4.
   - If no vibrations or poor sound quality are heard, go to sound judging.
4. Choose the appropriate track from No. 14 to 25 (small range frequency sweep) or 26 to 53 (single frequencies) to recreate the frequency that caused the poor sound quality or vibration located in step 3: this aids in diagnosis of the cause.

   NOTE: When you get to the track that recreates the problem, select the repeat function on the navigation unit or audio unit, this will help you isolate the cause.
5. Replace or insulate the source of the vibrations or, if the speaker is the source of the poor sound quality, replace it.

Special Tools Required
Diagnostics CD 07AAZ-SDBA100

Sound judging

- Do this test to compare overall sound quality, imaging, and dynamics between the client's vehicle and a known-good vehicle. Only use a vehicle of the same model and trim level for this test.
- Make sure the vehicle is using only OEM speakers.

1. In the client's vehicle, set the bass, treble, fader, and balance settings to the client's normal settings that were written down before beginning testing.
2. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit.
3. Play tracks No. 7 to 12 (sound quality, midland, dynamics, and imaging demonstration tracks) at a normal, or slightly higher than normal, volume level. Write down the volume setting being used.
4. Listen to areas of the track that stand out as being either very clear, or poorer than other areas of the track.
5. Insert the diagnostics CD (T/N: 07AAZ-SDBA100) into the navigation unit or audio unit of a known-good vehicle.
6. Play the tracks at the same volume level and the same bass, treble, balance, and fader settings as used in step 3 in the client's vehicle.
7. Listen to the same area of the track that stood out as being either very clear or poorer than other areas of the track.

8. Compare the client's vehicle's sound quality results to the known-good vehicle's results.

   - If the sound quality in the client's vehicle is comparable to the sound quality in the known-good vehicle, then the client's vehicle is operating as designed.
   - If the sound quality is not comparable, check these items in order.
     – Loose or improperly installed speakers or other hardware that may become excited by the vibrations generated by the speakers
     – Poor power or ground to the stereo amplifier (Type S model)
     – Damaged speaker(s)
     – Faulty amplifier
     – Faulty navigation unit
     – Faulty audio unit

Seek Stop Test

Do this test to check the performance of the audio unit's AM and FM reception. Refer to symptom troubleshooting: audio sound weak or distorted, or no sound is heard from speakers (display is normal) (see page 23-206) before continuing with this test.

NOTE:
- Window tint, aftermarket theft-recovery devices and other aftermarket accessories may reduce radio reception.
- Changes in cloud cover and other atmosphere conditions will affect the ability of the navigation unit or audio unit to receive radio signals.

1. Park the client's vehicle in an open area away from buildings or other obstructions.

2. Park a known-good vehicle (same year, model, and trim level) next to the client's vehicle, facing the same direction.

3. Start the engine in the client's vehicle, and turn on the radio.

4. Set the FM receiver to 87.7 MHz.

5. Press the Seek + button and record the first station that the navigation unit or audio unit locks onto.

6. Press the Seek + button repeatedly, and write down each station that the navigation unit or audio unit locks onto until the station recorded in step 5 is reached again.

7. Set the AM receiver to 530 kHz.

8. Press the Seek + button, and record the first station that the navigation unit or audio unit locks on to.

9. Press the Seek + button repeatedly, and write down each station that the navigation unit or audio unit locks onto until the station recorded in step 8 is reached again.

(cont'd)

Sound Quality Diagnosis (cont'd)

10. Turn the ignition switch to LOCK (0).

11. Start the engine in the known-good vehicle, and then do steps 4 thru 10 on the known-good vehicle.

12. Compare the number of stations received in steps 6 and 9 in the client's vehicle with the number of stations received in the known-good vehicle.

    - If the number of stations received is the same, or within 10 %, the audio unit's tuner performance is OK. The problem may be atmospheric conditions, multi path interference, or other obstructions to the radio signal.
    - If the customer's vehicle receives fewer stations by at least 10 %, go to step 2 of poor AM or FM radio reception of interference, with navigation (see page 23-196), without navigation (see page 23-199).

Audio Unit Removal/Installation

Without navigation

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board(s) with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands (If you have touched it, wipe it off thoroughly.).
- Eject all the discs before removing the audio unit to prevent damaging the CD/DVD player's load mechanism.
- If you are replacing the audio unit, write down the audio presets (if possible), and enter them into the new audio unit.

Sound Quality Diagnosis (cont'd)

10. Turn the ignition switch to LOCK (0).

11. Start the engine in the known-good vehicle, and then do steps 4 thru 10 on the known-good vehicle.

12. Compare the number of stations received in steps 6 and 9 in the client's vehicle with the number of stations received in the known-good vehicle.

    - If the number of stations received is the same, or within 10 %, the audio unit's tuner performance is OK. The problem may be atmospheric conditions, multi path interference, or other obstructions to the radio signal.
    - If the customer's vehicle receives fewer stations by at least 10 %, go to step 2 of poor AM or FM radio reception of interference, with navigation (see page 23-196), without navigation (see page 23-199).

Audio Unit Removal/Installation

Without navigation

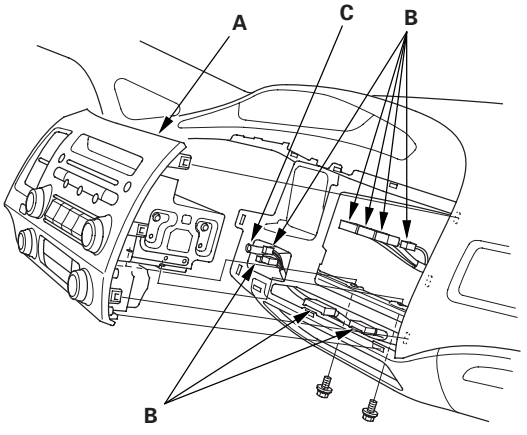
SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board(s) with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands (If you have touched it, wipe it off thoroughly.).
- Eject all the discs before removing the audio unit to prevent damaging the CD/DVD player's load mechanism.
- If you are replacing the audio unit, write down the audio presets (if possible), and enter them into the new audio unit.

1. Make sure you have the anti-theft code for the audio system.

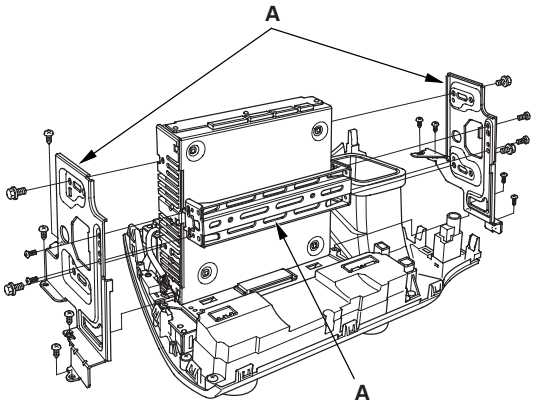
2. Remove the subdisplay visor (see page 20-100).

3. Remove the center pocket hole lid and bolts, then pull out the center panel (A).

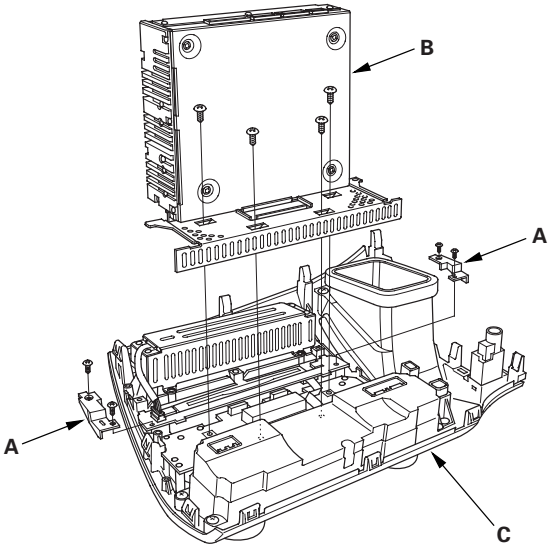


4. Disconnect the connectors (B) and the air hose (C), then remove the center panel.

5. Remove the bolts, screws and the brackets (A).



6. Remove the screws, rear covers (A) and the audio unit (B) from the center panel display (C).

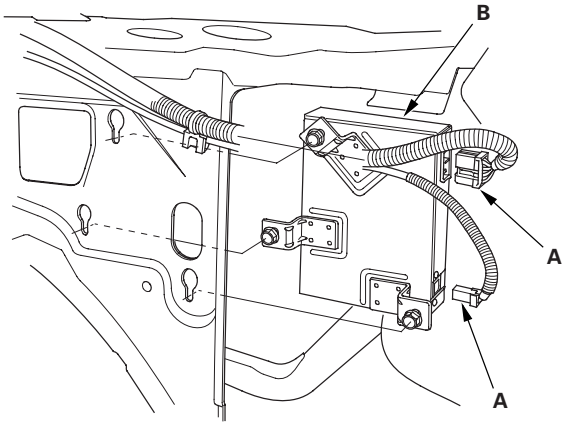


7. Install the audio unit in the reverse order of removal, and note these items:

   - Make sure all connectors and antenna lead are secure.
   - Enter the anti-theft code for the audio system, then set the clock.

XM Receiver Removal/Installation

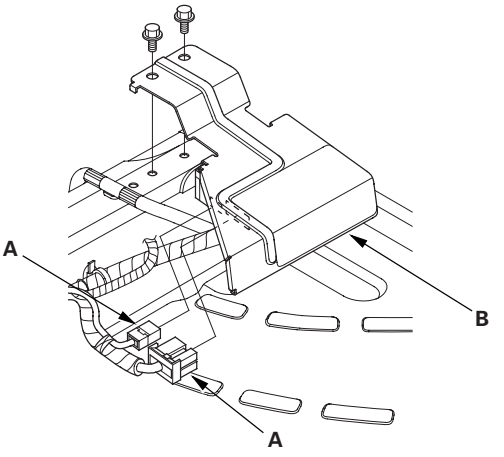
1. Open the trunk lid and remove the right trunk side trim panel (see page 20-80).
2. Disconnect connectors (A) from the XM receiver (B).



3. Loosen the three bolts, and remove the XM receiver.
4. Install the XM receiver in the reverse order of removal.

USB Adapter Unit Replacement

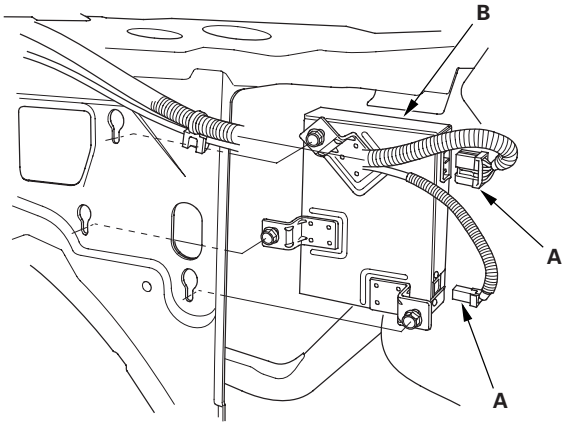
1. Remove the front passenger's seat (see page 20-118) and pull back the carpet.
2. Disconnect the connectors (A) from the USB adapter unit (B).



3. Remove the bolts and the USB adapter unit.
4. Install the USB adapter unit in the reverse order of removal.

XM Receiver Removal/Installation

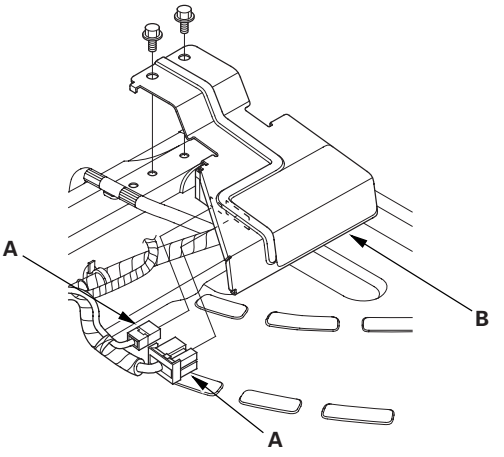
1. Open the trunk lid and remove the right trunk side trim panel (see page 20-80).
2. Disconnect connectors (A) from the XM receiver (B).



3. Loosen the three bolts, and remove the XM receiver.
4. Install the XM receiver in the reverse order of removal.

USB Adapter Unit Replacement

1. Remove the front passenger's seat (see page 20-118) and pull back the carpet.
2. Disconnect the connectors (A) from the USB adapter unit (B).

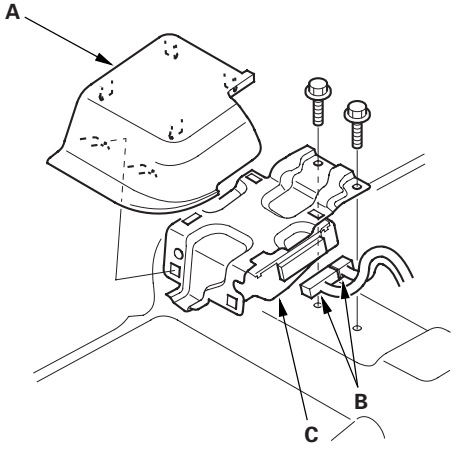


3. Remove the bolts and the USB adapter unit.
4. Install the USB adapter unit in the reverse order of removal.

Stereo Amplifier Removal/ Installation

Type S model

1. Slide the driver's front seat forward fully.
2. Remove the amp cover (A), then disconnect the connectors (B).

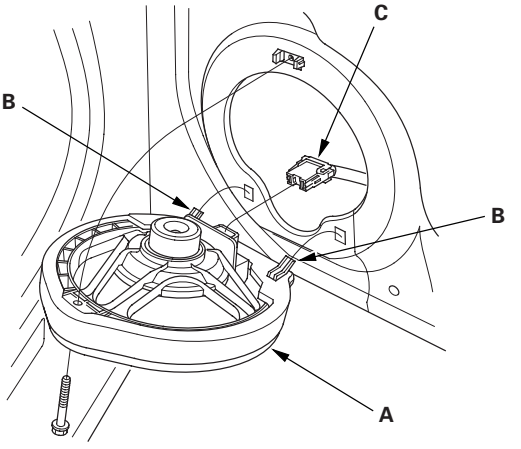


3. Remove the mounting bolts, then remove the stereo amplifier (C).
4. Install the stereo amplifier in the reverse order of removal.

Speaker Replacement

Front Door Speaker

1. Remove the front door panel (see page 20-7).
2. Remove the screw. Then lift the speaker (A) straight up to release the lower clips (B).



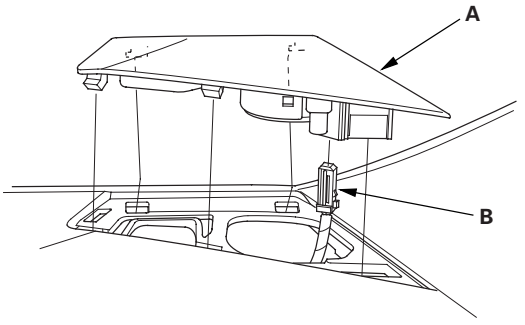
3. Disconnect the 2P connector (C), and remove the speaker.
4. Install the speaker in the reverse order of removal.

(cont'd)

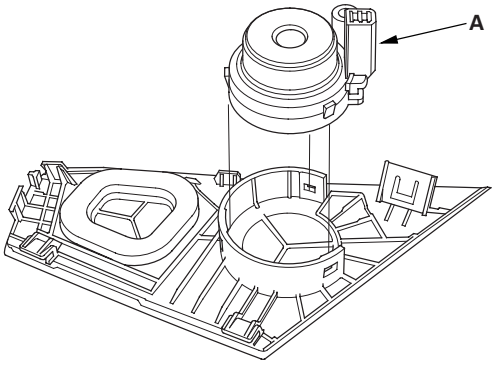
Speaker Replacement (cont'd)

Tweeter

1. Carefully pry the tweeter grille (A) out of the dashboard. Be careful not to damage the tweeter grille and the dashboard.



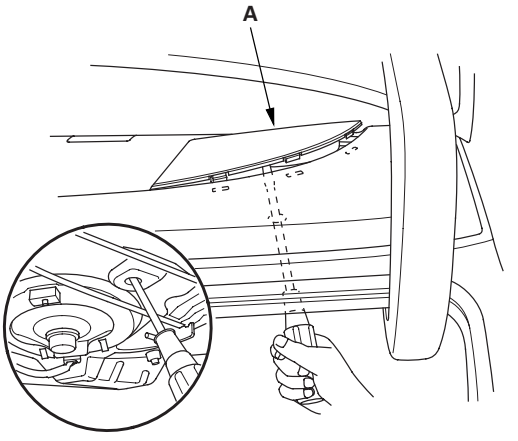
2. Disconnect the 2P connector (B) from the tweeter.
3. Remove the tweeter (A) from the speaker grille.



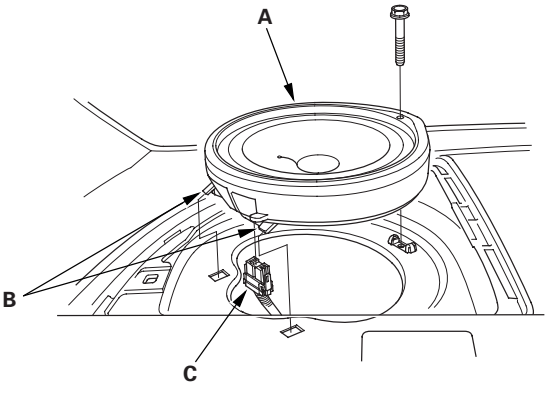
4. Install the tweeter in the reverse order of removal.

Rear Speaker

1. Remove the rear speaker grille (A).



2. Remove the screw. Then lift the speaker (A) straight up to release the clips (B).

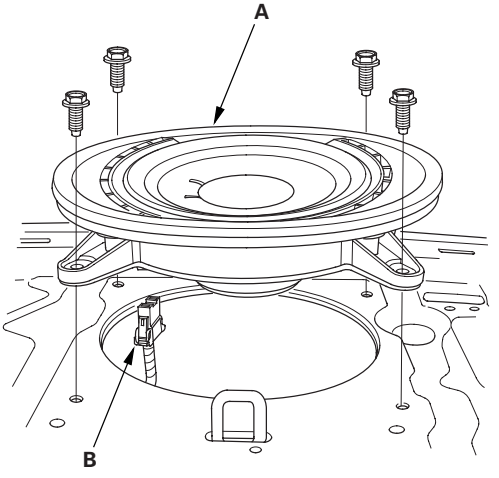


3. Disconnect the 2P connector (C), and remove the speaker.
4. Install the speaker in the reverse order of removal.

Subwoofer (Type S model)

1. Remove the rear tray (see page 20-78).

2. Remove the four mounting bolts from the subwoofer (A).



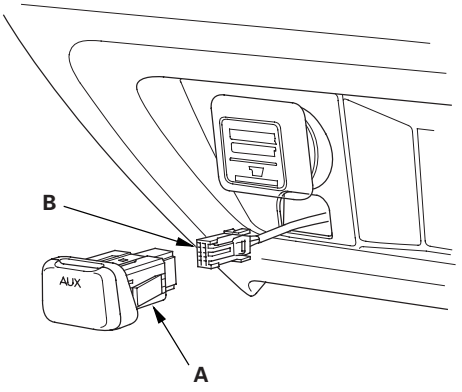
3. Disconnect the 2P connector (B), and remove the subwoofer.

4. Install the subwoofer in the reverse order of removal.

Auxiliary Jack Assembly Replacement

1. With navigation: Remove the navigation unit (see page 23-355).
   Without navigation: Remove the audio unit (see page 23-256).

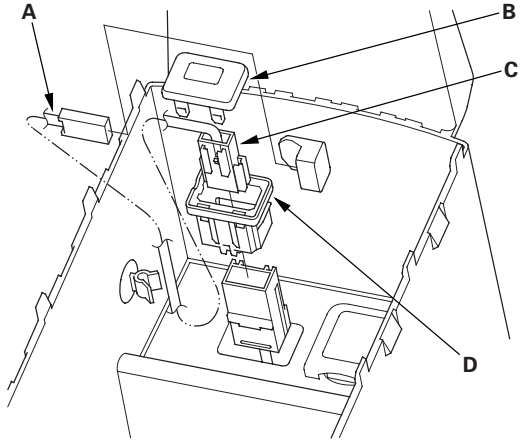
2. Carefully pull out the auxiliary jack assembly (A), then disconnect the 5P connector (B).



3. Install the auxiliary jack assembly in the reverse order of removal.

USB Adapter Replacement

1. Remove the center console (see page 20-92).
2. Detach the USB adapter cable (A) from the clip. Remove the cover (B) and disconnect the USB adapter cable connector (C).

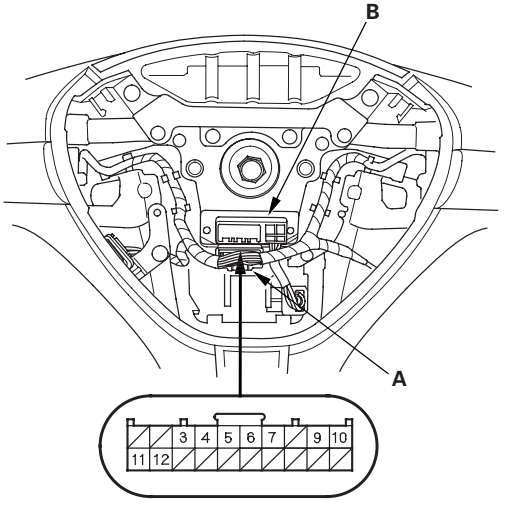


3. Carefully pull out the USB adapter holder (D) from the center console box.
4. Install the USB adapter in the reverse order of removal.

Audio Remote Switch Test

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

1. Remove the driver's airbag assembly (see page 24-188).
2. Remove the 20P connector (A) from the cable reel (B).



3. Measure the resistance between terminals No. 9 and No. 10 in each switch position according to the table.

Position	Resistance
No button pressed	About 10 kΩ
MODE	About 3.7 kΩ
CH (+)	About 1.7 kΩ
CH (−)	About 775 Ω
▲ (VOL.UP)	About 357 Ω
▼ (VOL.DOWN)	About 100 Ω

4. If the resistance is not as specified, replace the audio remote switch (see page 23-263).

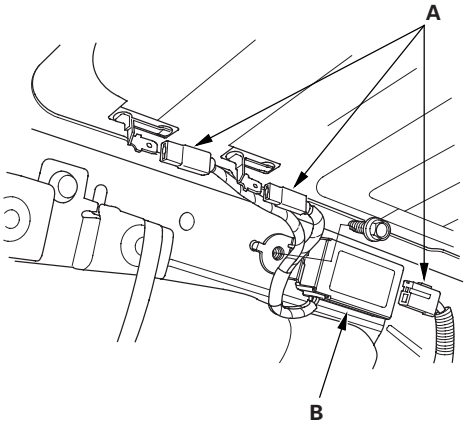
Audio Remote Switch Replacement

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

1. Remove the steering wheel (see page 17-6).
2. Remove the audio remote switch (see page 17-7).
3. Install the audio remote switch in the reverse order of removal.

AM/FM Antenna Amplifier Replacement

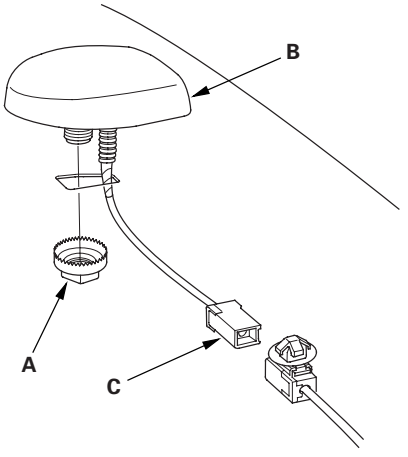
1. Remove the right side C-pillar trim (see page 20-75).
2. Disconnect the connectors (A) from the AM/FM antenna amplifier (B).



3. Remove the bolt and AM/FM antenna amplifier.
4. Install the unit in the reverse order of removal.

XM Antenna Replacement

1. Remove the headliner (see page 20-84).
2. Remove the nut (A) from the XM antenna (B).

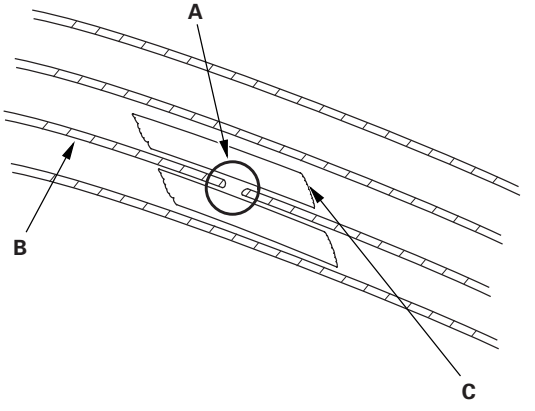


3. Disconnect the connector (C) and remove the XM antenna.
4. Install the antenna in the reverse order of removal.

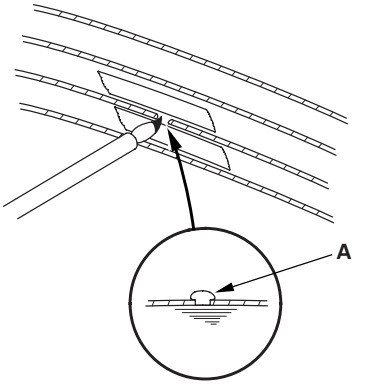
AM/FM Antenna Repair

NOTE: To make an effective repair, the broken section must not be longer than one inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.

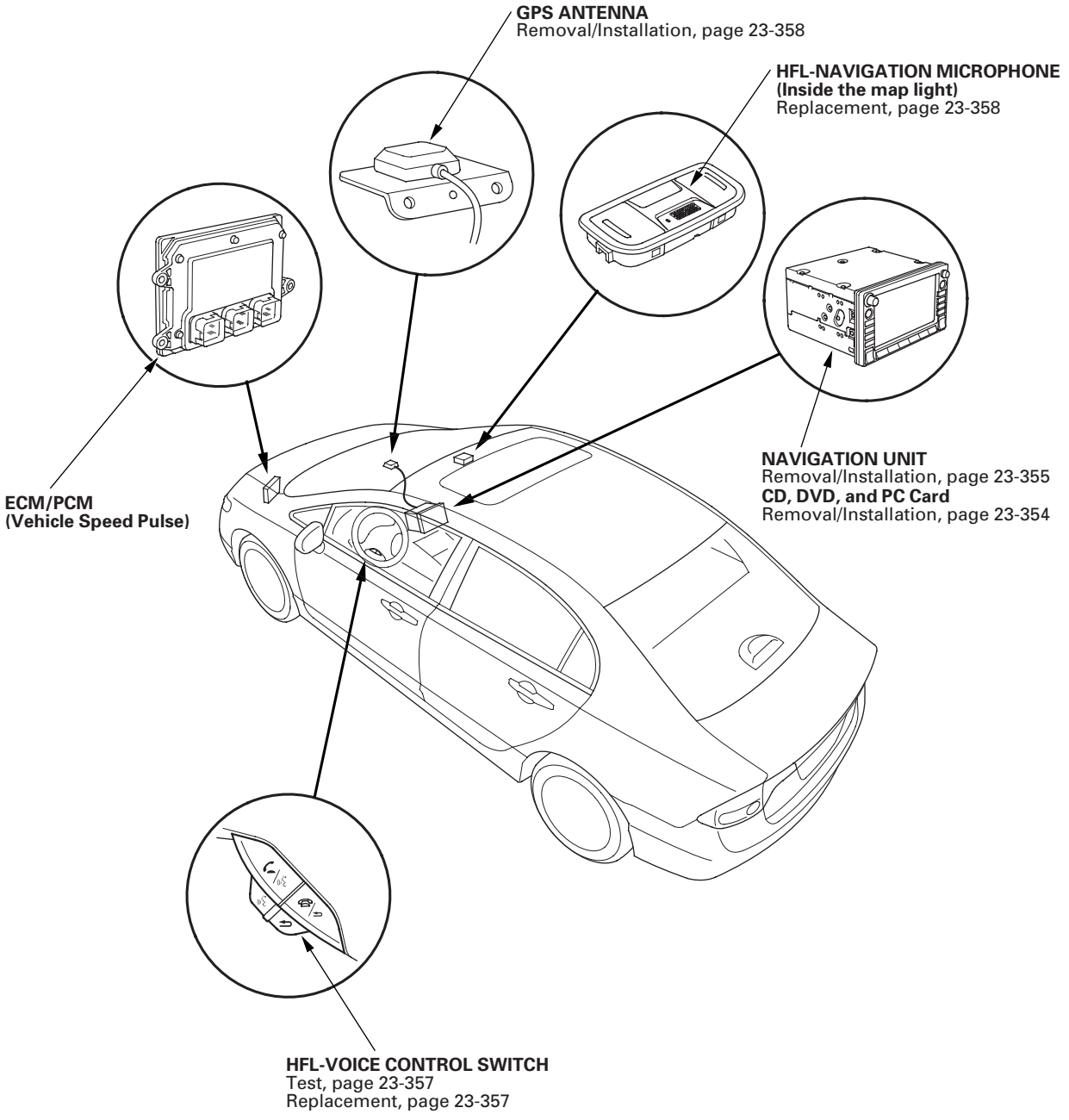


2. Carefully mask above and below the broken portion of the window antenna wire (B) with cellophane tape (C).
3. Mix the silver conductive paint thoroughly. Using a small brush, apply a heavy coat of paint (A) extending about 1/8'' on both sides of the break. Allow 30 minutes to dry.



4. Check for continuity in the repaired wire.
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

Component Location Index



General Troubleshooting Information

General Operation

Refer to the navigation system manual for the navigation system operating procedures.

Anti-theft Feature

The navigation system and audio unit have a coded theft protection circuit. Make sure you have the anti-theft security code before:

- Disconnecting the battery.
- Disconnecting the navigation unit connector A (24P) and C (8P).
- Removing the No. 23 (10 A) fuse from the under-hood fuse/relay box.

After service, reconnect power to the navigation unit, and turn the ignition switch to ON (II). Enter the 4-digit anti-theft security code, then select Done.

If the code cannot be found, use the interactive Network (iN) to look it up. You can view the serial number in one of the ECU Info diagnostic screens (see page 23-305). Alternatively, you can find the serial number on the underside label which is located on the navigation unit in the trunk.

When replacing the navigation unit, be sure to give the customer the new anti-theft security code.

Symptom Diagnosis

Certain circumstances and system limitations will result in occasional vehicle positioning errors. Some client's may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing client's about symptoms of the navigation system.

Self-Inertial Navigation Limitations

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause discrepancies between the vehicle's actual position and the indicated vehicle's position (GPS vehicle position).

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the engine stopped and the vehicle stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table.
- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
  - Continuous tire slippage on a slippery surface
  - Driving with snow chains mounted
  - Abnormal tire pressure
  - Incorrect tire size
  - Frequent lane changes across a wide highway
  - Continuous driving on a straight or gently curving highway
  - Very bumpy roads
- Tolerances in the system and map inaccuracies sometimes limit how precisely the vehicle's position is indicated. Examples of this include:
  - Driving on roads not shown on the map (map matching is not possible)
  - Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage
  - Driving on a road with a series of sharp hair-pin turns
  - Driving near a gradual highway exit or transition
  - Driving on one of two close parallel roads
  - Making many 90 degree turns

Global Positioning System (GPS) Limitations

The GPS cannot detect the vehicle's position or elevation during the following instances:

- For the first 5 to 10 minutes after reconnecting the battery (this process can take as long as 45 minutes).
- When the satellite signals are blocked by tall buildings, mountains, tunnels, large trees, inside parking structures or large trucks.
- When the GPS antenna is blocked by metallic window tinting or by an object placed above it in the vehicle. The GPS antenna requires a clear unobstructed view of the sky.
- When there is no satellite signal output (signal output is sometimes stopped for satellite servicing).
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors and theft recovery systems) and cell phones placed near the navigation system.

The accuracy of the GPS is reduced during these instances:

- Metallic window tinting above the GPS antenna.
- When only three or less satellite signals are received (Four satellite signals are required for accurate positioning).
- When driving near high tension power lines.
- When the satellite control centers are experiencing problems.

Muting Logic

Whenever the navigation system is giving guidance, the front speakers are muted. When the voice control system is being used, all of the speakers are muted. If the HandsFreeLink is in use, the voice control system is unavailable and a message appears onscreen.

LCD Unit Limitations

NOTE: The screen is not touch sensitive. Use the interface dial and buttons to select items on the screen.

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops (you may see an error message displayed stating this fact).
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the screen may be noticeable. Clean the screen with a soft, damp cloth. You may use a mild cleaner intended for eye glasses or computer screens. To avoid scratching the panel, do not rub too hard or use abrasive cleaners or shop towels.

Symptom Duplication

- When the symptom can be duplicated, verify that it is not a characteristic of the system. Review the navigation system manual and compare it to a known-good vehicle (with the same software and database), under the same conditions. If the symptom is not the same as the known-good vehicle, follow the self-diagnostic procedures and the appropriate troubleshooting procedures.
- When the symptom does not reappear or only reappears intermittently, ask the client about the conditions when the symptom occurred.
  - Always ask the client to demonstrate the problem.
  - Try to establish possible user error or a misunderstanding of the system.
  - Try to establish if outside interference may have been the cause.
  - Try to duplicate the symptom under the same conditions the client experienced.
  - Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
  - Inspect the vehicle for after-market electronic devices (vehicle locators, amps, radar detectors, etc.) that may be hidden.

NOTICE

When troubleshooting navigation system problems, ensure that the known-good vehicle is the same software version year and model as the vehicle being serviced. Mixing incompatible navigation DVDs or other system components can delay the troubleshooting process by creating symptoms or issues causing effects unrelated to the original problem.

(cont'd)

General Troubleshooting Information (cont'd)

Service Precautions

- If you need to replace the navigation unit, you can back-up the navigation data and transfer it to a new navigation unit. See Save users memory (see page 23-310).
- When the battery is disconnected, the internal GPS clock resets to 0:00. The clock resets to the correct time after the system finishes GPS initialization.
- Before disconnecting the battery, make sure you have the anti-theft codes for the audio system and the navigation system, and write down the audio presets. Also obtain any PGM-FI or transmission DTCs and freeze frame date (which are lost when the ECM/PCM loses power).
- After reconnecting the battery, you have to wait to get the initial signal from the satellite. It will take from 10 to 45 minutes.
- Adjust the setup clock settings (time zone and daylight savings) in the navigation system.
- Before returning the vehicle to the client, enter the anti-theft codes for the audio system and the navigation system.

System Initialization

If the navigation system loses power (like the battery was disconnected), the navigation system requires initialization. Once completed, your system is ready to use.

This initialization requires the following:

- Entering the 4-digit anti-theft security code to unlock the system
- GPS initialization (may not be needed depending of the length of time the system was without power)
- Map matching to align the GPS to a location on the map

Entering the Security Code

Any time the navigation system loses power, you need to enter the 4-digit anti-theft code on the navigation system display. This 4-digit code is located on a small code card that was given to the customer. Enter the 4-digit code, then select Done.

If the navigation system anti-theft code is missing, use the interactive Network (iN) to look it up. You need the serial number for the navigation unit to do this.
You can view the serial number by entering the diagnostic mode. Select Unit Check from the main menu, then the ECU info diagnostic screen. This allows you to get the serial number without removing the navigation unit.

The iN may display more than one code for a given serial number. This is because serial numbers are not unique. You may have to try more than one 4-digit code. If no code is shown, or if the code(s) given do not work in the navigation unit, contact the Automobile Warranty department. If the code 0000 works, replace the navigation unit.

When replacing the navigation unit or audio unit, make sure you give the client the new anti-theft security code.

GPS Initialization

NOTE: You must park the vehicle outside with a clear view of the southern sky.

Depending on the length of time the battery was disconnected, your system may require GPS initialization. If it does, the following screen appears:

The navigation system lost power and is acquiring its location from the GPS satellites. This usually takes less than 10 minutes.

*** Start the engine.**
*** Park the vehicle in an open area away from trees, power lines, and tall buildings.**
*** Remove loose articles, cell phones, or electrical accessories located near the GPS antenna.**
*** If this screen is displayed repeatedly when starting the vehicle, see your dealer.**

If this procedure is not necessary, the system proceeds directly to the Disclaimer screen. During initialization, the system searches for all available GPS satellites, and obtains their orbital information. During this procedure the vehicle should be out in the open with a clear view of the sky.

If the navigation system finds the satellites properly, this box clears, and changes to the Disclaimer screen. If within 10 minutes the system fails to locate a sufficient number of satellites to locate your position, the following screen appears.

Something is interfering with the system's ability to acquire its location. Check the following:

*** The vehicle must be in an open area with a clear view of the sky.**
*** Remove sources of GPS interference like metallic window tint above antenna, or electrical items near antenna(see owner's manual for details).**
*** Check GPS antenna cable connection.**
*** Restart the engine and repeat the GPS acquire procedure. If the problem persists, see your dealer.**

It this screen appears, turn off the engine, then restart the vehicle and move it to a different location. If the disclaimer screen appears, the GPS initialization is complete.

NOTE:
- The average acquiring time is less than 10 minutes, but it can take as long as 45 minutes.
- If the system is still unable to acquire a signal, follow the instructions on the screen. If this screen appears again, go to troubleshooting for the GPS icon is white or not shown (see page 23-341).
- Skip to a CSF screen by pushing the MENU and INFO buttons at the same time and can move to an System Links screen.

Map Matching

This part of the initialization matches the GPS coordinates with a road on the map screen. To do this part of the procedure, make sure that the navigation system is displays a map, and drive the vehicle on a mapped road shown on the map screen. Do not enter a destination at this time. When the name of the current road you are driving on, appears at the bottom of the screen, the entire procedure is complete. Your system is now ready to use.

Obtaining A Navigation DVD

If the Navigation DVD is lost or damaged, or you need a yearly updated DVD, you have two ways to purchase one. You can either call 888-549-3798, or order on-line at www.acura.com.

Both methods require a credit card. The DVD cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Earlier model navigation DVDs (black, orange, light blue label and the older versions with a white label)
- Map software programs manufactured by other companies
- DVD movies, or DVDs containing audio recordings

Update DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced maps and points of interest (POI) coverage
- Fixes for minor software bugs
- Additional features

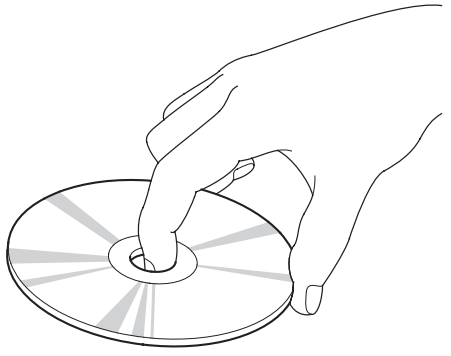
NOTE:
- Map matching must be done any time the DVD is removed or replaced.
- Always order navigation DVDs on an as-needed basis. During a typical model year, each color DVD may undergo a half a dozen software only version upgrades to fix minor issues on some or all models the DVD supports. This is normal. Usually only the letter at the end of the version number changes, while the database (maps and POIs) remain unchanged.
- Never promise your customer future free updates. There are no free programs for updating the navigation DVD. Update DVDs are generally available for purchase each fall. The online DVD order site provides information when an update for a particular color DVD is available.
- Damaged discs are not covered by warranty unless they have been damaged by the navigation system.

(cont'd)

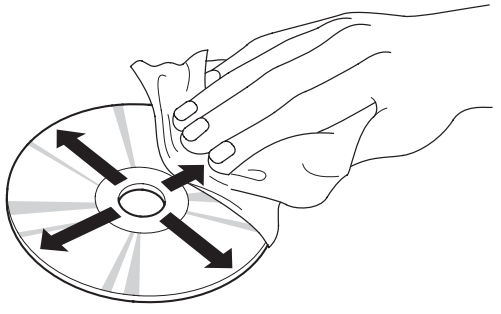
General Troubleshooting Information (cont'd)

DVD Handling and Cleaning

To avoid damaging or leaving fingerprints on the DVD, always handle it by the edges and place it in a jewel case whenever it is outside the navigation unit. Deep scratches or fingerprints on the back of the DVD can cause intermittent rebooting or other system errors.



Smudges and fingerprints can be carefully removed using a mild cleaner and tissues designed to clean eyeglasses. To clean a DVD, use a clean soft cloth. Very gently wipe across the DVD from the center to the outside edge, never in a circular motion.



Do not place stabilizer rings or labels on the DVD.

Earliest DVD Version Application for Each Model

Each navigation system DVD contains a map/POI (point of interest) database and the navigation system software for each model that it supports. Inserting an older DVD can cause problems since it lacks the software to provide the specific features needed for that model. Unfortunately, the navigation software does not detect or warn you that the version is outdated, and it may even appear to operate.

NOTE: Replacing a DVD just because the version number is higher is not always warranted. A higher software version does not necessarily mean it contains newer software for your model. The DVD contains software for all models that use the same color DVD, and a revised number may or may not have software fixes or upgrades for the model in question.

Typical warning symptoms that an outdated DVD is being used include:

- The Acura model navigation screen may display a Honda logo while booting up.
- A newly introduced model feature or current accessory may not display properly, and Extension will display instead.

  NOTE: Extension may be displayed when using Music Link, but should never be displayed when XM is selected.

- The current street (the street being driven on) does not appear properly at the bottom of the map screen display when the vehicle is driven on a main road.

  NOTE: If necessary, compare the operation to the navigation system of the same model and year vehicle that has a current DVD.

How to Identify Navigation DVD Versions, and How to Inspect A DVD for Damage

To determine the navigation version on a particular model, start the engine, then locate the navigation unit. Open the DVD door, and push the eject button to eject the DVD. Hold the DVD by the edges, and check for these items:

- Check any official Acura service website for more service information about the navigation DVDs.
- The DVD label color.
- Read the DVD version on the label, and note it on the repair order. The version number is near the bottom of the label text (for example, ver: 4.23A). You will need this version number:
  - To verify that the DVD version is appropriate for the vehicle. Check any official Honda service website for more service information.
  - Any time you call Tech Line regarding a navigation system issue.
  - To answer client inquires concerning update or coverage issue.

    NOTE: Client's may obtain DVDs from sources outside the normal ordering process. If you determine this is the case, recommend that your customer purchase the appropriate DVD from the Acura Disc Fulfillment Center (see ORDERING A DVD).

  - Check the underside of the DVD for signs of mishandling. Deep scratches, or random scratches, light swirl marks, or fingerprints can cause random lock-ups, reboots, erratic voice response, erratic positioning errors, and DVD read or format errors.

    NOTE: A damaged DVD is not covered under warranty unless the disc is damaged by the navigation unit. Damage by the navigation unit typically appears as circular scratches caused by something rubbing against the DVD as it spins. The damage may appear as arcs or complete circles on the DVD reading surface.

  - Verify that the underside of the DVD is silver, and not a copy with a blue color. Copies will not work properly and can cause other symptoms that mimic hardware problems.
- Incorrectly colored DVDs being put into navigation vehicles. This causes the system to either display error messages, or causes system malfunctions that mimic a hardware problem. This results in the client leaving with a malfunctioning navigation system.
- The DVD version provided to the client is out-of date or incompatible with a particular model. This inconveniences your client by delaying the repair, or by causing additional (and unnecessary) returns to your dealership.
- The client experiences bugs or other issues that have already been resolved in later versions currently available at the fulfillment desk.

If the DVD is defective, or has any of the issues mentioned above, return the vehicle to your client and recommend that they order the proper DVD from the Acura Disc Fulfillment Center.

NOTE: Navigation DVDs do not come with replacement navigation units. If you are replacing a navigation unit because it is defective (following appropriate service manual troubleshooting), and the DVD does not eject, order a DVD. See Obtaining a navigation DVD.

(cont'd)

General Troubleshooting Information (cont'd)

How to Answer Client Questions About Navigation Coverage

Some clients may ask questions regarding a city, address, or POI (point of interest) covered by the navigation system. It is better to verify a coverage question on an actual vehicle than to disappoint your client by promising coverage that may be incomplete or missing in their area. The following suggestions can be used to answer coverage inquiries from your client.

Is my address covered by the navigation system?

Using a current production vehicle (of the same model), try and enter the client's address (street first) to see if their area is covered. Always enter the street first, because sometimes their city may be included in a neighboring township, or under some larger metropolitan city name. If the address is shown in a later year vehicle, but not your client's vehicle, you might recommend that your client purchase an update.

Is my city covered by the navigation system?

For general questions about whether a city is covered, view the map coverage link on the DVD order site. On the site, select a year, and select a model, then click on the Coverage link. You then select a state or province, and the cities are listed. Of course, this does not guarantee that the customer's road or address is in the system. Verifying on an actual production vehicle is always the best guarantee that your information is accurate.

The gas station on my corner is now a restaurant. Why is it still incorrect in the navigation system?

For POI-related client questions, explain that businesses are constantly moving, and there can be a considerable lag in updating the millions of POIs in the system. The database is updated annually, and the best way to the verify whether the POI is accurate is verify the inquiry on a current production vehicle.

Answers to these and other questions regarding coverage can be found in these locations:

- In the Frequently Asked Questions section of the navigation system manual.
- At the online DVD order site, by clicking on the FAQs link.

How do I find the local address of a business that is part of a national chain (for example, Starbucks)?

There are three ways to find the local address to businesses:

- If you know the phone number of the business, select Phone Number and enter the 10 digit phone number (area code plus seven digit number).
- Select Category, then Restaurant. Enter the keyword Star. The resulting list includes all restaurants that have the letters Star anywhere in the name.
- Select Name and enter Starbucks. For more common business names, like McDonalds, you may have to search through a list that includes other businesses like McDonalds Welding, McDonalds Automotive, etc.

Precaution on Client "Sneak Previews"

Your client might request a look (or sneak preview) at features in the latest navigation software. You should never preview a navigation DVD in a client's vehicle. Inserting a newer DVD installs the latest software from the DVD into the memory of the client's navigation system. When the original DVD is reinstalled, the newer software remains in memory and is often incompatible with the client's original DVD Map and POI database, or software.

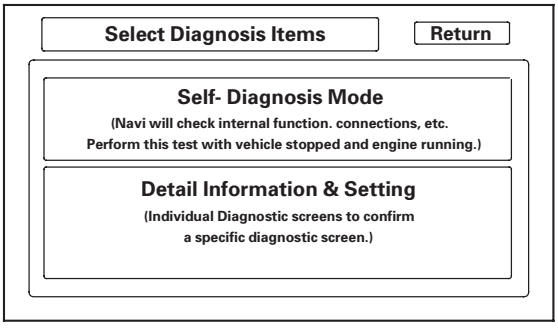
If your client wishes to see the latest navigation coverage or software features, demonstrate it on an in-stock vehicle that already has the latest DVD version.

If a newer version is loaded either by the dealer or the client, the only remedy is to enter the navigation diagnostic mode's Version screen and do a forced download. Check any official Honda service website for more information about what patches may need reinstalling.

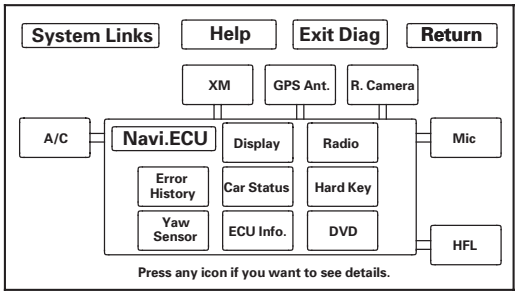
How to Check Error History

The Error History feature is to record intermittent navigation issues that occur while using the system. Sometimes the client complaint cannot be duplicated. The error history may record the information needed to diagnose the problem. To check the error history:

1. Start the engine.
2. Press and hold the MAP/GUIDE, MENU, and CANCEL buttons for 3 seconds.
3. When the Select Diagnosis Items menu is displayed, select Detail Information & Setting.

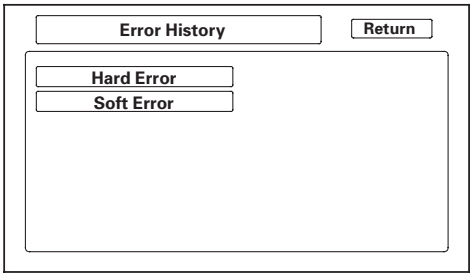


4. When the navigation unit has hard codes, the Error History icon appears yellow when the Self Diagnosis mode (System links) screen is displayed. When no hard errors are stored, the icon appears gray. To view the errors with their DTC codes, select the error history icon.



5. Select Hard Error.

   NOTE: Soft errors are for factory use only.



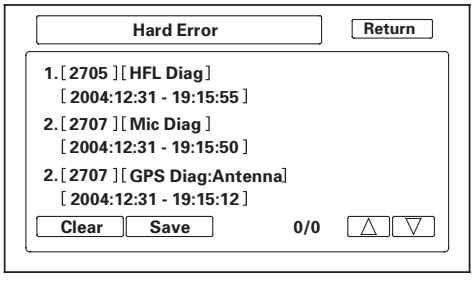
Hardware Error History

6. The Hard Error screen displays the following information for each error:

   - The DTC trouble code for the error
   - A brief description of the DTC code
   - The date and time when the error occurred.

   NOTE:
   - To see additional errors, use the joystick to select UP or DOWN.
   - Select Clear to delete the error history. The Save feature is for factory use only.

7. Use the DTC Symptom Troubleshooting table to troubleshoot the error.



8. Clear the DTCs.
9. Select Return to exit the error history.

Software Error (Soft error) History

Software errors are not available. They are for factory use only.

(cont'd)

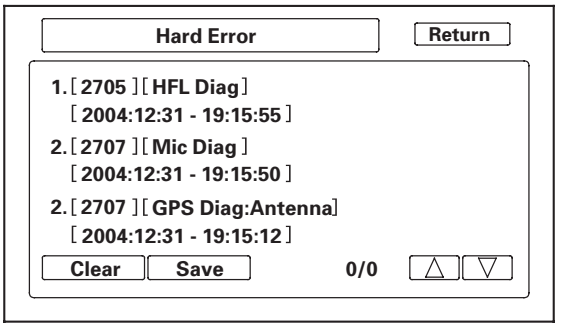
General Troubleshooting Information (cont'd)

How to Clear Error History

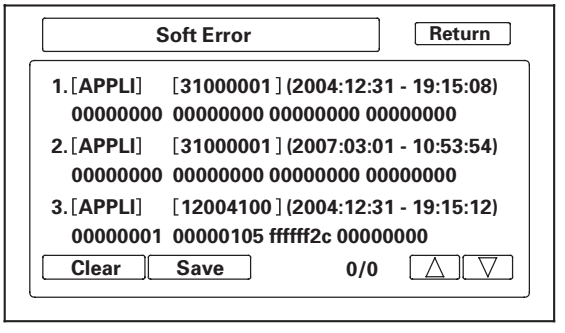
1. Do the steps in How to check Error History.
2. Select Clear in the error menu.

NOTE:
- By selecting Clear, all software and hardware errors stored in history are erased at the same time.
- Save is for factory use only.

Hard error history is displayed

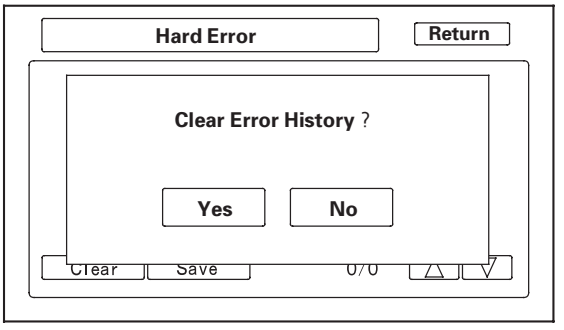


Soft error history is displayed (Soft errors are for factory use only)

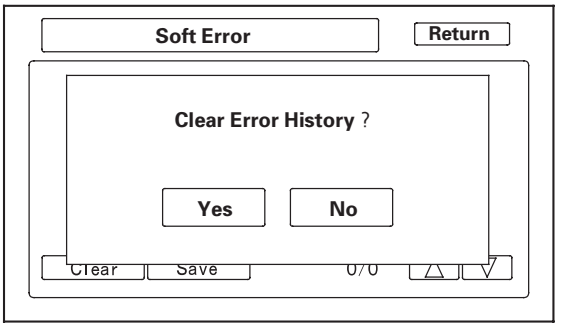


3. After selecting Clear, then selecting Yes, both Hard Error history and Soft Error history are cleared at the same time.

Hard error history clear



Soft error history clear (Soft errors are for factory use only)



4. Press return to exit.

DTC Troubleshooting Index

DTC	Description	Circuit	Failure Detection	Page	Also Check for
1001	FROM system Info Error	Flash ROM management	Navigation unit internal data error.	(see page 23-320)	Low or weak battery voltage
1101	Media Bus Send Error	Media condition monitoring	Navigation unit internal media error.	(see page 23-320)	Low or weak battery voltage
1201	DVD High Temp	DVD drive	Navigation unit temperature above the upper limit. Failure in navigation unit fan circuit.	(see page 23-321)	• Low or weak battery voltage • High temperature around the navigation unit
1202	DVD Low Temp	DVD drive	Navigation unit temperature below the lower limit.	(see page 23-321)	• Low or weak battery voltage • High temperature around the navigation unit
1301	GPS Antenna Error	GPS Antenna	GPS antenna circuit malfunction.	(see page 23-322)	Low or weak battery voltage
1302	GPS Receiver Error 1	GPS Receiver	GPS antenna circuit malfunction. Navigation unit internal GPS receiver malfunction.	(see page 23-323)	Low or weak battery voltage
1303	GPS Receiver Error 2	GPS Receiver	Navigation unit internal GPS receiver malfunction.	(see page 23-324)	Low or weak battery voltage
1305	Gyro Error 2: ECU Temp XX ℃	Gyro	Navigation unit internal gyro malfunction.	(see page 23-324)	Low or weak battery voltage
1306	Vehicle Speed Pulse	Vehicle Speed Pulse	VSP circuit malfunction.	(see page 23-325)	Check for F-CAN DTCs
1307	DVD Read Error	DVD	Scratched/Dirty DVD or navigation unit internal DVD ROM drive.	(see page 23-325)	Low or weak battery voltage
1402	Audio Error 2	CD	Mechanical malfunction in the CD changer.	(see page 23-326)	Low or weak battery voltage
1409	Audio Error 9	XM	XM Antenna/circuit malfunction.	(see page 23-326)	Low or weak battery voltage
2607	XM Diag	XM	GA-NET Bus circuit malfunction Open/Short. XM Antenna circuit malfunction.	(see page 23-327)	
2609	VRAM Diag	ECU VRAM	Navigation unit internal VRAM malfunction.	(see page 23-329)	
2610	DRAM Diag	ECU DRAM	Navigation unit internal DRAM malfunction.	(see page 23-330)	
2701	GPS Diag: Antenna	GPS	GPS antenna malfunction.	(see page 23-330)	
2702	GPS Diag: Receiver in Navi	GPS	GPS antenna malfunction.	(see page 23-331)	
2703	Aircon Diag	Aircon	Communication error between climate control unit and navigation unit (open/short).	(see page 23-331)	Check for F-CAN DTCs
2705	HFL Diag	HFL	HandsFreeLink control unit internal malfunction.	(see page 23-334)	Check for F-CAN DTCs
2706	Gyro Diag: ECU Temp XX ℃	Gyro	Navigation unit internal malfunction.	(see page 23-336)	
2707	Mic Diag	Mic	Mic circuit malfunction Open/Short.	(see page 23-337)	

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Navigation system stays on the GPS initialization screen	System Initialization (see page 23-268)	• Navigation unit • GPS antenna/cable is disconnected or damaged • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches
Vehicle position icon constantly leaves road, moves erratically, or is displayed very far from actual vehicle position	Symptom Troubleshooting (see page 23-344)	• Navigation unit • GPS antenna/cable • ECM/PCM (speed and fuel pulses) • Harness/fuses/switches
System always comes up in in-line diagnostic mode	Symptom Troubleshooting (see page 23-347)	
Navigation system will not accept security code	Symptom Troubleshooting (see page 23-353)	The wrong color DVD is installed
Navigation frequently asks for anti-theft code and/or needs GPS initialization	Symptom Troubleshooting (see page 23-350)	• Loss of voltage or poor ground (G504, G505) • Navigation unit • Low battery voltage • Harness/fuses/switches
GPS icon is white or not shown	Symptom Troubleshooting (see page 23-341)	• Navigation unit • Aftermarket accessories connected to the system • The wrong color DVD is installed • The DVD is damaged or dirty • GPS antenna/cable • Harness/fuses/switches
Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins	Symptom Troubleshooting (see page 23-345)	• Navigation unit • GPS antenna/cable • ECM/PCM (speed signal)
No picture is displayed	Symptom Troubleshooting (see page 23-338)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches
Picture has lines/rolls/other issues or is an odd color	Symptom Troubleshooting (see page 23-339)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Aftermarket accessories connected to the system • Harness/fuses/switches
Display day/night mode does not work or does not work properly	• If you use the display mode button, the auto day/night function is disabled until you turn the ignition switch to ON (II) • Symptom Troubleshooting (see page 23-348)	• Display brightness set to High in day or night mode • Gauge control module • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches
System locks up or freezes constantly	Symptom Troubleshooting (see page 23-348)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Harness/fuses/switches

Symptom	Diagnostic procedure	Also check for
Voice guidance cannot be heard, is broken up, or there is static	Symptom Troubleshooting (see page 23-341)	• Volume or voice feedback setting (see Owner's manual) • Navigation unit • Stereo amplifier • Harness/fuses/switches
Voice control does not work/ respond	Symptom Troubleshooting (see page 23-342)	• Navigation unit • The wrong color DVD is installed • The DVD is damaged or dirty • Microphone harness/switches HandsFreeLink control unit
Navigation cannot control HVAC by voice command	Symptom Troubleshooting (see page 23-346)	• The wrong color DVD is installed • Harness/fuses/switches • Wrong navigation unit (model code)
Navigation cannot control XM radio	Symptom Troubleshooting (see page 23-350)	Low or weak battery
Navigation cannot control audio system	Symptom Troubleshooting (see page 23-349)	Wrong color DVD
Navigation display buttons do not work or respond properly	Symptom Troubleshooting (see page 23-340)	• Navigation unit • Open/short between the XM receiver or the GA-Net bus • The wrong color DVD is installed • The DVD is damaged or dirty
Today's Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The client has not entered a group of locations for Today's Destinations. This is normal. The button is only selectable if the client is using this function	See Owner's Manual
Some set-up and information functions of the navigation system are grayed-out and do not work	Client did not select OK from Disclaimer screen. Refer to System Function Diagram (see page 23-289)	
Previous Destinations button is dim and not selectable in the Enter destination by screen (grayed-out)	The vehicle may be new, or the customer deleted the destination. Enter a destination, and allow the system to route to it. After the trip, the Previous Destinations button will be selectable	
Address cannot be found or system gives poor routing	• Verify proper operation and system limitations using the owner's manual. • See Answering client question Navigation coverage in general troubleshooting • Refer to Database limitation in the navigation system manual to report database errors	• Database limitations (address not in database) • The wrong color DVD is installed
OPEN/CLOSE function of the display does not work	Symptom Troubleshooting (see page 23-351)	• Navigation unit • Harness
Navigation display will not close	Symptom Troubleshooting (see page 23-352)	• Navigation unit • Harness
Navigation display does not open or opens part way	Symptom Troubleshooting (see page 23-352)	• Navigation unit • Harness

(cont'd)

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
PC card will not play/card icon on audio screen cannot be selected	Symptom Troubleshooting (see page 23-234)	Navigation unit
Navigation display stays on with ignition switch in LOCK (0)	Symptom Troubleshooting (see page 23-349)	• Harness/fuses/switches • Aftermarket accessories connected to the system
DVD read error messages	Symptom Troubleshooting (see page 23-346)	• Navigation unit • The wrong color DVD is installed • Damaged DVD
Navigation system will not go beyond the disclaimer screen and displays the OK button	See navigation display buttons do not work or respond properly	• The wrong color DVD is installed • Scratched or damaged DVD • Navigation unit
The navigation anti-theft code card is lost or missing	See anti-theft feature (see page 23-266)	
The vehicle icon lags behind when the vehicle turns	See self-inertial navigation limitations (see page 23-266)	• Aftermarket accessories connected to the system • GPS antenna/cable
Navigation screen is darker than normal or takes time to brighten when it is cold	See LCD unit limitations (see page 23-267)	
The navigation clock is off by 1 to 3 hours after replacing the navigation unit	See service precautions (see page 23-268)	• Perform map matching (see page 23-269) • GPS antenna/cable • Check and adjust the clock settings
A new navigation DVD is needed	See obtaining a navigation DVD (see page 23-269)	
Time is not correct	Reset Time Adjustment in set-up	The wrong colored DVD or version is installed
The DVD is scratched or dirty	See DVD Handling and Cleaning (see page 23-270)	Navigation unit
The wrong DVD was installed and now the system does not function properly	See Precaution client Sneak Previews (see page 23-272)	• Install the correct version DVD • Check any official Honda service website for more service information about the navigation system.
A specific city cannot be found	See How to answer client questions about navigation coverage (see page 23-272)	• The DVD is scratched or dirty • Refer to Database limitation in the navigation system manual to report database errors
The Honda Globe Screen (not the Acura Globe Screen) appears every time the vehicle is started	Symptom troubleshooting (see page 23-354)	Also see the symptom The wrong DVD was installed and now the system does not function properly

System Description

Overview

The navigation system is a highly sophisticated, hybrid locating system.

The navigation unit uses global positioning system (GPS) satellite signals, internal yaw and vehicle speed inputs, and a map database to show where the vehicle is and to help guide you to a desired destination.

The navigation unit's GPS receiver receives signals from the GPS, a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude, and elevation of the vehicle.

Signals from the system's yaw rate sensor (inside the navigation unit) detects turns, and the ECM/PCM vehicle speed pulse (VSP) and reverse signal enable the system to keep track of the vehicle's speed and direction of travel. The advantage of this hybrid system is that the system can track your position if either the GPS signal or the vehicle speed signal is missing. For instance, when in a tunnel (no GPS), the speed signal is used to update your position on the map. Alternately, while the vehicle is being transported on a ferry, GPS signals can show the vehicle position on the map as it crosses the water.

The navigation system uses the location, direction, and speed information to display the appropriate map and calculate a route to the destination entered. As you drive to a destination, the system provides both visual and audio guidance. Audio guidance is sent to the audio unit, and an RGB graphics color signal is sent to the navigation display.

This navigation system also has voice recognition that allows voice control of most of the navigation, and audio functions. The voice control switches (navigation TALK and navigation BACK buttons on the steering wheel) activate the voice control system. The microphone on the ceiling receives your voice commands. For more information on this feature, consult the navigation owner's guide.

The illumination signal is used by the navigation unit to automatically switch the display mode between the Night and Day display modes. When the headlights are on, the dash brightness control setting full brightness overrides the Night display mode, and allows a daytime navigation display with the lights on.

When the navigation system is giving voice guidance commands, the front speakers are muted. When the voice control system is being used (navigation TALK button pressed), all of the speakers are muted.

The internal GA-Net II bus passes information back and forth between the navigation display, the navigation unit, and the audio system components. The information passed on this bus are touch button commands, audio muting signal, audio (radio and XM), and any open in these bus lines can affect the navigation system or other audio accessory operation.

The clock on the navigation display is set and maintained by the navigation unit. The time is automatically adjusted for daylight savings, and time zone changes while driving. The time can be adjusted in setup.

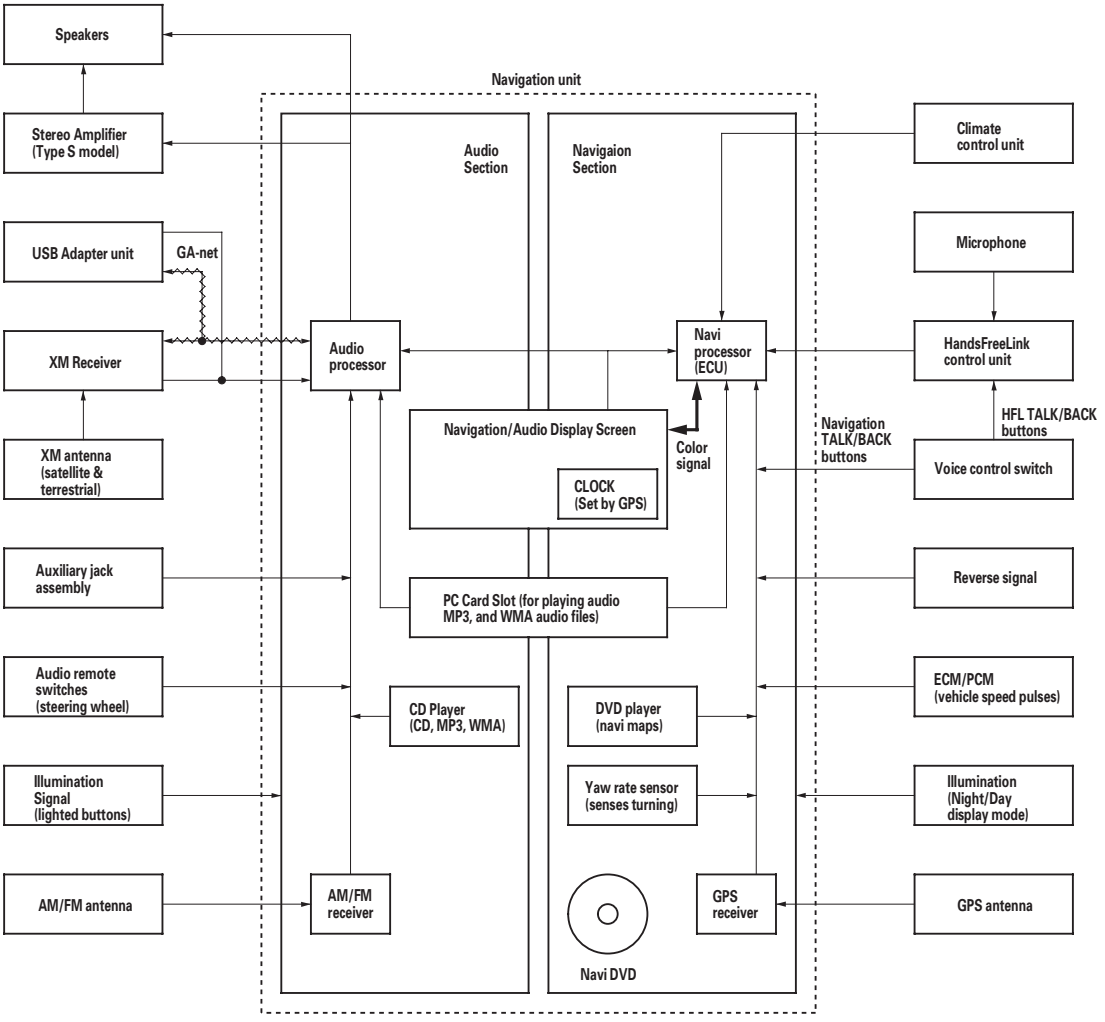
Additional information is available about the navigation components following the System Diagram. A glossary of terms that are used throughout this section follows the detailed information.

The Navigation System Manual in the glove box covers all of the system functions and settings. Use this as a resource when evaluating a customer concern.

The Comm.Bus connects the HFL and the navigation unit.
If a POI phone number is available, the navigation unit sends the phone number (on the calcurate route to screen) to the HandsFreeLink control unit for dialing.

(cont'd)

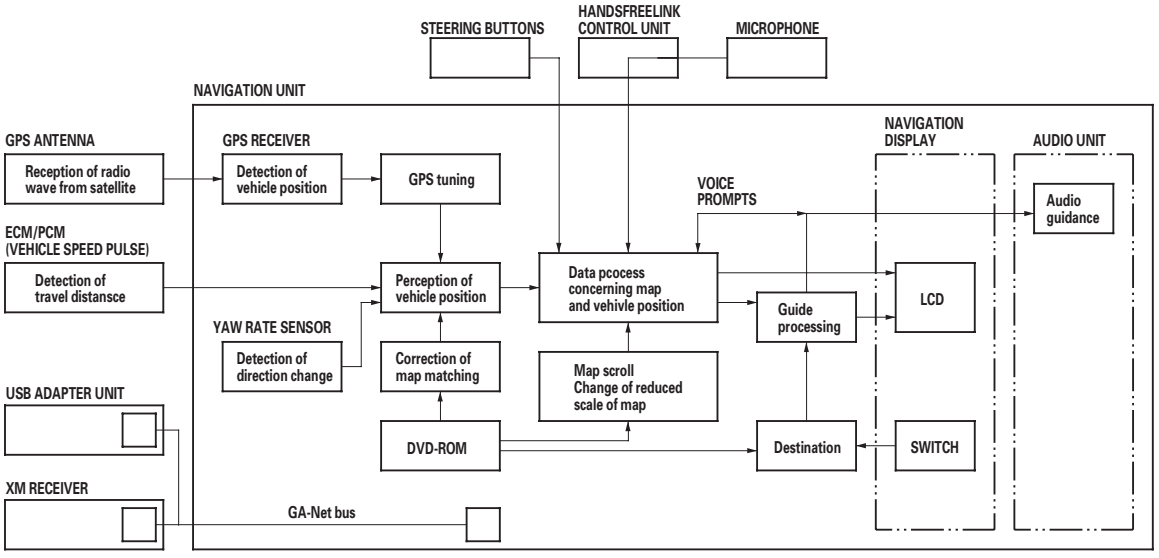
System Description (cont'd)



Navigation Function

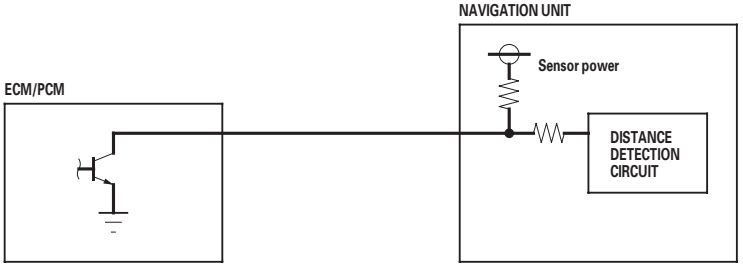
The navigation system is composed of the navigation unit, the ECM/PCM (vehicle speed signal), the GPS antenna, microphone, voice control switch, XM receiver, and the climate control unit.
These units communicate with each other on the GA-Net bus.

Function Diagram



Vehicle Speed Pulse

The vehicle speed pulse is sent by the ECM/PCM. The ECM/PCM receives a signal from the output shaft (countershaft) speed sensor, then it processes the signal and transmits it to the speedometer and other systems.

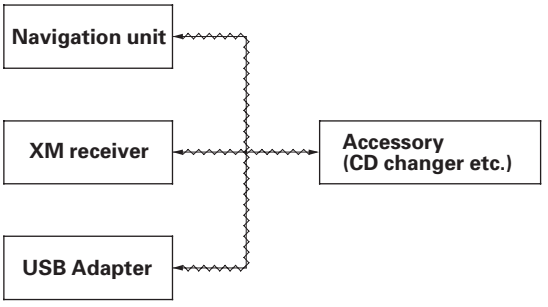


(cont'd)

System Description (cont'd)

GA-Net Bus Configuration

The GA-Net bus passes audio and navigation commands throughout the navigation and audio components. These commands include audio/XM selections by voice, and XM station and music title names. Because the entire bus is daisy chained between components (see diagram below), any open or short in the GA-Net bus harness will cause any or all of these functions to become inoperative. The addition of any factory audio accessory must maintain the continuity of the GA-Net bus by installing the Y cable included with the accessory kit.



Muting Signal Logic

The audio muting logic is orchestrated by the navigation unit. The navigation unit determines what audio source has priority to use the speakers.

The priority of the audio sources is as follows:
HandsFreeLink has the highest priority, followed by, navigation, and finally the radio/CD player. The priority is passed by HandsFreeLink to the navigation unit by dedicated mute wires. The navigation mute signal is passed to the stereo amplifier.

The navigation unit temporarily disables the voice control buttons, but allows guidance to be heard. In addition, the navigation unit suppresses the output from the XM receiver, disc player, or other audio accessories.

When the navigation system sends out a voice route guidance command, the rear speakers are muted, and the navigation voice is heard in the front speakers.

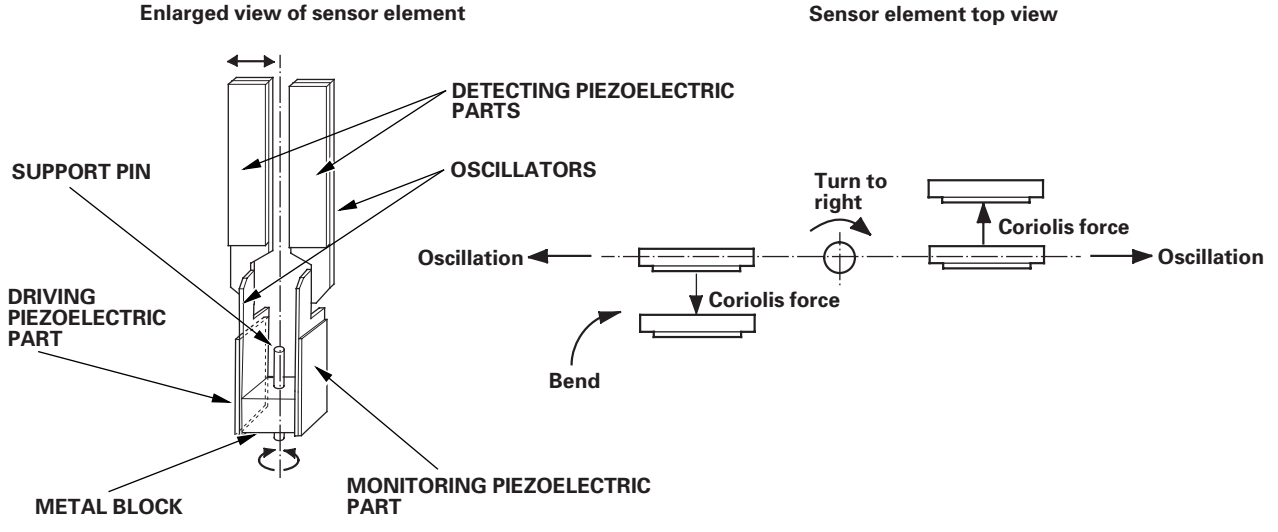
When the navigation voice control system and HandsFreeLink is use, the rear speakers are muted, and the navigation voice prompts are heard from the front speakers.

Yaw Rate Sensor
The yaw rate sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

Sensor Element Structure
The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

Oscillation Gyro Principles
The piezoelectric parts have electric/mechanical transfer characteristics. They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and Coriolis force. (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

Operation
1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part. The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force).
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.

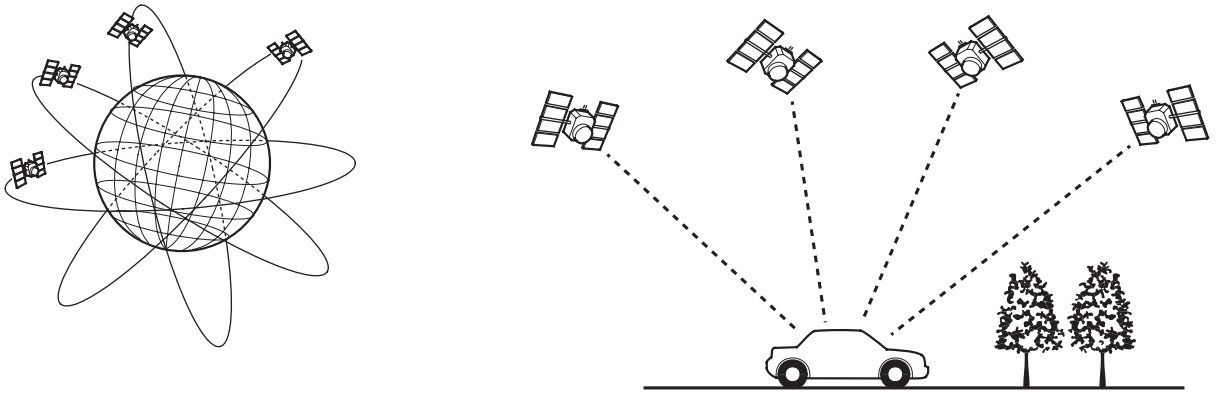


(cont'd)

System Description (cont'd)

Global Positioning System (GPS)
The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by using the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from four or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellite's positions in its respective orbit.

Position Detection Image with GPS Satellite



Precision of GPS
The precision of the GPS varies according to the number of satellites from which signals are received and the view of the sky. The accuracy is indicated by the color and shape of the GPS icon shown on the display.

GPS ICON COLOR	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
No GPS icon	None	Faulty reception	The GPS can't be utilized due to a faulty GPS receiver, open in the wire, or other fault or interference.
White GPS icon	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Green GPS icon	3	Vehicle position detectable in 2 dimensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
	4 or more	Vehicle position detectable in 3 dimensions (elevation displayed)	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)

GPS Antenna
The GPS antenna amplifies and transmits the signals received from the satellites to the GPS receiver.

GPS Receiver and Clock
The GPS receiver is built into the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The current time vehicle position and signal reception condition is transmitted from the GPS receiver to the navigation unit to adjust vehicle position.

Navigation Unit
The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions and the DVD-ROM drive, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the navigation display and audio driving instructions to the audio unit.

Calculation of Vehicle Position
The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCMs vehicle speed pulse (VSP) signal.

Map Matching Tuning
The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicated on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS Tuning
The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

Distance Tuning
The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

Route Guidance
The navigation unit can calculate different routes to a selected destination. You have five options:

- Direct Route — Calculate a route that is the most direct.
- Easy Route — Calculate a route that minimizes the number of turns needed.
- Minimize Freeways — Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Minimize Toll Roads — Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways — Calculate a route that uses freeways as much as possible.

Audio Guidance
The navigation unit transmits audio driving instructions before entering an intersection or passing a junction. The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers are muted when the voice control system is being used.

DVD-ROM
The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:

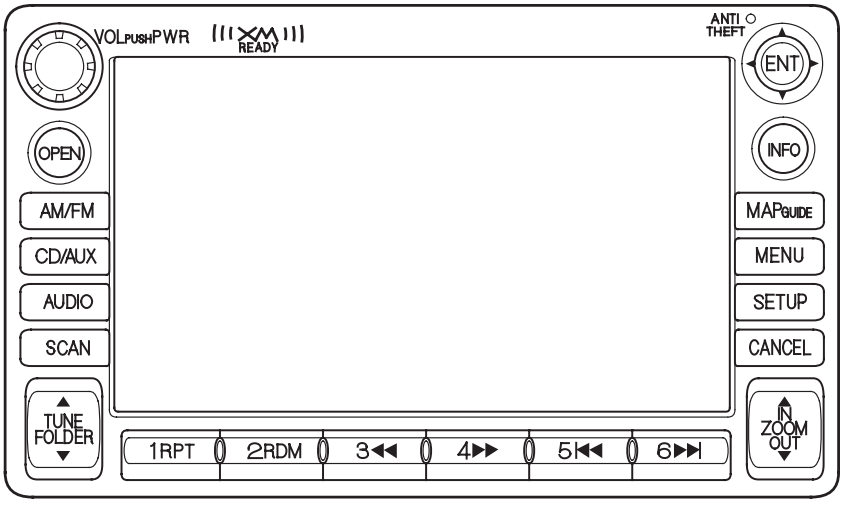
- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.

(cont'd)

System Description (cont'd)

Audio Unit (Built in the navigation unit)
The audio unit receives the audio driving instructions from the navigation unit, and transmits the instructions through the front speakers even when the audio system is in use.

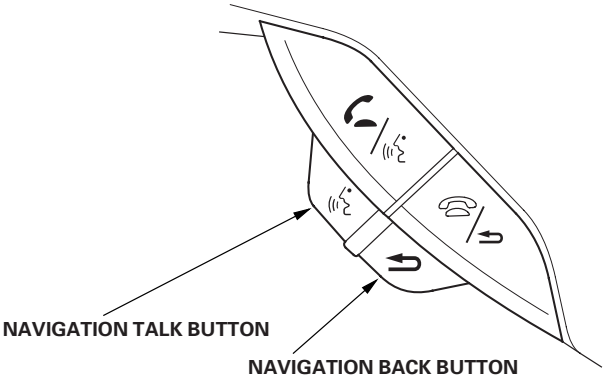
Navigation Display
The navigation display uses liquid crystal display (LCD). The LCD is a 6.5-inch-diagonal, thin film transistor (TFT), stripe type with 65,536 color. The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD consists of a touch sensitive resistive membrane with an infinite number of possible touch locations.



Microphone
The microphone (on the ceiling, near the front map light) receives voice commands and transmits them to the navigation unit for interpretation.

Navigation TALK Button
Activates the voice control system in the navigation unit to accept voice commands.

Navigation BACK Button
Returns the display to the previous screen (similar function as the CANCEL button).



Glossary
The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

Item	Definition
Active noise cancellation (ANC)	The active noise cancellation system cancels some of the vehicle noise. This occurs in the 1,500—2,400 rpm range. Microphones detect the low frequency sound, and the system outputs a canceling sound from the audio speaker.
Address Book	The HFL system can import a copy of the phone book from and approved HFL compatible phone and display the imported phone book on the navigation screen as the address book. See the Owner's Manual for more information.
B-CAN	Body CAN Bus (see CAN)
Bread-crumbs (White dots)	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CAN	Controller Area Network. This communication network allows processors in the vehicle to send/receive information. The fuel pulses used by the MID trip computer are received from the ECM/PCM using the F-CAN (Fast Controller Area Network) bus.
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
CSS	Countershaft (Output) Speed Sensor. This sensor reads the output shaft speed at the transmission and provides a speed pulse to the ECM/PCM.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD.
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed Coverage Area. Main metropolitan areas in the Lower 48 states, and Canada are mapped to this level. See the navigation system manual for a list of these areas.
DTC	Diagnostic Trouble Codes. Use the HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when tall buildings, or driving in a tunnel obscures the GPS signal.
Digitized road	A road that appears on the navigation screen. The road name appears at the bottom of the navigation screen. If the user drives off road, the navigation system displays not on a digitized road, and after 1/2 mile, the bread-crumbs appear.
Disclaimer screen	Screen containing cautionary information. It is meant to be read carefully, and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation Owner's Manual for information on how to order a replacement or an update DVD.
ECM	Engine Control Module. Typically referred to as the ECM.
FAQ	Frequently Asked Questions. See the navigation system manual for a list of the customer FAQs, and troubleshooting information.
F-CAN	Fast CAN Bus (see CAN)
GA-NET	The GA-NET allows the audio unit to communicate with all the audio and navigation components in a vehicle. If there is an open in the GA-NET, components or the entire audio and navigation system may appear inoperative.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately position the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC used for diagnosing vehicle problems. This device can be used to obtain DTC codes for diagnosis of the navigation system and CAN related problems.
HFL	HandsFreeLink uses Bluetooth technology as a wireless link between it and an approved Bluetooth compatible cell phone. See Vehicle Owner's manual or Quick Start Guide for more information.
HIP (AcuraLink)	Honda Information Platform (see AcuraLink)
H/U	Head Unit. The audio unit in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
Interface Dial	This control device consists of a rotating knob and the buttons surrounding it. This device allows control of the navigation, audio, and climate functions displayed on the screen.
Jog Dial	See interface dial.

(cont'd)

System Description (cont'd)

Item	Definition
LCD	Liquid Crystal Display (the navigation screen)
Map matching	The received GPS information allows the navigation system to position the vehicle on the map. MAP matching has occurred if the map screen displays the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling. The ANC circuit may also use it to check its tuning.
MID	Multi-Information Display
MW	Maneuver Window. While on - route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System.
Off-road tracking	See bread-crumbs.
Off route	This occurs when the user leaves mapped roads. Off road tracking dots (bread-crumbs) are displayed If the option is enables in the setup menu. The user can use them to return to a mapped road. The bottom of the navigation screen displays not on a digitized road.
Outlying areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since the have not been verified.
Paired	Linking your call phone to the HFL.
PC Card Slot	The PC Card (PCMCIA, type II) slot is for factory use only. Make sure that the sliding door is closed at all times, if opened, an error message is displayed on the screen.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal, also refered to as PCM.
PCMCIA	A computer industry defined term referring to the PC Card slot standard.
PIN	Personal Identification Number, a random 4 digit number created by the customer to protect personal information.
POI	Point Of Interest. These are the businesses, schools, etc. found under the places option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools, etc. See the Navigation System Manual Driving to Your Destination for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
SCS connector	The service check signal 2-pin connector used to put the navigation system into the diagnostic mode.
Security code	Code needed to activate the navigation system. You can get the security code from the in by entering the navigation unit serial number. You can find the serial number on the diagnostic screens (unit check, Navi ECU), or on the underside of the navigation unit.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either System Description, or System Diagnosis Mode (see page 23-297).
Unverified streets	These streets have not been verified for turn restrictions, one-way, etc. They appear light brown on the map. You can enter address destinations in these areas, but depending on your Unverified. Routing choice in setup, voice guidance may end at the last verified street closest to your destination.
USB	Universal Serial Bus. The USB is used for playing the compressed audio files (MP3, WMA, and AAC) on the external device through the audio unit.
Verified streets	These streets consist of the detailed metropolitan coverage areas, and other inter-town connection roads. These roads are shown in black or red on the map. (interstates are red)
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map.
VR	Voice Recognition. This allows voice control of many of the navigation functions. The hardware consists of the microphone, voice control switch (navigation TALK/BACK buttons), and the center speaker. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the PCM (VIA the CSS) is used to update the Vehicle position on the map. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal and directs the VP to move backwards on the map.
XM	This device receives information from the XM satellites and passes XM audio information to the audio unit. In addition, traffic information is sent to the navigation unit.
Yaw sensor	This device is located in the navigation system control unit and senses the side-to-side twisting force generated when the vehicle turns. See a detailed description of how this sensor works in system description.

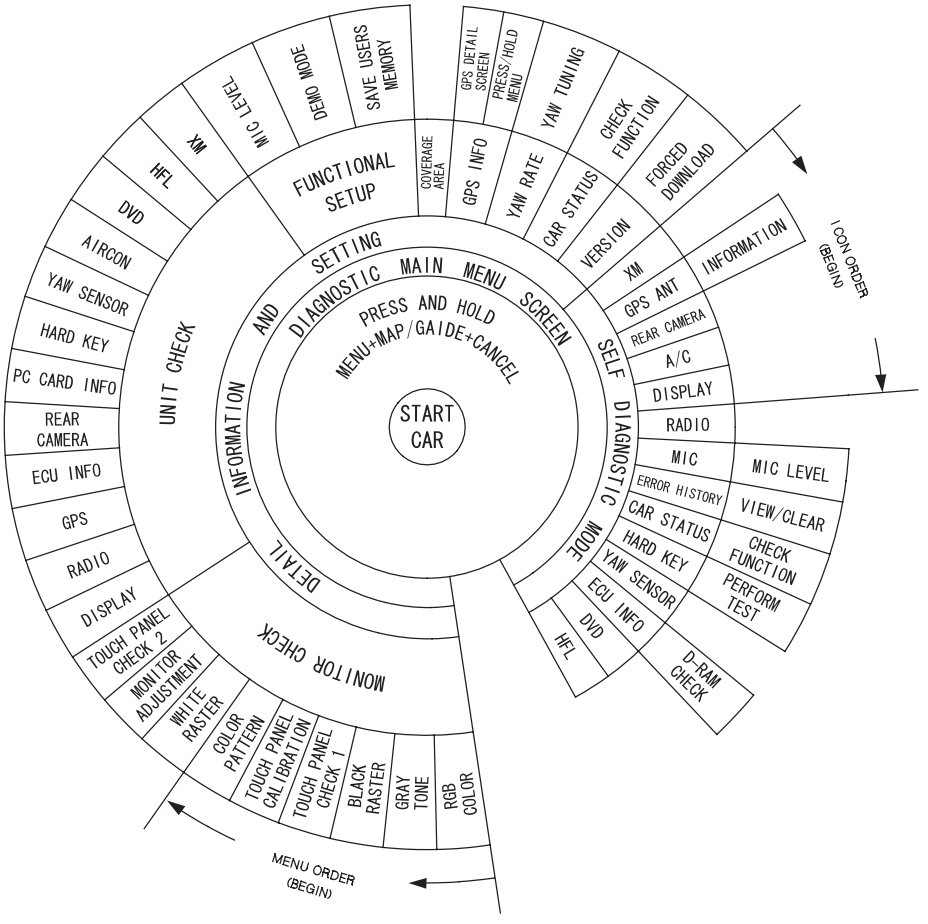
Diagnostic System Diagram
This diagram below shows all of the navigation diagnostic features available for system troubleshooting. The diagram starts at the center, and works outward in layers.

Access to the diagnostic features begins by starting the vehicle. This is necessary so the system can check the other systems connected by various busses. After starting the vehicle you can enter the diagnostic mode either by pressing and holding MENU, MAP/GUIDE, and CANCEL.

The main menu screen allows 2 checking modes - one automatic, and one manual:

- The automatic diagnostic check starts when you select SELF DIAGNOSTIC MODE. The system runs for several seconds, and reports any issues with Red icons. Rotate the interface dial and select the icon you wish obtain the problem details.
- The manual diagnostic check is selected from the main menu by selecting DETAIL INFORMATION AND SETTING. The traditional diagnostic menu is displayed. This allows you to obtain additional details as instructed in the troubleshooting procedures.

NOTE: Do not clear or change settings unless specified by either the Service Manual troubleshooting procedures or by the factory. Otherwise, you may accidentally delete customer information, or remove the latest flash software version installed by the factory.



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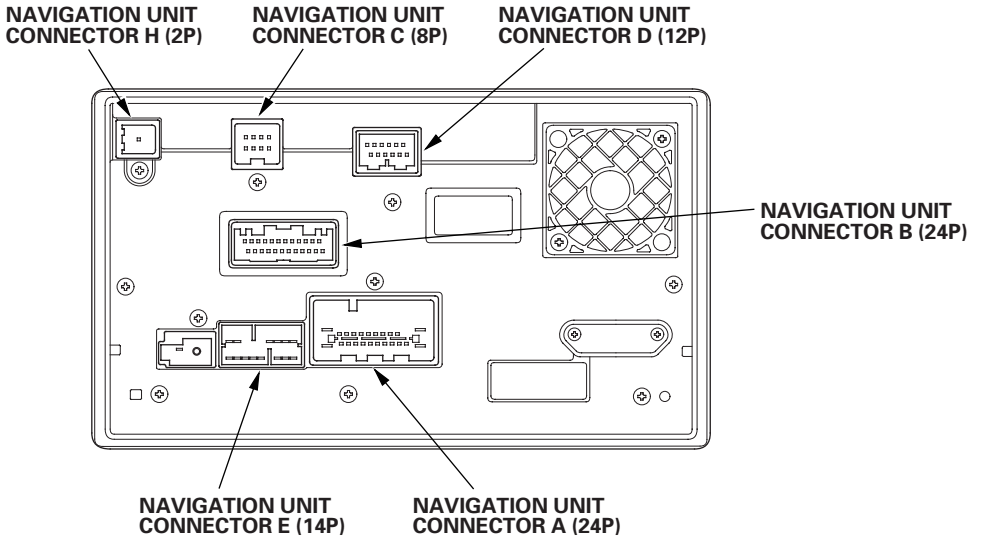
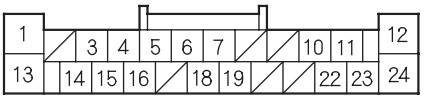
System Description (cont'd)

Navigation System Connector Location

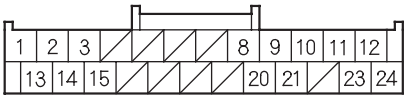


NAVIGATION UNIT CONNECTOR A (24P)



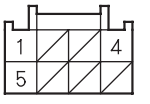
Wire side of female terminals

NAVIGATION UNIT CONNECTOR B (24P)



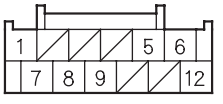
Wire side of female terminals

NAVIGATION UNIT CONNECTOR C (8P)



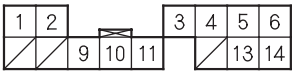
Wire side of female terminals

NAVIGATION UNIT CONNECTOR D (12P)



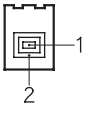
Wire side of female terminals

NAVIGATION UNIT CONNECTOR E (14P)



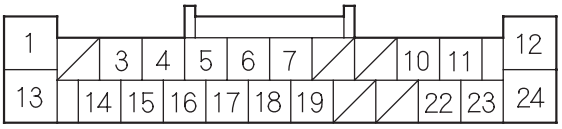
Wire side of female terminals

NAVIGATION UNIT CONNECTOR H (2P)



Terminal side of female terminals

Navigation Unit Inputs and Outputs for Connector A (24P)



Wire side of female terminals

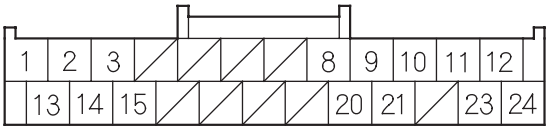
Navigation Unit Connector A (24P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	RED	ILL (−)	Ground for illumination light	With full dash lights brightness, 0 V	If open: When brightness = Auto, night mode for the display is inoperative when lights on. If short to ground: No change to display.
12	BLK	RADIO GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.
13	GRY	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights	Light on = battery voltage, Lights off = 0 V	If open: When brightness = Auto, night mode for the display is inoperative when lights on. If short to ground: Blows fuse No. 14 (7.5 A) in under-dash fuse/relay box.
15	BLU	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from ECM/PCM	Pulses 0−5 V: Average 2.5 V, when moving	If open: No vehicle speed pulses. Diagnostic screen Car Status, VSP Navi = 0. If short to ground: No vehicle speed pulses. Diagnostic screen Car Status, VSP Navi = 0.
24	WHT	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows fuse No. 23 (10 A) in the under-hood fuse/relay box.

(cont'd)

System Description (cont'd)

Navigation Unit Inputs and Outputs for Connector B (24P)



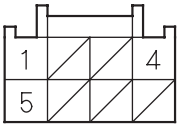
Wire side of female terminals

Navigation Unit Connector B (24P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
10	GRY*	HFL/NAVI COMM SH (Shield HFL)	Shield for terminal No. 11, 12, 23, 24	———	———
11	GRN	HFL/NAVI COMM2 (HFL communication 2)	Communication signal for HFL	———	HFL icon in Navi System Link changes between red and green
12	WHT	HFL/NAVI COMM4 (HFL communication 4)	Communication signal for HFL	———	Solid red HFL icon in Navi System Link
23	BLK	HFL/NAVI COMM1 (HFL communication 1)	Communication signal for HFL	———	HFL icon in Navi System Link changes between red and green
24	RED	HFL/NAVI COMM3 (HFL communication 3)	Communication signal for HFL	———	Solid red HFL icon in Navi System Link

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

Navigation Unit Inputs and Outputs for Connector C (8P)



Wire side of female terminals

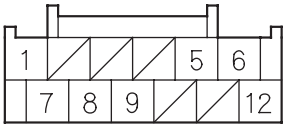
Navigation Unit Connector C (8P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	+B BACK UP	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to enter code screen. If short to ground: Blows fuse No. 23 (10 A) in the under-dash fuse/relay box.
4	BLK	GND	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
7	BRN	BACK LT—	Reverse signal of select laver from Multiplex integrated Control unit (A/T) or backup light switch (M/T)	In reverse, battery voltage: Otherwise 0 V	If open: Navigation never sees the reverse signal and back-up camera does not come on when in reverse. Diagnostic screen Car Status, Back = 0. If short to ground: Blows fuse No. 10 (7.5 A) in the under-dash fuse/relay box.

(cont'd)

System Description (cont'd)

Navigation Unit Inputs and Outputs for Connector D (12P)



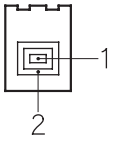
Wire side of female terminals

Navigation Unit Connector D (12P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	GRN	NAVI GUIDE	Steering wheel switch output	4—5 V (navigation TALK button pressed) 2.5—3 V (navigation BACK button pressed)	If open: Steering wheel navigation TALK, and navigation BACK switch/buttons do not work. If short to ground: Steering wheel navigation TALK, and navigation BACK switch/buttons do not work.
5	YEL	AC SI	A/C input signal	0-battery voltage pulses	If open: voice control does not work. If short to ground: Voice control does not work.
6	RED	AC SO	A/C output signal	0-battery voltage pulses	If open: A/C voice control does not work. If short to ground: A/C voice control does not work.
7	BRN	MIC GND	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: Navi System Link and Functional Set up Mic Level. If short to ground: No effect on voice recognition.
8	YEL	MIC SIG+	Microphone output signal positive	4—5 V (with navigation TALK button pressed)	If open: No microphone signal shown in diagnostic screens: Navi System Link and Functional Setup Mic Level. If short to ground: No microphone signal shown in diagnostic screens: Navi System Link and Functional Setup Mic Level.
9	GRY*	MIC SHIELD	Shield for terminal No. 7, 8	0 V	If open: No effect on voice recognition. If short to ground: No effect on voice recognition.
12	BLU	AC CK	Time set sync signal	0-battery voltage pulses	If open: A/C voice control does not work. If short to ground: A/C voice control does not work.

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

Navigation Unit Inputs and Outputs for Connector H (2P)



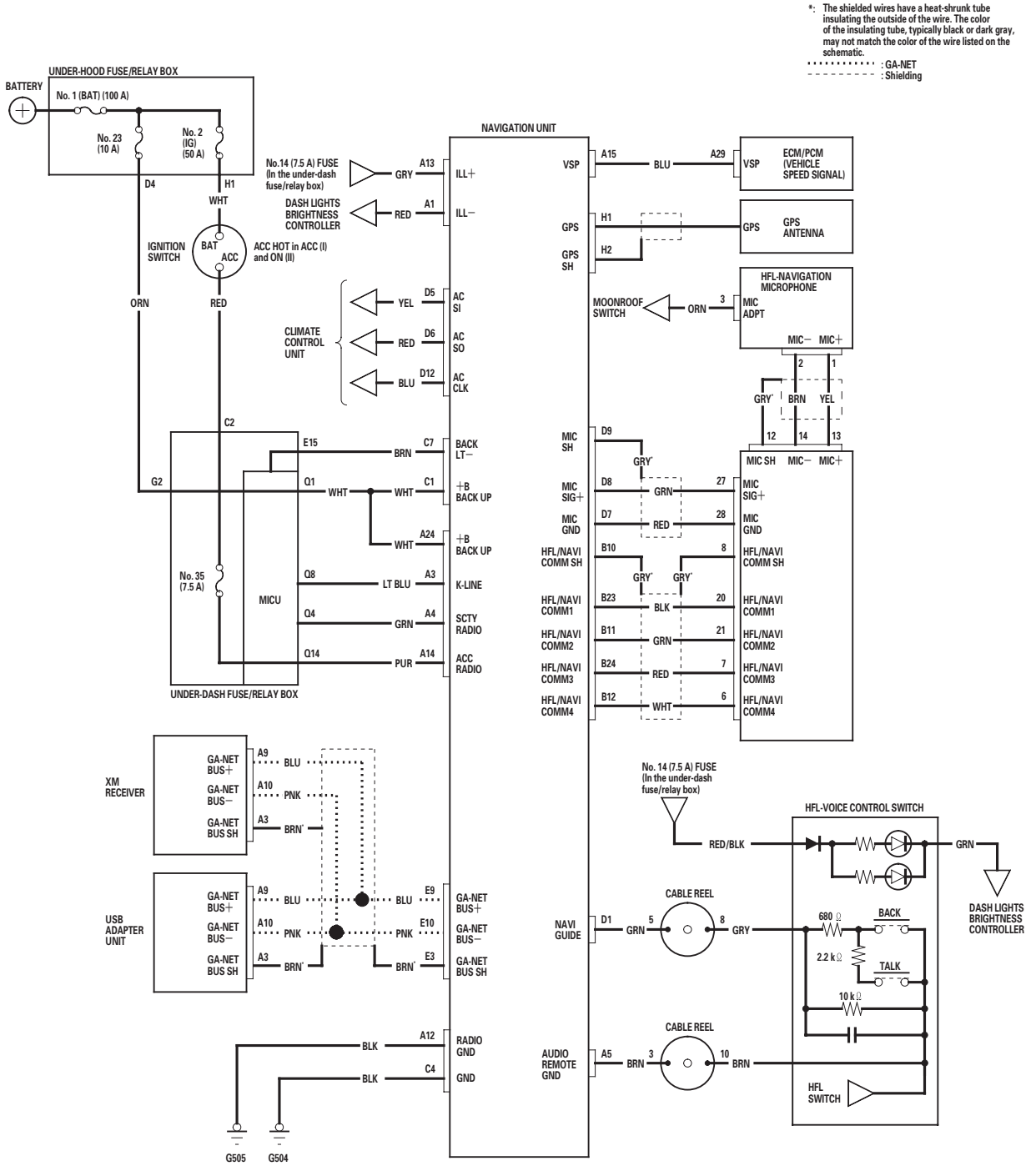
Terminal side of female terminals

Navigation Unit Connector H (2P)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	———	GPS	GPS signal (5 V in, GPS signal out)	5 V	If open: GPS icon on screen is white, system links screen ANT shows NG. If short to ground: GPS icon on screen is white, system links screen ANT shows NG.
2	———	GPS SH	Shield for terminal No. 1	0 V	If open: GPS icon on screen is white, system links screen ANT shows NG. If short to ground: No effect on system.

Navigation System

Circuit Diagram



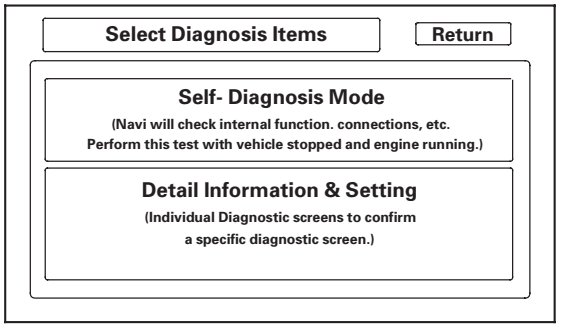
System Diagnostic Mode

Start-up procedure and Diagnostic Menu

Start the vehicle, and at the disclaimer screen use the navigation display hard buttons as described below:

Make sure the battery is in good condition, then press and hold the three buttons MAP/GUIDE, MENU, and CANCEL, for about 3 seconds. The display screen goes directly to the Select Diagnosis Items menu shown below.

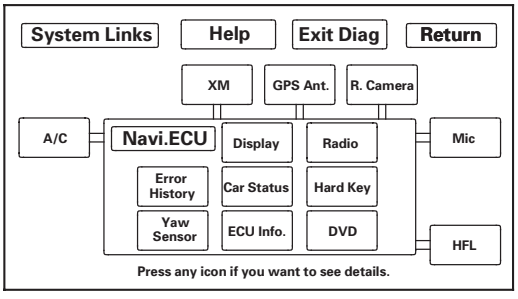
- Self-Diagnosis Mode (runs the automatic diagnosis of the navigation system)
- Detail Information & Setting (allows you to manually diagnose the navigation system)



System Links

1. By selecting Self-Diagnosis Mode from the navigation screen main menu. The message at the bottom of the screen flashes indicating the diagnostic is running. Make sure you enter the audio anti-theft code.

   NOTE:
   - The system cannot complete a full diagnosis unless the engine is running.
   - DTC 2703 can be stored when the ignition switch is at ACCESSORY (I). With the ignition switch is in ACCESSORY (I), the climate control unit is turned off and the navigation unit loses communication and stores DTCs. Therefore, there is a possibility that the system is normal even DTC 2703 is stored. Check system links with the engine running, and if it shows normal, the system is OK at this time.



2. Select the icon you want to diagnose. Push in the select the icon to see the details of that diagnostic function.

(cont'd)

System Diagnostic Mode (cont'd)

The System Links function runs automatically and displays a flashing message at the bottom of the screen reminding you to have the engine running for the test. The diagnostic tests the following:

- Most of the wires connecting the navigation components shown in the block diagram.
- The results from the various components shown in the block diagram.
- The microphone is tested by listening to the bong sound produced by the navigation unit from the speakers when the diagnostic is started. This requires that the audio system be operating normally.

When the diagnostic finishes, the icons turn different colors based on their test status. The color definitions are shown below and can also be seen by selecting Help on the System Links screen.

The indication on the screen may not change until you exit and reenter the Self-Diagnosis mode. In some cases, you may have to restart the engine for the indication to change. After you repair the affected component or harness, repeat this diagnostic.

Explanation of each icon
Each icon color is explained in the table below.

Icon Colors	Description
Green	The system ran a diagnosis and the results are OK.
Red	Errors that require replacement of hardware or harness. Examples are connection error or memory diagnosis errors. Troubleshooting for DTCs.
Yellow	Errors that doesn't require hardware replacement, such as an open display cover, an incorrect DVD, leaving the vehicle in ACCESSORY (I), or because of a missing accessory, like the rearview camera.
White	The diagnosis is running. The screen functions are locked out while the diagnosis is runs.
Gray	The system cannot automatically check this function. You have to select the diagnosis item and manually do additional testing, like checking the navigation buttons in the Hard Key test. When you complete the Hard Key test and return to the System Links menu, the gray icon turns green.

NOTE: By selecting the HELP icon, you can see a description for each color.

Icon Color Information

Icon	Icon Color				
	GREEN	RED	YELLOW	WHITE	GRAY
Display	Result of Connection under the Display diagnosis menu is OK.	Result of Connection under the Display diagnosis menu is NG.	———	Executing (Not completed)	———
Radio	Result of Connection under the Radio diagnosis menu is OK.	Result of Connection under the Radio diagnosis menu is NG.	———	Executing (Not completed)	———
XM	Result of Connection under the XM diagnosis menu is OK.	Result of Connection under the XM diagnosis menu is NG.	———	Executing (Not completed)	———
GPS Ant.	All result of Antenna and Receiver in NAVI ECU is OK.	Any result of Antenna and Receiver in NAVI ECU is OK.	———	Executing (Not completed)	———
R-Camera	Result of Connection under the R-Cammera diagnosis menu is OK. (optional)	Result of Connection under the R-Cammera diagnosis menu is NG. (optional)	Result of the Connection under the R-Cammera diagnosis menu is NG. (optional)	Executing (Not completed)	———
A/C*	Result of Connection under the Aircon diagnosis menu is OK.	Result of Connection under the Aircon diagnosis menu is NG.	———	Executing (Not completed)	———
HFL	Result of Connection under the HFL diagnosis menu is OK.	Result of Connection under the HFL diagnosis menu is NG.	———	Executing (Not completed)	———

*: DTC 2703 can be stored when the ignition switch is in ACCESSORY (I). With the ignition switch in ACCESSORY (I), the climate control unit is turned off and the navigation unit loses communication and stores DTCs. It is possible that the system is normal with DTC 2703 stored. Check the system links with the engine running, and if it shows normal, the system is OK at this time.

(cont'd)

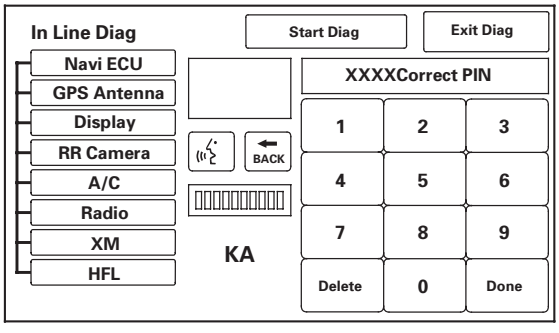
System Diagnostic Mode (cont'd)

Icon	Icon Color				
	GREEN	RED	YELLOW	WHITE	GRAY
Mic	The microphone detects the sound ''Pi-Pi-Pon'' at the system link menu.	The microphone could not detects the sound ''Pi-Pi-Pon'' at the system link menu.	———	Executing (Not completed)	———
ECU Info.	Both V-RAM or D-RAM is OK, and all Program Flash, Serial No., Model is available, and the DVD lid is closed.	Either the V-RAM or D-RAM is NG, or any of the Program Flash, Serial No., Model is unavailable.	DVD lid is opened	Executing (Not completed)	———
Hard Key	All buttons are pressed and are detected under Hard key menu.	All buttons are not pressed or pressed but not detected under Hard key menu, or exit from Hard key menu without the button not detected.	———	———	Until changing to Hard key menu.
Error History	———	———	Hard Error or Soft Error is detected under Error History menu.	Executing (Not completed)	Hard Error or Soft Error is not detected under Error History menu.
DVD	DVD mechanism is normal and the proper DVD is installed.	———	Improper DVD is installed, or DVD is not installed, or can not identify software version from the DVD or internal mechanism failure.	Executing (Not completed)	———
Yaw Sensor	Result of the Yaw Sensor diagnosis menu is OK.	Result of the Yaw Sensor diagnosis menu is NG.	Result of the Zero Point Output under the Yaw Sensor diagnosis menu is NO CHECK.	Executing (Not completed)	———
Car Status	———	———	———	———	Check these systems manually.

Factory diagnostic screen In Line Diag

NOTE: If the vehicle left the factory in the factory diagnostic mode, or if the navigation unit is replaced you will see this screen every time you turn on the ignition.

When a navigation unit is powered up for the first time at the factory or after replacement with a new or remanufactured navigation unit, the factory diagnosis screen (In Line Diag) appears. Normally the factory does the steps necessary to verify proper operation and terminate the factory diagnostic.
Until the proper confirmation sequence is done, the screen appears every time the vehicle is started.



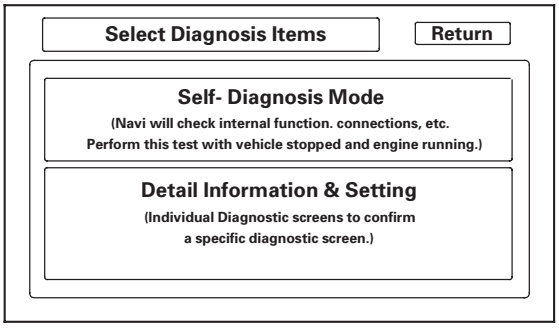
Follow the steps below to prevent the screen from showing up in the future:

- Press and hold the buttons (MENU, MAP/GUIDE, and CANCEL) for about 3 seconds. The Select Diagnosis items screen appears.
- Press and hold the MAP/GUIDE button for 5—10 seconds. A screen with a Complete button, appears.
- Press complete, then Return, and then shut the key off for 5 seconds. Do not disconnect the battery during this period as the unit is saving the setting to the SRAM memory. The In Line Diag should not appear again.
- Restart the vehicle, and confirm normal operation by completing the TQI of the Navigation System Service Bulletin.

Detailed Information & Settings

These section allows you to run a specific diagnostic and allows additional setting choices for some screens that are not shown when selecting an icon from the System Links screen.

When you select the menu item Detail Information & Setting menu, the main diagnosis menu is displayed.



(cont'd)

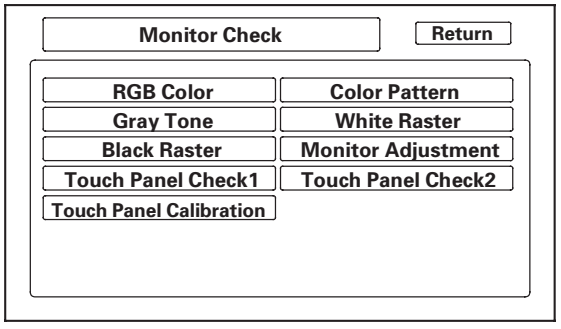
System Diagnostic Mode (cont'd)

Monitor Check

Overview of navigation display

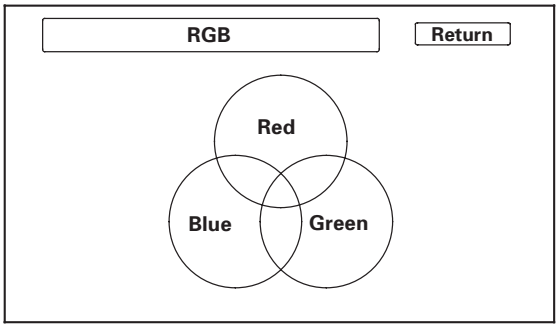
The illumination input from the gauge brightness control provides back lighting for the buttons surrounding the screen.

These screens allow you to troubleshoot the navigation display. Select the item you want to troubleshoot, and follow the diagnostic instructions.



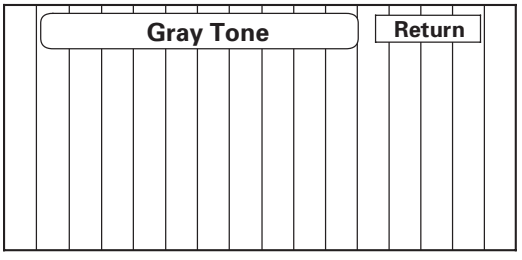
RGB Color

This screen verifies that the display unit is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all appear without distortion. The combination of all three should produce a central white section. If the picture has lines in it, or scrolls horizontally or vertically, and any of the colors are missing, troubleshoot for a composite sync and color signal problem (see page 23-339).

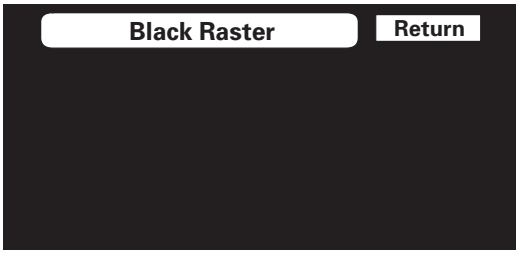


Gray Tone

This screen diagnoses problems with contrast. You should be able to see the changes from bar to bar across the scale. It is normal for the two bars on either side to appear the same. If you can't see changes from bar to bar, replace the navigation unit.

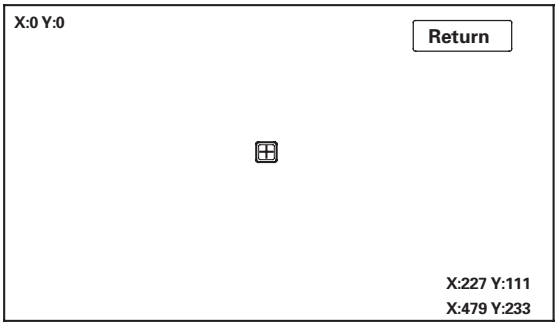


Black Raster
This diagnostic screen checks for pixels that may be stuck on. The entire display must be black. If pixels are stuck on, replace the navigation unit.



Touch Panel Check 1
The panel touch sensing system consists of a touch sensitive resistive membrane covering the display. Contrary to other systems using infrared beams, the screen has to be physically touched to make it work. The display has the capability of 479 touch locations (left to right), and 233 touch locations (top to bottom). The upper left hand corner is position (0, 0) and the lower right hand corner is (479, 233) as displayed. Touching anywhere on the screen displays the coordinate of the location, and a + icon appears where you touched the screen. If any area of the screen either doesn't respond, or responds at some other location when touched, then replace the navigation unit.

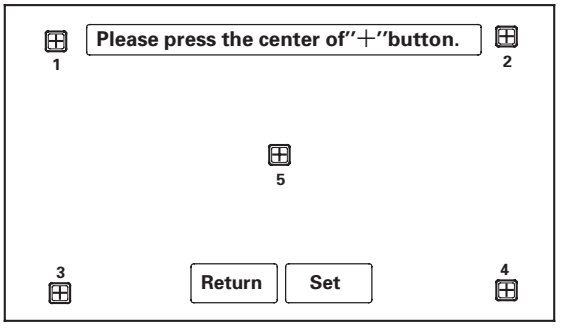
NOTE: Unlike earlier screens that used infrared sensors, direct sunlight does not affect this test.



Touch Panel Calibration
The display screen uses a touch sensitive membrane. This means that every location of the entire surface of the display is touch sensitive. This diagnostic allows alignment of these touch locations with the location of the buttons images on the screen.

Normally this should never need adjustment, and is used only to adjust the touch locations for parallax (the touch locations appear different when viewed at an angle). However, if an adjustment is necessary, follow this procedure:

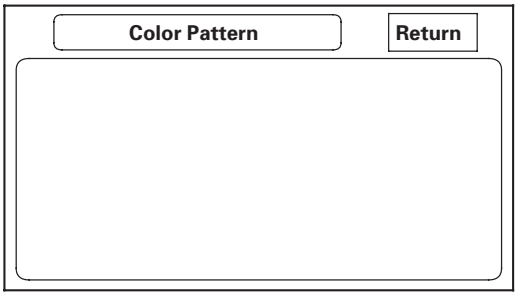
- The screen consists of the + button icons. Touch the center of the five + buttons on order 1—5.
- To store any change you make, touch the Set button.
- Use the Return key to exit the diagnostic.



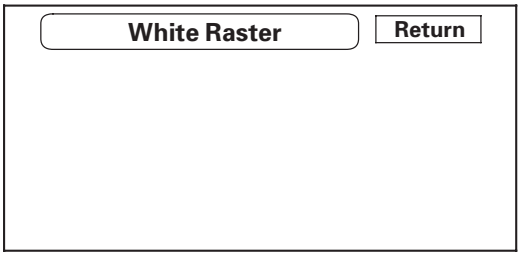
(cont'd)

System Diagnostic Mode (cont'd)

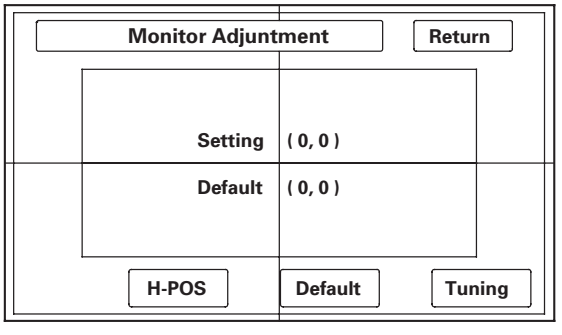
Color Pattern
The chart below shows the colors being used for the map and menu screens. This is for factory use only. To check the color signal use the RGB Color diagnostic found under the Monitor Check.



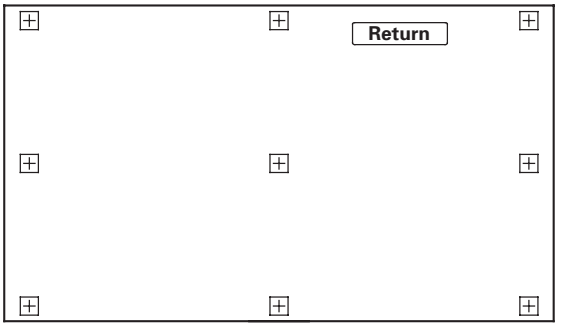
White Raster
This diagnostic screen checks for pixels that may be dead (off). The entire display must be white. If there are dead pixels, replace the navigation unit.



Monitor Adjustment
This allows you to center the navigation display. Use the joystick to move the picture up/down or left/right. It is unlikely that you will ever need to adjust the monitor position. The Default button resets the display position to factory specifications. The factory default is 0, 0 The H-POS button is for factory use only.



Touch Panel Check 2
If you touch the any icons on the screen, the icon changes the color while pressing the icon. If any icons of the screen doesn't respond, replace the navigation unit.

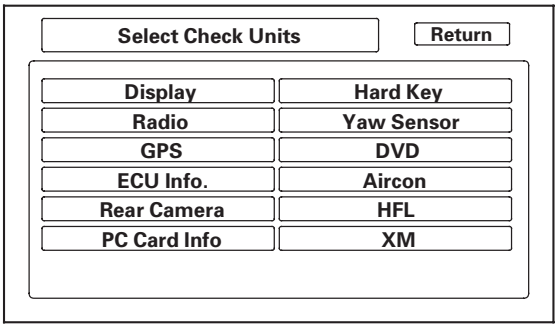


Unit Check (Quick Check)

Some of the tests and screens that are displayed under the Unit Check are different from the more detailed checks listed in other areas of this service manual.

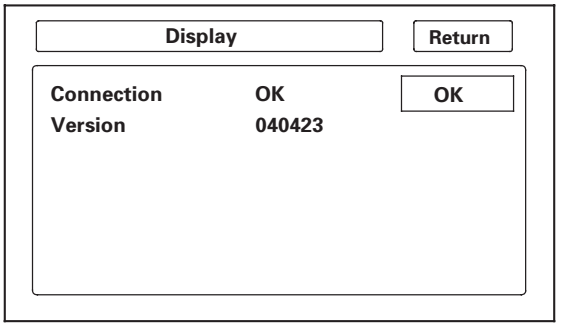
To start the test, select the item you want to check.

- Display
- Radio
- GPS
- ECU Info.
- Rear Camera
- PC Card Info.
- Hard Key
- Yaw Sensor
- DVD
- Aircon
- HFL
- XM

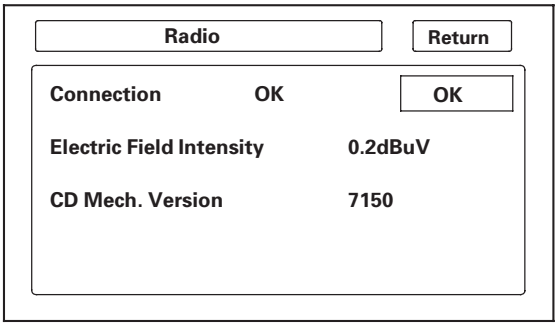


Display
This performs additional checks on the communication bus between the navi CPU and the navigation display. In addition, this test checks the internal electronic functions

If the connection is NG, replace the navigation unit.
- Connection verifies internal communications.
- Version represents the software version for the display.



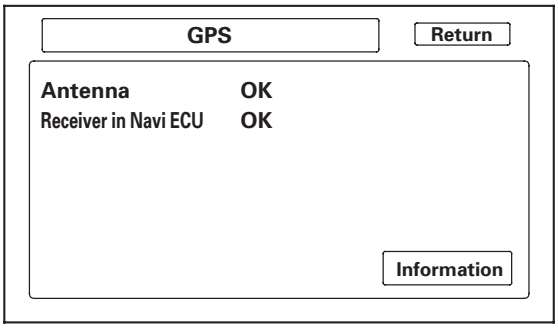
Radio
This diagnostic screen checks the internals of the radio (AM and FM) and CD player. If NG, replace the navigation unit.



(cont'd)

System Diagnostic Mode (cont'd)

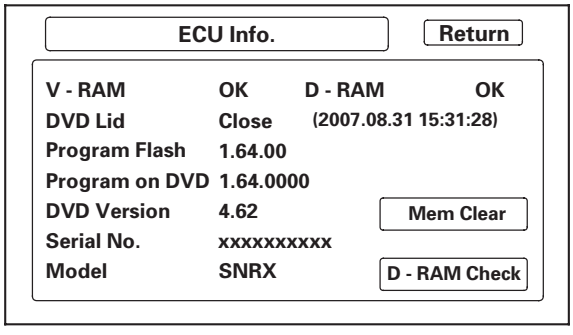
GPS
If GPS indicates NG (ANT), then check the entire GPS antenna wire from the navigation unit to the GPS antenna. If the wire is crushed or damaged, try a known-good antenna. If the diagnostic reads OK, replace the original GPS antenna. If the diagnostic still reads NG (ANT), replace the navigation unit.
Select information to see the GPS satellite details.



ECU Info.
This screen looks for problems in the navigation unit. When you initiate this diagnosis, the navigation unit may freeze or delay up to a minute while the diagnosis runs.

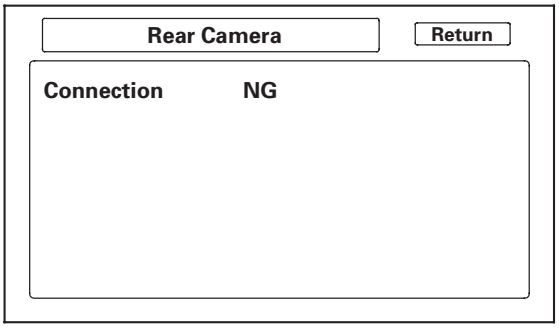
NOTE: Do not try to end this diagnostic by pressing OK or Mem clear before it finishes, otherwise the system may reboot.

- If V-RAM or D-RAM is NG, replace the navigation unit.
- DVD lid displays the state of DVD Lid of navigation unit.
- Program Flash: Displays the version of the navi software in memory.
- Program on DVD: If displayed, this value represents the version of the navigation software on the navi DVD.
- DVD version represents the database version on the DVD. You can find this information in either the Setup Screen Version, or in the Diagnostic Screen Version.
- Serial No. should be the same as the serial number found on the underside of the navigation unit. You need this number to obtain the security code from the Interactive Network (iN) system.
- The Mem Clr is for factory use and should not be used unless instructed by the factory.
  Selecting this will clear the customer's settings, personal information, GPS orbital data, and anything else stored in memory.



Rear Camera (Optional)

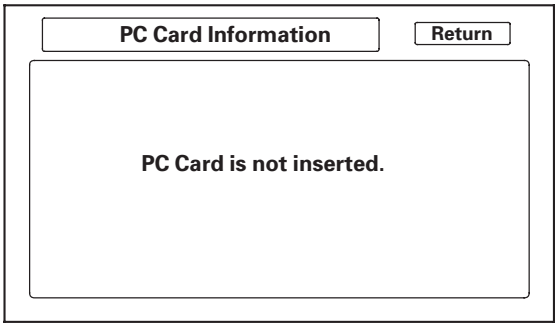
- If the optional rearview camera is connected, it appears as OK.
- It displays OFF when the optional rearview camera is not connected.



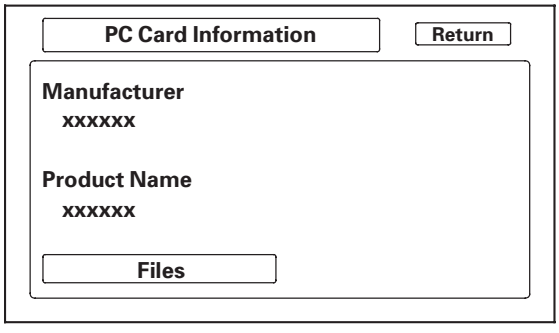
PC Card info.

There is no PC Card in the PC slot, and the screen should display, PC Card is not inserted.

NOTE: Do not insert any card or object into the slot.



If the factory provides a PC card and instructs you to insert it, the screen displays the Manufacturer, and Product Name as shown in the following screen. Follow the instructions provided by the factry to complete the test.



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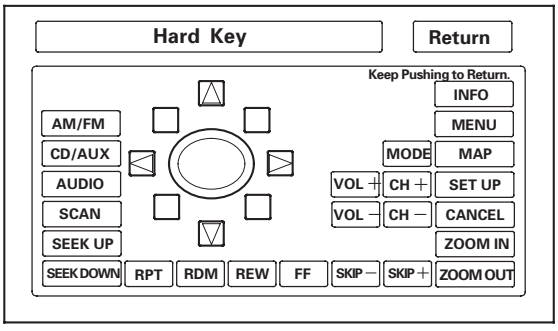
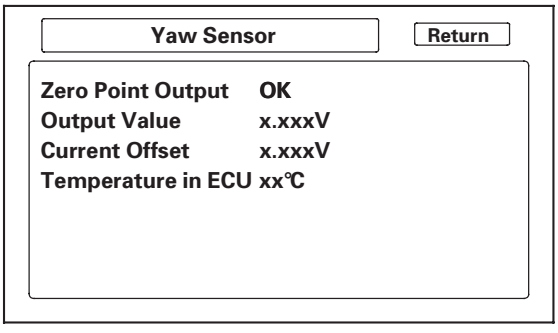
System Diagnostic Mode (cont'd)

Hard Key
This diagnostic screen checks the status of each of the hard buttons surrounding the navigation display. When you press each hard button, the corresponding item on the screen should flash blue. Touch the return key, or press and hold the joystick to exit.

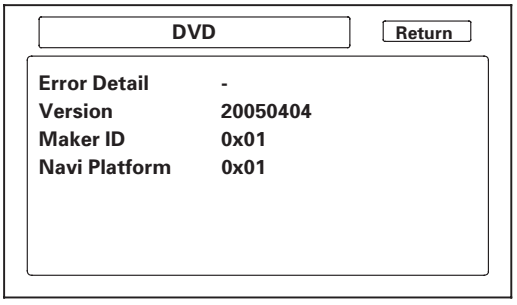
NOTE: It is normal for the VOL (+, −) CH (+, −) and MODE button to be inactive.



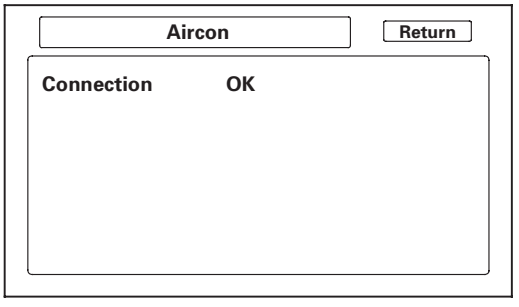
Yaw Sensor
This screen gives a quick test of the yaw sensor functionality based on the two voltages Sensor and Offset. For more information see the Yaw Rate Diagnostic.



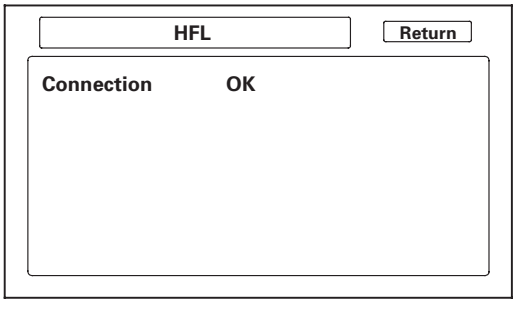
DVD
This diagnostic tests the navigation DVD reader.



Aircon
This diagnostic tests the climate bus connection (AC-SI and AC-SO) between the navigation unit and climate control unit. Make sure the engine is running for this test.

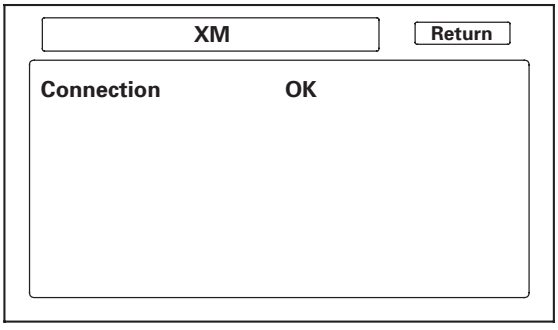


HFL
- This checks the 4 wire communication bus between the HFL and the navigation.
- When connection is shown with NG, check the connection between the navigation unit and the HandsFreeLink control unit.



XM

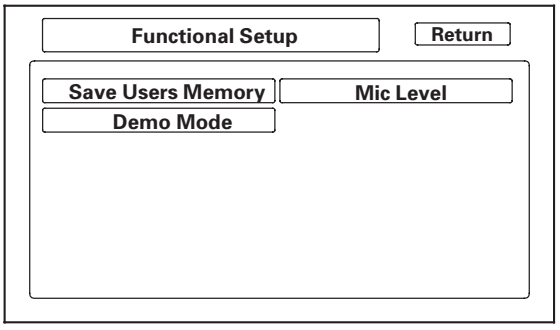
- This checks the GA-NET Bus line to the XM receiver.
- When connection is shown with NG, check the connection between the XM receiver and the navigation unit.



Functional Setup

Select the item you want to check.

- Save Users Memory
- Demo Mode
- Mic Level

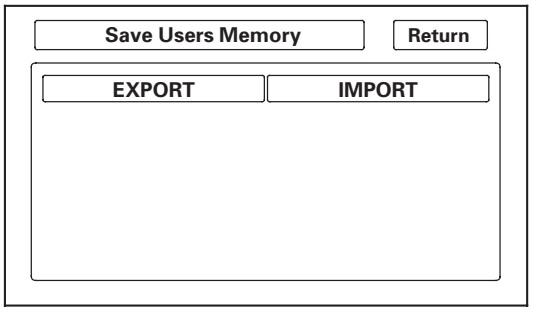


(cont'd)

System Diagnostic Mode (cont'd)

Save Users Memory

When replacing the navigation unit, this function allows the dealer to transfer the client's personal data to the new navigation unit. The transferred information includes their Setup settings, and personal addresses. The dealer inserts a PC card to the navigation unit, and then selects the Save Users Memory function. The two functions in this diagnostic screen are EXPORT and IMPORT. EXPORT saves the client's data to the PC card, and IMPORT moves the PC card files to the new navigation unit.



Before starting this function, see the PC Card FAQs for information regarding PC cards, and how to use this function.

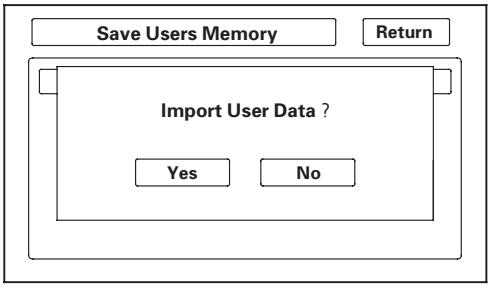
1. Select EXPORT button to move the client's data from the original navigation unit to the PC card. Select YES on the Export User Data Confirmation screen. The process takes only a couple of seconds. The system stores two files on the card.

   NOTE: If the EXPORT button is grayed out, check the PC card's edge connector, and the pins inside the navigation unit (with a flashlight) for damage.

2. After installing the client's original DVD in the new navigation unit, allow the system to boot up. Insert the PC card in the new navigation unit and enter the Save Users Memory in the navigation system diagnostic mode.

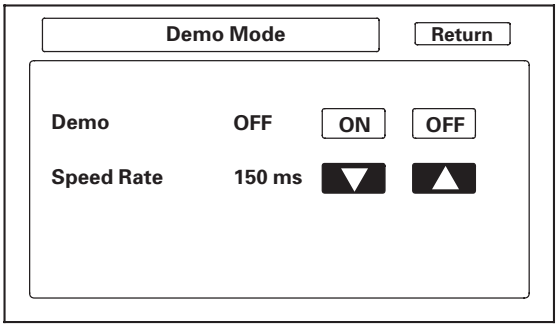
3. Select IMPORT button to move the two files stored by the Export process from the PC card to the new navigation unit. Select YES on the Import User Data Confirmation screen. When the transfer is finished (a few seconds) the system automatically reboots. After the system reboots, remove the PC card from the PC slot.

   NOTE: If the IMPORT button is grayed out, check if the Model and the Program Flash shown on the Version screen are the same.



Demo Mode

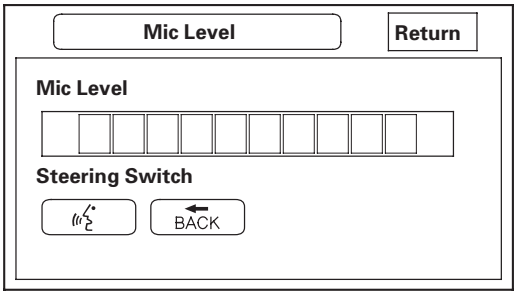
This screen is for factory use only, and should always be set to OFF. Occasionally the DEMO setting is turned ON when vehicles are being used at Auto Shows or similar events. Turning this feature on, allows the navigation system to automatically follow a route to a destination when the vehicle is stationary. The Speed changes the speed of the demo mode.



Mic Level

This diagnostic allows you to independently test the microphone and the navigation TALK and BACK buttons. They are used to activate the voice control system. The microphone is located near the map light in the roof console. It is directional, and works only with the voice coming from the driver's seat.

- Press the navigation TALK button on the steering wheel, wait unit you hear a beep, and in a normal voice say ''testing''. The TALK indicator on the screen should momentarily turn green, and the text Now Recording... should appear in yellow. If the talk indicator shown on the screen does not briefly turn green, check the wiring from the steering wheel navigation TALK button to the navigation unit. If there is no Mic Level movement when you speak, then you should check the wires running from the microphone in the roof console to the HandsFreeLink control unit and the navigation unit. If the wires are OK, the microphone must be faulty; replace the microphone located in roof console (see page 23-358).
- Press the navigation BACK button on the steering wheel. This should cause the Cancel indicator on the screen to momentarily turn green. If it does not briefly turn green, check the wiring from the steering wheel navigation BACK button to the navigation unit.



(cont'd)

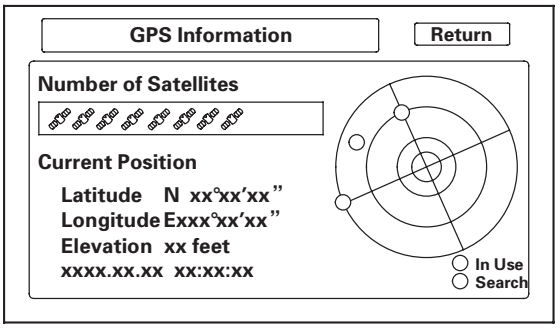
System Diagnostic Mode (cont'd)

GPS Information

This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow numbers) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represents 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Nearby obstructions, like tall buildings will block satellites in that direction. That is why it is necessary to be in an open area to effectively troubleshoot GPS reception issues. The satellite numbers shown on the diagram correspond to the PRN number in the GPS Details screen. There are always at least 24 active GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares are always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

NOTE: When you use this screen for troubleshooting, park the vehicle outside, away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.

- The Number of Satellites box shows the number of acquired satellites (maximum of 12). It should contain three or more icons. If not troubleshoot for GPS icon is white or not shown (see page 23-341).
- The Current Position shows latitude, longitude, and elevation (in feet). If there are less than four satellites, the elevation can be grossly inaccurate.
- The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the customer in Setup screen 2 Adjust Time Zone/Clock.

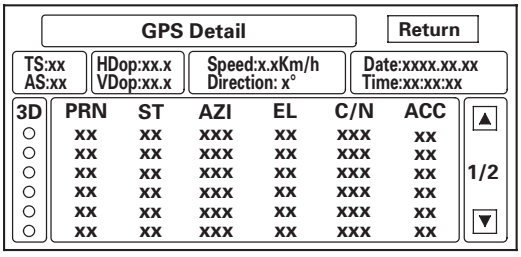


NOTE: Pressing the map/guide button displays the satellite number on each circle.

GPS Detail

By pressing and holding the MENU button for 2 seconds, a GPS Detail screen appears. This screen displays real time incoming satellite positional data when the vehicle is outside in the open. The information shown on this screen is for factory use.

NOTE: The data shown in an example only.



- The box TS/AS and H Dop/V Dop is for factory use.
- The Speed and Direction information is updated in real time when driving.
- The Date/Time Information is the same as in Setup screen 2 Adjust Time Zone/Clock.
- If the 3D icon is shown above the yellow dots, this implies that at least four satellites are available for map positioning, and the GPS indicator on the map screen will be green. See the Global Positioning System detailed explanation in the System Description.
- If the row of data in the table below begins with a yellow dot, the AZI and EL fields can be used to locate each satellite on the circular GPS diagram (see prior screen).

NOTE: The table of values define the terms at the top of the columns in the GPS Detail screen.

Column	Description	Problem indication
3D	Active satellites (Yellow Dot)	If 3D or 2D is missing when the vehicle is parked outside, follow GPS icon is white or not shown troubleshooting (see page 23-341).
PRN	The satellite ID number	
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, follow GPS icon is white or not shown troubleshooting (see page 23-341).
AZI	Azimuth, the angle (0—360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Normal signal is 49-52, no signal: 27-33
ACC	N/A	
△ 1/2 or 2/2 ▽	Shows view of all satellites in two screen views 1/2 or 2/2	

(cont'd)

System Diagnostic Mode (cont'd)

Yaw Rate

This diagnostic checks the yaw rate sensor in the navigation unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see the yaw rate sensor theory of operation under System Description (see page 23-283).

- Sensor indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 V when the vehicle is stopped.
- Offset is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 V when the vehicle is stopped.
- A sensor output voltage LOWER than the Offset voltage indicates that the vehicle is turning to the right.
  A sensor output voltage HIGHER than the Offset voltage indicates that the vehicle is turning to the left.
- The yaw rate offset, and sensor should both indicate about 2.500 V when the vehicle is stopped. If either reads zero, or 5.000 V, replace the navigation unit.
- The yaw rate offset and sensor should be within +/—0.01 V of each other when the vehicle is stopped. The sensor value should change relative to the offset as the vehicle turns while driving. If not, replace the navigation unit.

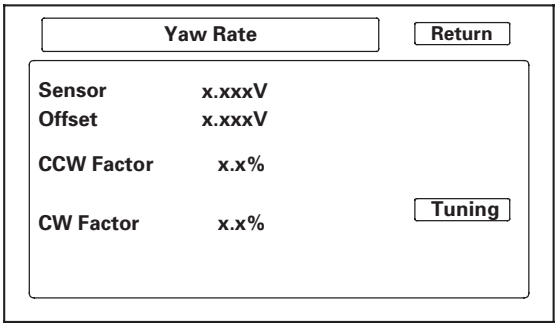
Example: Vehicle stopped

Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.516—2.536 V	Sensor	2.623 V

Example: Vehicle turning

Normal		**Abnormal**	
Offset	2.526 V	Offset	2.526 V
Sensor	2.678 V (left turn) 2.478 V (right turn)	Sensor	2.623 V (no change on turns)

- Sensitivity study represents the status of the internal tuning function. At initialization, this value starts at 6 and increases to 10 as the internal correction values become more accurate.
- The settings CCW Cal Factor, CW Cal Factor, and Set are for factory use only. THIS SHOULD NEVER BE ADJUSTED.
- For detailed analysis of the yaw rate select tuning.



Yaw Rate Tuning

This diagnostic allows you to graphically display problems with the yaw rate sensor.

- The ANG-Disp value accumulates any differences between the offset and sensor voltages (see Yaw Rate diagnostic). When the sensor functions properly, the random changes in these two voltages generally cancels out, so the value is 0. However if one voltage is consistently higher than the other, then the ANG-Disp value accumulates the constant change.
- The Reset button temporarily clears the angular accumulation (ANG-Disp), and clears the display dots.
- Do not touch the CCW, CW, or Set buttons. These are used for factory setup only.

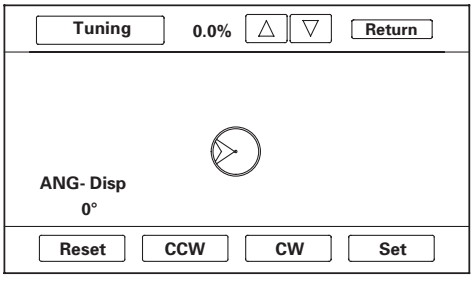
Two tests are explained below. For large problems with the sensor values, the stationary test usually confirms whether the sensor is defective. For yaw rate issues related to driving, do the road test described below.

1. Stationary test: If the VP icon spins in place and the ANG-Disp value slowly increases or decreases in value, the yaw rate sensor is defective. Replace the navigation unit.

2. Road test: Drive the vehicle on a very straight road. Enter the diagnostic mode, select Yaw rate, and touch the Tuning button. While driving down a straight road, the white dots should trace a straight line across the screen. However, if you are driving on a straight road, and you notice the dots constantly dropping down or heading up as you drive, the navigation unit's yaw sensor is defective. You can touch Reset to clear ANG-Disp, and dotted lines.

   If either test above fails, please enter Yaw rate sensor defective for the problem description, on the Navigation core return form.

   NOTE: The CCW, CW and Set buttons are disabled, and cannot be activated.



Car Status

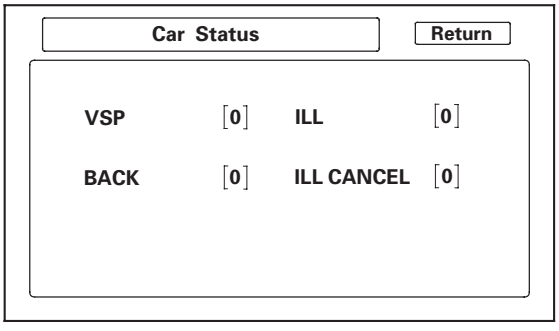
Use this screen to confirm that the navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.

- VSP-Vehicle Speed Pulse from ECM/PCM (Connector A (24P) terminal No. 15)
  a) OFF (0) when vehicle is not moving
  b) ON (1) when vehicle is moving

The VSP comes from the ECM/PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor. As this scaling factor becomes more accurate, the Level gradually increases from 0 to 10 (see the Tire Calibrate diagnostic screen).

- BACK-Reverse indication from taillight relay (Connector C (8P) terminal No. 7)
  a) OFF (0) when the shift lever is in any position other than reverse
  b) ON (1) when the shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse. This signal is needed because the Speed Pulse has no direction indication.



(cont'd)

System Diagnostic Mode (cont'd)

- ILL-Illumination Indication
  (Connector A (24P) terminal No. 13)
  a) OFF (0) when parking lights, or headlights are off
  b) ON (1) when parking lights, or headlights are on

The navigation uses the signal to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- ILL CANCEL
  a) OFF (0) when the dash lights brightness control button is less than 90 % brightness with the headlights turned on.
  b) ON (1) when the dash lights brightness control button is more than 90 % brightness with the headlights turned on.

Version

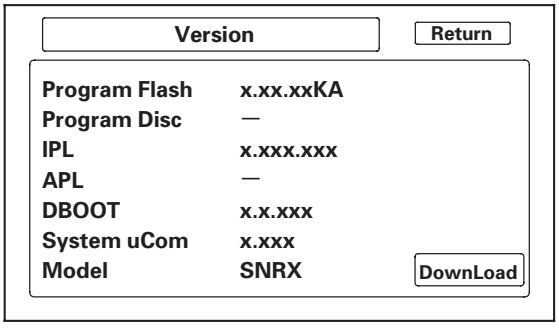
This screen displays the current version information for the navigation system software. In addition, this screen allows the loading of updated software if requested by the factory, or instructed by a Service Bulletin. Software may be loaded from a CD or a PC card.

- Program Flash: Displays the version of the navigation software in memory.
- Program Disc: If displayed, this value represents the version of the navi software on the navi DVD.

  NOTE: The last two letters of the Program Flash or DVD fields indicate which DVD is installed in the unit.

- IPL, APL, DBOOT, and System uCom, are all for factory use.
- Model: For this model, the field should begin with SNR
- Download: Do not touch, unless instructed by the factory.

  Check any official Acura service website for more service information about navigation DVDs.



PC Card FAQs

Question	Answer
Where do we buy the flash memory or adaptors, and what do we ask for?	You need a PCMCIA type II adaptor and a flash memory chip. You can purchase them at a computer, or office supply store. The card is the same size and shape as the PC card in the HDS. Adaptors that accept multiple flash types are not recommended.
What memory flash chips will work with what adaptors?	The flash memory devices that have been tested include Compact Flash (CF), and ATA style (like the card in the HDS). Other card types and flash memory chips may work, but have not been tested.
What capacity card do I need for this function?	A memory chip with capacity of 64 MB to 2 GB will work. The two files moved to the PC card during export are less than a Megabyte in size.
Should the dealer have a dedicated PC card for the Export and Import navigation function?	Yes, treat the PC card as a dedicated special tool that you can use any time you need to transfer the navigation personal files to a new navigation unit or '09 and later vehicles.
What device can I use to maintain the PC card, and delete files?	Any computer store sells USB style card readers that accept the PC card, and allow you to do file maintenance on your PC card. Most laptops will also accept the PC card.
Can we move the client's data to different models?	No, the files are model specific and will only load into a navigation unit with the same part number.
Can we move the client's data to the same vehicle with a different software version (like moving from version 4.41 to version 4.51)?	The client's files can only be transferred to a new navigation unit, if the Model and the Program Flash shown on the Version screen are the same. Files cannot be transferred to the different model and different versions.
Will other files on the PC card like images or music files prevent the Export/Import function from working?	No, the system simply adds two small files that are recognized by the new navigation unit when performing the import function. However, it the PC card is full, the Export function won't work correctly.
Do I have to delete the files on the PC card after each transfer of the personal data?	After the transfer of personal data to the new navigation unit, the files remain on the PC card. Since this is confidential information, Acura recommends deleting these files after the transfer use. Please note that each time you export navigation files of the same model and version, the files are overwritten. Over time the PC card accumulates two files for each version of the 8 or so Acura navigation models.
It the memory card needs formatting, what format should I use?	It is unlikely that the PC card will ever need formatting, however, if it does, use the FAT (file allocation table) file system.
I can't enter the navigation diagnostic mode to do the Export/Import function. How can I transfer the personal data?	Some internal navigation unit ECU failures may make it impossible to use the Export/Import function.

(cont'd)

System Diagnostic Mode (cont'd)

Question	Answer
Why wont the Export or Import functions work? What do I check as part of troubleshooting?	• The card may not be fully inserted into the slot. Eject the PC card, and inspect for warping or damage to the edge connector. Never use excessive force to insert a PC card. This can damage the pins in the rear of the slot. • The PC card may not contain files that are recognized by the new navigation unit. Navigation data can only be transferred between navigation units with the same Model code, and with the same navi Program flash version. • The flash memory chip type may not be accepted by the system. Only Compact Flash and ATA cards have been tested. • The card's PCMCIA adaptor may prevent a known-good PC card from being recognized. Avoid multi-slot type PCMCIA adaptors that accept several different flash memory types. • The card may be full and as a result the files are stored, but without any data. Export and import appear to function, but move nothing. Delete unused files from the PC card. • There may not be any files on the PC card. If the PC card has a write protection switch, make sure it is turned off before using the Export function. • Although flash memory chips are reliable, occasionally they develop bad sectors or other formatting errors that prevents them from accepting files. The PC card should be reformatted using the FAT format. • The PC card may have been formatted using the format NTFS. Only the FAT format is accepted by the system. • Hard Disc Drive (HDD) cards may not work properly in the system and can overheat or quit functioning, particularly in a hot vehicle. They are not recommended. • Before performing the Import function, ensure that the original navigation DVD is loaded into the new navigation unit and working properly.

Error Message Table

Screen Error Message	Solution
Navigation system is unable to acquire a proper GPS signal.	Make sure there is nothing on the dashboard blocking the GPS antenna. If not, move the vehicle to an open space away from tall buildings, trees, etc. Aftermarket metallic window tinting and other aftermarket devices can affect the GPS reception.
Navigation unit door is open or No DVD disc installed. Please check system.	Make sure the navigation DVD is the correct color and is not scratched or damaged. Make sure it is installed with the label side up and the navigation unit door is snapped fully closed.
No DVD disc, please check system.	Check that the navigation DVD is installed with the label side up.
Display temp is too high. System will shut down until display cools down.	This message appears briefly when the display temperature is too high, and then the display turns off until the temperature cools down. The system turns back on when the display cools down.
Outside temperature is low, system will take a while to start up.	The temperature is below −30 ℃ and the navigation unit has difficulties reading the navigation DVD. The system will start up when the temperate warms up.
DVD disc reading error (unformatted), please consult your dealer.	Check the navigation DVD for the correct color and software version. Also check for deep scratches or other damage. Make sure you are using an official Acura navigation DVD. The system cannot read other mapping databases or video DVDs. Check any official Acura service website for more service information about the navigation system.
Route has not been completed. Please try again from a different location.	Routing to or from a place (new area) that is not in the database. Try planning a different route to or from a different location that is clearly displayed on the map (map matched).
No alternate route found. Original route will be guided.	No alternate route method was found. The original route method will be used.
This destination cannot be found in database.	The destination was not found in the database. Try another destination nearby, or select the destination with the jog dial.

DTC Troubleshooting

DTC 1001: FROM System Info Error

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Turn the ignition switch to LOCK (0), and then back to ON (II).
2. Check for the hard error code (see page 23-273).

   Is DTC 1001 indicated?

   YES—Replace the navigation unit (see page 23-355), because there is an internal problem with the Flash-ROM. ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 1101: Media Bus Send Error

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 1101 indicated?

   YES—Replace the navigation unit (see page 23-255). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 1201: DVD High Temp

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- This code sets when the internal temperature of the navigation unit ECU rises above 70 ℃ (158 ℉). The unit is designed to shut down to protect the navigation unit ECU. This could be caused by an inoperative navigation unit ECU fan or if the passenger's compartment temperature exceeds the maximum. Do the troubleshooting when the unit is within the allowable temperature range.

1. Check that the temperature is below 70 ℃ (158 ℉) in the passenger's compartment.

2. Clear the hard error code (see page 23-274).

3. Turn the ignition switch to LOCK (0), and then back to ON (II).

4. Check for the hard error code (see page 23-273).

   Is DTC 1201 indicated?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Intermittent failure, the system is OK at this time. If the unit repeatedly comes back with the DTC, replace the navigation unit. ■

DTC 1202: DVD Low Temp

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- This code sets when the internal temperature of the navigation unit ECU falls below —20 ℃ (—4 ℉). The unit is designed to shut down to protect the navigation unit ECU. This is usually caused by very cold exterior temperatures. Do the troubleshooting when the unit is within the allowable temperature range.

1. Check that the temperature is above —20 ℃ (—4 ℉) in the passenger's compartment.

2. Clear the hard error code (see page 23-274).

3. Turn the ignition switch to LOCK (0), and then back to ON (II).

4. Check for the hard error code (see page 23-273).

   Is DTC 1202 indicated?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 1301: GPS Antenna Error

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Make sure the vehicle is parked outside, away from buildings.
- Aftermarket electronic devices located near the navigation unit or GPS antenna can potentially interfere with the operation of the navigation system.

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 1301 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Turn the ignition switch to LOCK (0).
5. Check for poor connections or loose terminals at the navigation unit connector H (2P).
6. Clear the hard error code.
7. Turn the ignition switch to LOCK (0), and then back to ON (II).
8. Check for the hard error code.

   Is DTC 1301 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. ■
9. Turn the ignition switch to LOCK (0).
10. Replace a known-good GPS antenna (see page 23-358).
11. Turn the ignition switch to ON (II).
12. Clear the hard error code.
13. Turn the ignition switch to LOCK (0), and then back to ON (II).
14. Check for the hard error code.

    Is DTC 1301 indicated?

    YES—Replace the original GPS antenna. ■

    NO—Replace the navigation unit (see page 23-355). ■

DTC 1302: GPS Receiver Error 1

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Make sure the vehicle is parked outside, away from buildings.
- Aftermarket electronic devices located near the navigation unit or GPS antenna can potentially interfere with the operation of the navigation system.

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 1302 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Turn the ignition switch to LOCK (0).
5. Check for poor connections or loose terminals at the navigation unit connector H (2P).
6. Clear the hard error code (see page 23-274).
7. Turn the ignition switch to LOCK (0), and then back to ON (II).
8. Check for the hard error code (see page 23-273).

   Is DTC 1302 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. ■
9. Turn the ignition switch to LOCK (0).
10. Replace a known-good GPS antenna (see page 23-358).
11. Turn the ignition switch to ON (II).
12. Clear the hard error code (see page 23-274).
13. Turn the ignition switch to LOCK (0), and then back to ON (II).
14. Check for the hard error code (see page 23-273).

    Is DTC 1301 indicated?

    YES—Replace the original GPS antenna. ■

    NO—Replace the navigation unit (see page 23-355). ■

DTC Troubleshooting (cont'd)

DTC 1303: GPS Receiver Error 2

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Make sure the vehicle is parked outside and away from buildings.
- Aftermarket electronic devices located near the navigation unit or GPS antenna can potentially interfere with the operation of the navigation system.

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 1303 indicated?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 1305: Gyro Error 2: ECU Temp XX ℃

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Make sure the vehicle is parked outside and away from buildings.
- Aftermarket electronic devices located near the navigation unit or GPS antenna can potentially interfere with the operation of the navigation system.
- Do this test only when the dash temperature is between —20 ℃ (—4 ℉) and 70 ℃ (158 ℉).

1. Clear hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 1304 indicated?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 1306: Vehicle Speed Pulse

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then start the engine.
3. Check for the hard error code (see page 23-273).

   Is DTC 1306 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Drive the vehicle and watch the VSP signal.

   Does the VSP signal change from [0] *to* [1] *as you drive?*

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Do the symptom troubleshooting for vehicle position icon constantly leaves road, moves erratically or is very far from actual position (see page 23-344). ■

DTC 1307: DVD Read Error

NOTE:
- Check the vehicle battery condition first.
- Check any official Honda service website for more information about the navigation system.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Inspect the navigation DVD for scratches or damage.

1. Turn the ignition switch to ON (II).

   Is there a DVD error message?

   YES—Go to DVD screen error messages (see page 23-319).

   NO—Go to step 2.
2. Clear the heard error code (see page 23-274).
3. Turn the ignition switch to LOCK (0), then back to ON (II).
4. Check for the hard error code (see page 23-273).

   Is DTC 1307 indicated?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC Troubleshooting (cont'd)

DTC 1402: Audio Error 2

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 1402 indicated?

   YES—Check if the audio unit functions are working properly. If any problems are found, go to the applicable troubleshooting in audio section. ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 1409: Audio Error 9

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 1409 indicated?

   YES—Check the XM error codes (see page 23-194). If any codes are detected, go to the applicable troubleshooting in audio (XM) section. ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 2607: XM Diag

NOTE: Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back ON (II).
3. Go into the Diagnostic Menu, and select the Self-Diagnosis Mode in the Select Diagnosis Items menu (see page 23-297).
4. Check the System Links.

   Is the XM icon red?

   YES—Go to step 5.

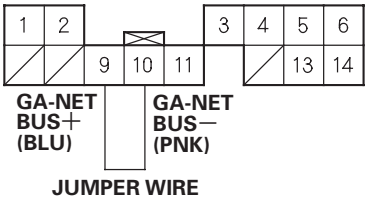
   NO—Intermittent failure, the system is OK at this time. ■
5. Turn the ignition switch to LOCK (0).
6. Check for poor connections or loose terminals at navigation unit connector E (14P), USB adapter unit connector A (14P), and XM receiver connector A (14P).

   Are the connections OK?

   YES—Go to step 7.

   NO—Repair poor connections or loose terminals, and recheck the self-diagnosis mode (see page 23-297). ■
7. Disconnect navigation unit connector E (14P) and XM receiver connector A (14P).
8. Connect navigation unit connector E (14P) terminals No. 9 and No. 10 with a jumper wire.

NAVIGATION UNIT CONNECTOR E (14P)



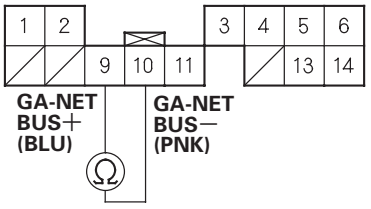
Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between XM receiver connector A (14P) terminals No. 9 and No. 10.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

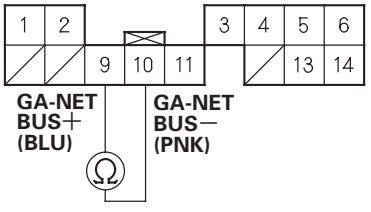
NO—Open in the wire between the navigation unit and the XM receiver. Replace the affected shielded harness. ■

10. Disconnect the jumper wire.

11. Disconnect USB adapter unit connector A (14P).

12. Check for continuity between navigation unit connector E (14P) terminals No. 9 and No. 10.

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

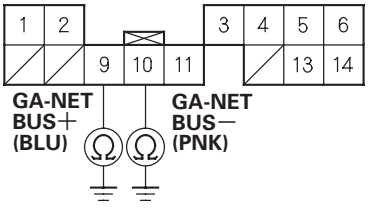
Is there continuity?

YES—Short in the wire(s) between GA-NET (+) and (−) wire. Replace the affected shielded harness. ■

NO—Go to step 13.

13. Check for continuity between body ground and navigation unit connector E (14P) terminals No. 9 and No. 10 individually.

NAVIGATION UNIT CONNECTOR E (14P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the navigation unit, the USB adapter unit, and the XM receiver. Replace the affected shielded harness. ■

NO—Go to step 14.

14. Reconnect the all connectors, then turn the ignition switch to ON (II).

15. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).

16. Check the System Links.

    Is the XM icon red?

    YES—Go to step 17.

    NO—Intermittent failure, the system is OK at this time. ■

17. Turn the ignition switch to LOCK (0).

18. Disconnect USB adapter unit connector A (14P), and then turn the ignition switch to ON (II).

19. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).

20. Check the System Links.

    Is the XM icon red?

    YES—Go to step 21.

    NO—Internal short circuit in the USB adapter unit. ■

21. Turn the ignition switch to LOCK (0).

22. Connect USB adapter unit connector A (14P).

23. Disconnect XM receiver connector A (14P), and then turn the ignition switch to ON (II).

24. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).

25. Check the System Links.

    Is the XM icon red?

    YES—Replace the navigation unit (see page 23-355). ■

    NO—Replace the XM receiver (see page 23-258). ■

DTC 2609: VRAM Diag

NOTE: Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).

2. Turn the ignition switch to LOCK (0), and then back to ON (II).

3. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).

4. Select the System Links, then select the ECU Info.

    Is V-RAM OK indicated?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—Replace the navigation unit (see page 23-355). ■

DTC Troubleshooting (cont'd)

DTC 2610: DRAM Diag

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).
4. Select the System Links, then select the ECU Info.

   Is D-RAM OK indicated?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-355). ■

DTC 2701: GPS Diag: Antenna

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Make sure the vehicle is parked outside, away from buildings.
- Check for electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).
4. Select the System Links, then select the GPS Ant.

   Is Antenna OK indicated?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Check for poor connections at navigation unit connector H (2P).

   Is the connection OK?

   YES—Replace the GPS antenna (see page 23-358). ■

   NO—Repair the poor connection. ■

DTC 2702: GPS Diag: Receiver in Navi ECU

NOTE:
- Check the vehicle battery condition first.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Make sure the vehicle is parked outside, away from buildings.
- Check for electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

1. Clear the hard error code (see page 23-274).

2. Turn the ignition switch to LOCK (0), and then back to ON (II).

3. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).

4. Select the System Links, then select the GPS Ant.

   Is Receiver in Navi ECU OK indicated?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-355). ■

DTC 2703: Aircon Diag

NOTE:
- Check the vehicle battery condition first.
- Check for B-CAN DTCs and resolve them before troubleshooting.
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- DTC 2703 can be stored when the ignition switch is at ACCESSORY (I). With the ignition switch is in ACCESSORY (I), the climate control unit is turned off and the navigation unit loses communication and stores DTCs. Therefore, there is a possibility that the system is normal even DTC 2703 is stored. Check system links (see page 23-297) with the engine running, and if it shows normal, the system is OK at this time. If not, do this troubleshooting.

1. Clear the hard error code (see page 23-274).

2. Turn the ignition switch to LOCK (0), and then back to ON (II).

3. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).

4. Check the System Links.

   Is the Aircon icon red?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■

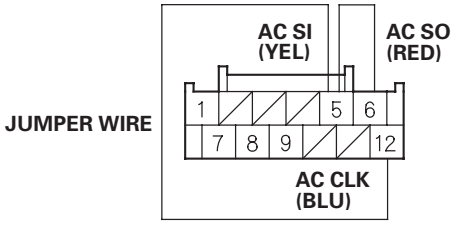
5. Turn the ignition switch to LOCK (0).

(cont'd)

DTC Troubleshooting (cont'd)

6. Disconnect navigation unit connector D (12P).
7. Connect navigation unit connector D (12P) terminals No. 5, No. 6, and No. 12 with a jumper wire.

NAVIGATION UNIT CONNECTOR D (12P)



Wire side of female terminals

8. Turn the ignition switch to ON (II).
9. Press the RECIRCULATION and OFF buttons.

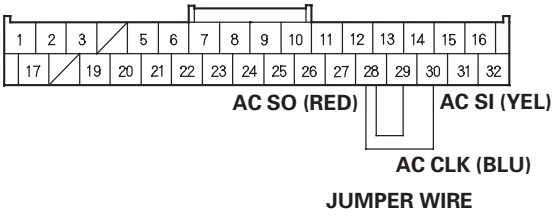
   Does the RECIRCULATION indicator turn on?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Go to step 10.

10. Turn the ignition switch to LOCK (0), then disconnect the jumper wire.
11. Disconnect climate control unit connecter A (32P).
12. Connect climate control unit connector A (32P) terminals No. 28, No. 29, and No. 30 with a jumper wire.

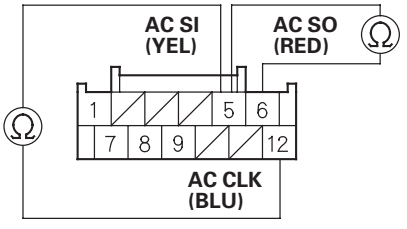
CLIMATE CONTROL UNIT CONNECTOR A (32P)



Wire side of female terminals

13. Check for continuity between navigation unit connector D (12P) terminals No. 5 and No. 6, then between terminals No. 5 and No. 12.

NAVIGATION UNIT CONNECTOR D (12P)



Wire side of female terminals

Is there continuity?

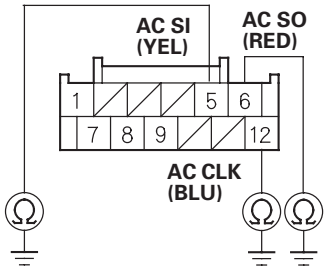
YES—Go to step 14.

NO—Repair open in the wire(s) between the navigation unit and the climate control unit. ■

14. Disconnect the jumper wire.

15. Check for continuity between body ground and navigation unit connector D (12P) terminals No. 5, No. 6, and No. 12 individually.

NAVIGATION UNIT CONNECTOR D (12P)



Wire side of female terminals

Are there continuity?

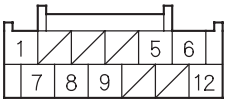
YES—Repair short to body ground in the wire(s) between the navigation unit and the climate control unit. ■

NO—Go to step 16.

16. Check for continuity between the terminal of navigation unit connector D (12P) according to the table.

From terminal	To terminals
D5 (YEL)	D6 (RED), D12 (BLU)
D6 (RED)	D12 (BLU)

NAVIGATION UNIT CONNECTOR D (12P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire(s) between the navigation unit and climate control unit. ■

NO—Go to step 17.

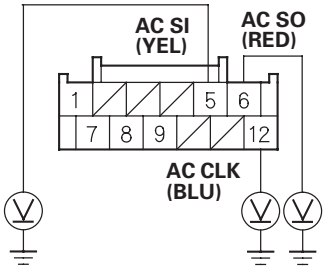
(cont'd)

DTC Troubleshooting (cont'd)

17. Turn the ignition switch to ON (II).

18. Measure the voltage between body ground and navigation unit connector D (12P) terminals No. 5, No. 6, and No. 12 individually.

NAVIGATION UNIT CONNECTOR D (12P)



Wire side of female terminals

Is there voltage above 0.2 V?

YES—Repair short to power in the wire(s) between the navigation unit and the climate control unit. ■

NO—Replace the climate control unit (see page 21-75). ■

DTC 2705: HFL Diag

NOTE: Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).

2. Turn the ignition switch to LOCK (0), and then back to ON (II).

3. Go into the Diagnostic Menu, and Select the Self-Diagnosis Mode in the Select Diagnosis Items Menu (see page 23-297).

4. Select the System Links.

   Is the HFL icon red?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■

5. Turn the ignition switch to LOCK (0).

6. Connect the HDS to the DLC (see page 23-359).

7. Clear the DTCs with the HDS.

8. Turn the ignition switch to LOCK (0), and then back to ON (II).

9. Check for DTCs with the HDS.

   Are there any HFL DTCs indicated?

   YES—Do the HFL DTC troubleshooting. ■

   NO—Go to step 10.

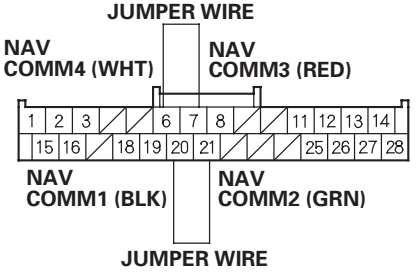
10. Turn the ignition switch to LOCK (0).

11. Disconnect navigation unit connector B (24P).

12. Disconnect the HandsFreeLink control unit 28P connector.

13. Connect HandsFreeLink control unit 28P connector terminals No. 6 and No. 7 with a jumper wire, then connect the terminals No. 20 and No. 21 with a jumper wire.

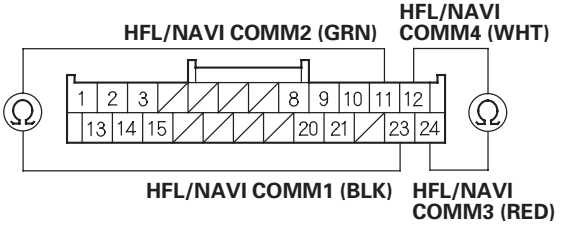
HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

14. Check for continuity between navigation unit connector B (24P) terminals No. 11 and No. 23 then check for continuity between terminals No. 12 and No. 24.

NAVIGATION UNIT CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Go to step 15.

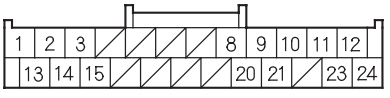
NO—Open in the wire between the navigation unit and the HandsFreeLink control unit. Replace the affected shielded harness. ■

15. Disconnect the jumper wire.

16. Check for continuity between the terminals of navigation unit connector B (24P) according to the table.

From terminal	To terminals
B11 (GRN)	B12 (WHT), B23 (BLK), B24 (RED)
B12 (WHT)	B23 (BLK), B24 (RED)
B23 (BLK)	B24 (RED)

NAVIGATION UNIT CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Short in the wires between the navigation unit and the HandsFreeLink control unit. Replace the affected shielded harness. ■

NO—Go to step 17.

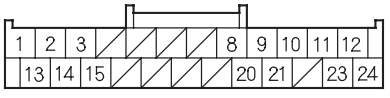
(cont'd)

DTC Troubleshooting (cont'd)

17. Check for continuity between navigation unit connector B (24P) and body ground according to the table.

Navigation unit connector	Wire color
B11	GRN
B12	BLK
B23	WHT
B24	RED

NAVIGATION UNIT CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wires between the navigation unit and the HandsFreeLink control unit. Replace the affected shielded harness. ■

NO—Replace the HandsFreeLink control unit (see page 23-388). ■

DTC 2706: Gyro Diag: ECU Temp XX ℃

NOTE:
- Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).
- Do this test only when the passenger's compartment temperature is between —20 ℃ (—4 ℉) and 70 ℃ (158 ℉).

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back ON (II).
3. Check for the hard error code (see page 23-273).

   Is DTC 2706 indicated?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Intermittent failure, the system is OK at this time. ■

DTC 2707: MIC Diag

NOTE: Before you troubleshoot, make sure to follow the general troubleshooting information (see page 23-266).

1. Clear the hard error code (see page 23-274).
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Go into the Diagnostic Menu, and select the Self-Diagnosis Mode in the Select Diagnosis items menu (see page 23-297).
4. Select the System Links.

   Is the Mic icon red?

   YES—Go to step 5.

   NO—Go to step 8.
5. Turn the ignition switch to LOCK (0).
6. Check for poor connections or loose terminals at the HandsFreeLink control unit 28P connector, the HFL-navigation microphone 3P connector, and the navigation unit B (24P) connector.

   Are the connections OK?

   YES—Go to step 7.

   NO—Repair the poor connections or loose terminals. ■
7. Check for DTCs with the HDS.

   Is DTC B1775 or B1776 indicated?

   YES—Troubleshoot the indicated DTC. ■

   NO—Replace the HFL-navigation microphone (see page 23-358). ■
8. Select the Mic in the System Links.
9. Press the navigation Talk button on the steering wheel switch, then check the Mic Level (see page 23-311).

   Is the microphone level OK?

   YES—Intermittent failure, the system is OK at this time. ■

   NO—Replace the HFL-navigation microphone (see page 23-358). ■

Symptom Troubleshooting

No picture is displayed

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft code.

1. Check the No. 23 (10 A) fuse in the under-hood fuse/relay box and the No. 35 (7.5 A) fuse in the under-dash fuse/relay box, and reinstall the fuse if it is OK.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse and recheck. ■

2. Turn the ignition switch to ON (II).

3. Operate the radio and listen to the audio.

   Can you hear the audio?

   YES—Go to step 4.

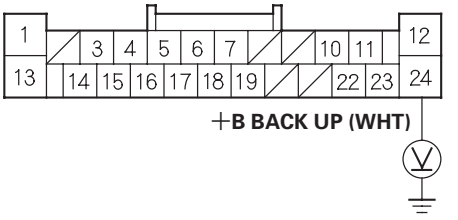
   NO—Refer to audio system troubleshooting. ■

4. Turn the ignition switch to LOCK (0).

5. Remove the navigation unit (see page 23-355).

6. Measure the voltage between navigation unit connector A (24P) terminal No. 24 and body ground.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

Is there battery voltage?

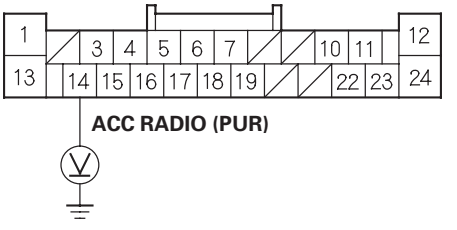
YES—Go to step 7.

NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

7. Turn the ignition switch to ON (II).

8. Measure the voltage between navigation unit connector A (24P) terminal No. 14 and body ground.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

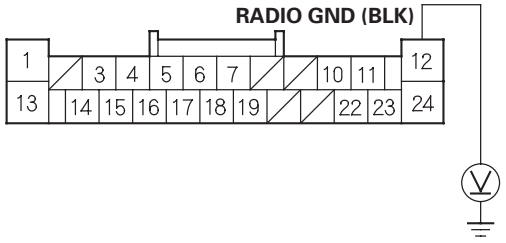
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

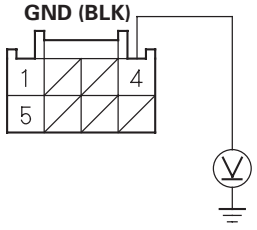
9. Measure the voltage between navigation unit connector A (24P) terminal No. 12 and body ground, and between navigation unit connector C (8P) terminal No. 4 and body ground.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

NAVIGATION UNIT CONNECTOR C (8P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between the navigation unit and body ground (G504) (see page 22-30), (G505) (see page 22-32). ■

Picture has lines/rolls/other issues or is an odd color

Diagnostic Test: Monitor Check

NOTE:
- Check the vehicle battery condition frist.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the navigation screen settings for brightness, contrast, black level and the color screen for map color and menu color.
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft codes.

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the navigation unit.

   Are there any electronic accessories?

   YES—Disable the accessories, and recheck. ■

   NO—Go to step 2.

2. Turn the ignition switch to ON (II).

3. Start up the navigation picture.

   Is the picture scrolling horizontally (left to right or right to left)?

   YES—Go to step 5.

   NO—Go to step 4.

4. Go into the Detail Information & Settings, select Monitor Check, and use RGB Color diagnostic under Monitor Check (see page 23-302).

   Are the red, green, and blue colored circles shown?

   YES—Go to step 5.

   NO—Replace the navigation unit (see page 23-355). ■

(cont'd)

Symptom Troubleshooting (cont'd)

5. Turn the ignition switch to LOCK (0), then turn to ON (II), and observe the navigation picture.

   Did the image improve?

   YES—Check for sources of electrical noise, such as poor battery connection, alternator, defective battery, aftermarket accessories or cell phone, and poor pin fits at the navigation unit. ■

   NO—Replace the navigation unit (see page 23-355). ■

Navigation display buttons do not work or respond properly

NOTE:
- Check the vehicle battery condition first.
- Always make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft codes.

1. Turn the ignition switch to ON (II).

2. Go into the Detail Information & Settings select Unit Check, and use Hard Key test under Unit Check (see page 23-305).

   Does the navigation unit buttons work properly?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-355). ■

GPS icon is white or not shown

Diagnostic Test: Self-Diagnosis Mode

NOTE:
- Check the vehicle battery condition first.
- With good reception, the icon is normally green.
- Make sure the GPS antenna is plugged in.
- Check for any aftermarket accessories or metallic window tinting that may be interfering with the GPS signal.
- Make sure the vehicle is parked outside, away from buildings.
- Refer to GPS Information (see page 23-312) for realtime satellite reception display.

1. Check for aftermarket metallic window tint on the rear window and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

   Is there aftermarket metallic window tint or electronic accessories?

   YES—Remove tint or the accessories, and recheck. ■

   NO—Go to step 2.

2. Turn the ignition switch to ON (II).

3. Go into the Self-Diagnosis Mode, and use the System Links diagnostic (see page 23-297) to check the GPS antenna.

   Is the GPS Ant icon red?

   YES—Check for a kinked, crushed, or disconnected GPS antenna wire. If the icon is still red, replace the GPS antenna (see page 23-358). ■

   NO—Check that nothing is blocking the GPS antenna located under the package shelf and recheck. Substitute a known-good GPS antenna, and recheck. ■

   - If the symptom is gone, replace the GPS antenna.
   - If the symptom is still present, substitute a known-good navigation unit (see page 23-355), and recheck. If the symptom is gone, replace the original navigation unit.

Voice guidance cannot be heard, is broken up, or there is static

Diagnostic Test: Self-Diagnosis Mode

NOTE:
- Check the vehicle battery condition first.
- Check the navigation volume level (see Owner's Manual).
- Check the connectors for poor connections or loose terminals.
- If the Hard Error Code is stored, check the Hard Error Code troubleshooting first.
- Make sure that the correct DVD color and version are installed.
- Inspect the DVD for dirt or damage.
- Before troubleshooting, make sure you have anti-theft codes for the navigation system.
- After troubleshooting, enter the anti-theft codes for the navigation system.

1. Turn the ignition switch to ON (II).

2. Press the SET-UP button.

3. Check the volume and voice feedback setting for the navigation system in set-up.

   Is either set to OFF?

   YES—Set the voice feedback to ON, and select an audible level for the volume. ■

   NO—Go to step 4.

4. Check the audio system operation.

   Can you hear the audio?

   YES—Go to step 5.

   NO—Troubleshoot audio system. ■

5. Select the Self-Diagnosis mode.

6. Check for error code to the Error History.

   Is the Hard Error Code in stored?

   YES—Refer to the Hard Error Code troubleshooting. ■

   NO—Replace the navigation unit (see page 23-355). ■

Symptom Troubleshooting (cont'd)

Voice control does not work/respond

Diagnostic Test: Mic Level

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.
- Check the connector for poor connection or loose terminals.
- Before troubleshooting, make sure you have the navigation system anti-theft codes.
- After troubleshooting, enter the anti-theft codes for the navigation system.

Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.

- Make sure you are on the correct screen when trying to issue a voice command. For instance, the command ''Find the nearest Italian Restaurant'' only works on a Map screen.
  (See the Navigation System Manual for a complete list of allowed voice commands for the information being displayed.)
- Close the windows, moonroof, and doors.
- Set the fan speed to low (1 or 2).
- Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
- Pause after pressing the navigation TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
- If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
- If you speak a command with something in your mouth, or your voice is too husky, the system may misunderstand your command.
- Compare the system operation with a known-good vehicle. Have more than one person test the system operation. If the like known-good vehicle performs the same, if is a characteristic of the system.

1. Turn the ignition switch to ON (II).

2. Go into the Self-Diagnosis Mode select, Mic Icon Menu, and use the Mic Level test under Functional Setup (see page 23-309) to check the operation of the navigation Talk and Back buttons.

   Are the navigation TALK and BACK buttons operational?

   YES—step 10

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Do the voice control switch test (see page 23-357).

   Is the voice control switch OK?

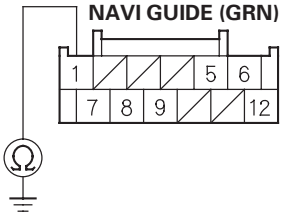
   YES—Go to step 5.

   NO—Replace the HFL-voice control switch. ■

5. Disconnect the HFL-voice control switch 5P connector and navigation unit connector D (12P).

6. Check for continuity between body ground and navigation unit connector D (12P) terminal No. 1.

NAVIGATION UNIT CONNECTOR D (12P)



Wire side of female terminals

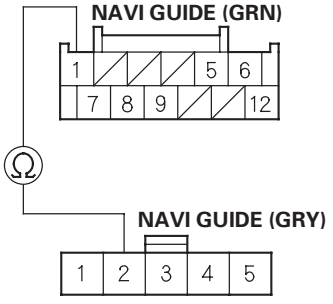
Is there continuity?

YES—Repair short to body ground in the wire between the navigation unit and the voice control switch, or replace the cable reel. ■

NO—Go to step 7.

7. Check for continuity between navigation unit connector D (12P) terminal No. 1 and HFL-voice control switch 5P connector terminal No. 2.

NAVIGATION UNIT CONNECTOR D (12P)
Wire side of female terminals



HFL-VOICE CONTROL SWITCH 5P CONNECTOR
Wire side of female terminals

Is there continuity?

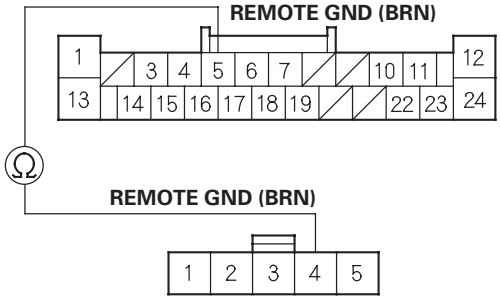
YES—Go to step 8.

NO—Repair open in the wire between the navigation unit and the HFL-voice control switch, or replace the cable reel. ■

8. Disconnect navigation unit connector A (24P).

9. Check for continuity between navigation unit connector A (24P) terminal No. 5 and HFL-voice control switch 5P connector terminal No. 4.

NAVIGATION UNIT CONNECTOR A (24P)
Wire side of female terminals



HFL-VOICE CONTROL SWITCH 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between navigation unit and voice control switch, or replace the cable reel. ■

10. Use the Mic Level diagnostic under Functional Setup (see page 23-309) to check the operation of the microphone.

Is the microphone operational?

YES—Check the operation of the voice control system (see the Navigation System Manual). ■

NO—Go to step 11.

11. Check the HFL DTCs (see page 23-360).

Are there any DTCs indicated?

YES—Repair the indicated DTCs. ■

NO—Substitute a known-good HFL-navigation microphone (see page 23-358), then reconnect all of the connectors and recheck. If the symptom/indication goes away, replace the original microphone. If the symptom/indication is still present, replace the navigation unit (see page 23-355). ■

Symptom Troubleshooting (cont'd)

Vehicle position icon constantly leaves road, moves erratically, or is displayed very far from actual vehicle position

NOTE:
- Check the vehicle battery condition first.
- Check that the GPS antenna is plugged in.
- This is not the same condition as when driving off-road (or on a fire or logging road). This condition is caused by a loss of map matching from a bad sensor input. Check for after market window tinting or other objects that can block the GPS signal. Always do the Map matching (see page 23-269) before proceeding with the troubleshooting.
- Make sure that the correct DVD color and version are installed.
- Inspect the DVD for dirt or damage.
- Check any official Honda service website for more service information about the navigation system.
- Check the GPS signal reception in an open area.

1. Check the GPS icon on the navigation screen.

   Is the GPS icon white?

   YES—Do the troubleshooting for GPS icon is white or not shown (see page 23-341). ■

   NO—Go to step 2.

2. Go into the Self-Diagnosis Mode, and use the Yaw Rate test (see page 23-314) to check the yaw rate sensor.

3. Go into the Self-Diagnosis Mode, and use the Car Status test (see page 23-315) to check the vehicle speed pulse.

   Are the yaw rate sensor and vehicle speed pulse OK?

   YES—The condition may be normal. Check to see if the condition occurs in the same place in a known-good vehicle. If it does, the problem could be in the database. Go to step 4.

   NO—If the problem is the yaw rate sensor, replace the navigation unit (see page 23-355). If the problem is the vehicle speed pulse, check for an open in the wire between the navigation unit and the ECM/PCM (VSP signal). If the wire is OK, substitute a known-good navigation unit, and retest. If the problem goes away, replace the original navigation unit. If the problem is still present, replace the ECM/PCM. ■

4. Substitute a known-good navigation unit, and check to see if the problem occurs in the same place.

   Does the problem occur in the same place?

   YES—The problem is in the database. Report the problem according to the Navigation System Manual under Reporting Errors. ■

   NO—Replace the original navigation unit (see page 23-355). ■

Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins

NOTE:
- Check the vehicle battery condition first.
- This is not the same condition as when driving off-road (or on a fire or logging road).
- This condition is caused by a loss of map matching from a bad sensor input. Check for aftermarket or other objects that can block the GPS signal. Always perform Map matching (see page 23-269) before proceeding with the troubleshooting.
- Always check for and resolve all CAN DTCs before troubleshooting the navigation system.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic mode, and use Version (see page 23-316).
- Make sure that the correct DVD color and version are installed.
- Check for aftermarket metallic window tinting.
- Inspect the DVD for dirt or damage.
- Check any official Honda service website for more service information about the navigation system.
- Before troubleshooting, make sure you have anti-theft codes for the navigation system.
- After troubleshooting, enter the anti-theft codes for the navigation system.
- Check the DVD for damage or scratches.
- Check for connectors for poor connections or loose terminals.

1. Check the GPS icon on the navigation screen.

   Is the GPS icon white or missing?

   YES—Do the troubleshooting for GPS icon is white or not shown (see page 23-341). ■

   NO—Go to step 2.

2. Go into the Self-Diagnostic mode, and use the Yaw Rate diagnosis (see page 23-314) to check the yaw rate sensor.

   Is the yaw rate sensor OK?

   YES—Go to step 3.

   NO—Replace the navigation unit (see page 23-355). ■

3. Go into the Diagnostic mode, and use the Car Status diagnosis (see page 23-315) to check the vehicle speed pulse (VSP) and the BACK signals.

   Are the vehicle speed pulse and the BACK signals OK?

   YES—The problem may be a characteristic of the system. Check to see if the problem occurs in the same place in a known-good vehicle. If it does, the problem could be in the database. Go to step 4.

   NO—
   - If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit. BLU wire for open or short. If OK, good ECM/PCM. If the problem or symptom goes Update the ECM/PCM (see page 11-227) if it does not have the latest software or substitute a known-good ECM/PCM (see page 11-228).
   - If the BACK signal is indicated ON (I), when in any shift lever position other than reverse, troubleshoot the back-up light switch circuit or MICU (A/T). ■

4. Substitute a known-good navigation unit (see page 23-355), and check to see if the problem occurs in the same place.

   Does the problem occur in the same place?

   YES—The problem is in the database and should be considered a characteristic of the system. Report the problem according to the Navigation System Owner's Manual under Reporting Errors and look for improvements in future databases. ■

   NO—Replace the navigation unit (see page 23-355). ■

Symptom Troubleshooting (cont'd)

DVD read error messages

Diagnostic Test: Car Status

NOTE:
- Check the vehicle battery condition first.
- Confirm the correct DVD color and version is installed in the navigation unit (see page 23-270).
- Refer to General Troubleshooting for a list of common DVD screen error messages and the probable causes (see page 23-319).
- Check any official Honda service website for more service information about the navigation system.
- Go into the Diagnostic mode and use the ECU Info diagnostic (see page 23-305) to check the status of the DVD cover.
- Inspect the navigation DVD for scratches or damage.
- The following troubleshooting is for the error message shown on the error messages table (see page 23-319).

1. Check the DVD-ROM reading surface for scratches and finger prints.

   Are there any scratches or finger prints on the DVD-ROM reading surface?

   YES—Clean or replace the DVD-ROM (see page 23-270).■

   NO—If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see page 23-355).■

Navigation cannot control HVAC by voice command

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connections or loose terminals.
- Check for and resolve all CAN DTCs before troubleshooting the navigation system.
- If the Hard Error Code stored, check the Hard Error Code troubleshooting first.
- Before troubleshooting, make sure the anti-theft codes for the navigation system.
- After troubleshooting, enter the anti-theft codes for the navigation system.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic mode, and use Version (see page 23-316).
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Connect the HDS to the DLC. Check for B-CAN or F-CAN DTCs in the data list.

   Are there any DTCs in the B-CAN or F-CAN systems?

   YES—Troubleshoot and repair all CAN related DTCs, and then retest.

   NO—Go to step 2.

2. Turn the ignition switch to ON (II).

3. Select the Self-Diagnosis mode.

4. Check for error code in the Error History.

   Are there any Hard Error Code stored?

   YES—Refer to the Hard Error Code troubleshooting. ■

   NO—Go to step 5.

5. Substitute a known-good climate control unit. Reconnect all connectors, and retest.

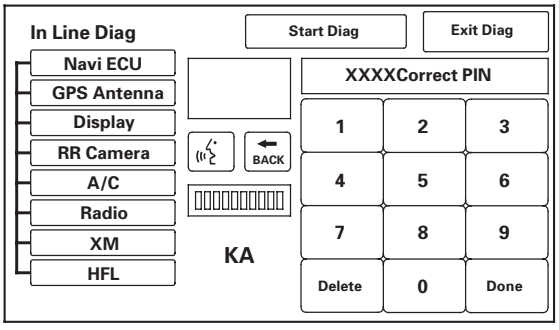
   Does the symptom go away?

   YES—Replace the original climate control unit (see page 21-75). ■

   NO—Replace the navigation unit (see page 23-355). ■

System always comes up in in-line diagnostic mode

1. When a navigation unit is powered up for the first time at the factory, the factory diagnosis screen (In Line Diag) appears. Normally the factory performs the steps necessary to verify proper operation, and terminate the factory diagnostic. Until the proper confirmation sequence is performed, the screen will appear every time the vehicle is started.



2. Follow the steps to prevent the screen from showing up in the future:

   - Hold down the buttons (Menu, Map/Guide, and Cancel) for about 5 seconds. The Select Diagnosis Items screen appears.
   - Hold down the Map/Guide button for 5—10 seconds. A screen with a Complete button, appears.
   - Touch Complete, and then the Return button (the system may re-boot).
   - Restart the vehicle, and confirm normal operation by completing the PDI of the navigation system Service Bulletin.

Symptom Troubleshooting (cont'd)

Display day/night mode does not work or does not work properly

NOTE:
- Check the vehicle battery condition first.
- Check the connectors for poor connection or loose terminals.
- Before troubleshooting, get the navigation system anti-theft code.
- After troubleshooting, enter the navigation system anti-theft code.
- Full brightness on the instrument panel brightness control with the head lights turned on causes the system to stay in the day mode, even when the lights are on.

1. Make sure the instrument panel brightness control is not on full brightness. Turn the headlights on, and adjust the dash brightness to the middle range.

2. Change the day/night mode under Set-up to AUTO, and recheck.

   Does the display change to day and night modes when turning the headlights on and off?

   YES—The system is OK at this time. ■

   NO—Go to step 3.

3. Go into the Diagnostic Menu and use the Car Status test to check for an ILL signal (see page 23-315).

   Is the ILL signal OK?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Check the ILL+ circuit between the navigation unit and the No. 14 (7.5 A) fuse in the under-dash fuse/relay box. ■

System locks up or freezes constantly

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Start the engine, and turn the ignition switch to LOCK (0), then turn the ignition switch to ON (II).

   Does the system reboot?

   YES—The system is OK at this time. ■

   NO—Check the DVD for scratches or damage, and the navigation unit for water damage. If OK, go into the Diagnostic Menu, and do all of the Unit Check tests (see page 23-305). Also check for low battery charge or poor charging system performance. ■

Navigation display stays on with ignition switch in LOCK (0)

NOTE:
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft code, then write down the audio presets.
- After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system, then enter the audio presets.
- Check for aftermarket accessories that use the same power circuit. A feedback can cause this problem.

1. Remove the key from the ignition.

   Does the navigation screen stay on?

   YES—Go to step 2.

   NO—The system is OK at this time. ■

2. The vehicle may have been used as a demonstration vehicle at an event like an auto show. In these events, power is often jumpered to the navigation system so that the ignition key is not needed in the vehicle. At the end of the show, the jumper wire may not have been removed. Check the navigation unit connector A (24P) for a non-factory jumper wire in series with the factory cable.

   Is there a jumper wire?

   YES—Remove the jumper wire, and re-test. Return the jumper wire to Tech Line. ■

   NO—Go to step 3.

3. Check if the audio unit works.

   Does the audio unit work with the ignition switch off?

   YES—Troubleshoot the ACC circuit for a short to power with another circuit. ■

   NO—Replace the navigation unit (see page 23-355). ■

Navigation cannot control audio system

NOTE:
- Check the vehicle battery condition first.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic mode and use Version (see page 23-316).
- Check for connectors for poor connections loose terminals.
- Before troubleshooting, make sure you have anti-theft codes for the navigation system.
- After troubleshooting, enter the anti-theft codes for the navigation system.
- Make sure that the correct navigation DVD color and version are installed.
- Inspect the navigation DVD for dirt or damage.
- Check any official Honda service website for more service information about the navigation system.

1. Make sure the anti-theft code for the navigation system is entered.

2. Go into the Diagnostic Menu, and use the Navi System Link test (see page 23-297).

   Is the Radio icon red?

   YES—Do the troubleshooting for the voice guidance cannot be heard (see page 23-341). ■

   NO—Go to step 3.

3. Substitute a known-good navigation unit (see page 23-355), and recheck.

   Can the navigation control audio?

   YES—Replace the navigation unit (see page 23-355). ■

   NO—Do the audio system troubleshooting. ■

Symptom Troubleshooting (cont'd)

Navigation cannot control XM radio

NOTE:
- Check the vehicle battery condition first.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Start the vehicle.
2. Make sure the anti-theft code for the navigation system is entered.
3. Go into the Diagnostic mode, and use the System Links diagnosis (see page 23-297).

   Is the XM icon red?

   YES—Do the troubleshooting for the voice guidance cannot be heard (see page 23-341). ■

   NO—Go to step 4.
4. Substitute a known-good navigation unit (see page 23-355).

   Can the navigation system control XM radio?

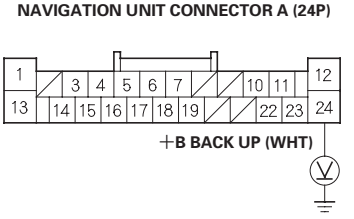
   YES—Replace the navigation unit (see page 23-355). ■

   NO—Replace the XM receiver (see page 23-258). ■

Navigation frequently asks for anti-theft code and/or needs GPS initialization

NOTE:
- This is often caused by a loss of battery power, a low or poor battery condition, or a poor ground.
- Make sure that the correct DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

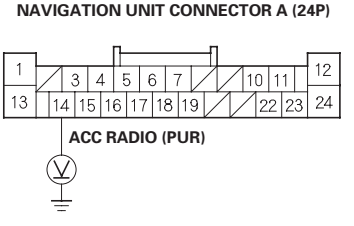
1. Measure the voltage between navigation unit connector A (24P) terminal No. 24 and body ground.



   Is there battery voltage?

   YES—Go to step 2.

   NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■
2. Turn the ignition switch to ON (II).
3. Measure the voltage between navigation unit connector A (24P) terminal No. 14 and body ground.



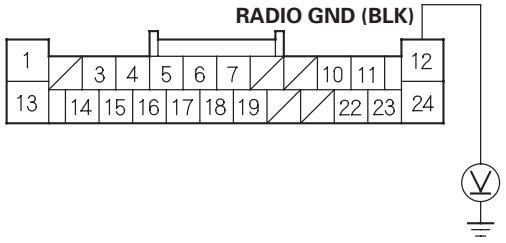
   Is there battery voltage?

   YES—Go to step 4.

   NO—Repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

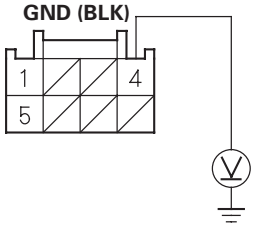
4. Measure the voltage between navigation unit connector A (24P) terminal No. 12 and body ground, and between navigation unit connector C (8P) terminal No. 4 and body ground.

NAVIGATION UNIT CONNECTOR A (24P)



Wire side of female terminals

NAVIGATION UNIT CONNECTOR C (8P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between the navigation unit and body ground (G504, G505). ■

OPEN/CLOSE function of the display does not work

NOTE:
- Check the vehicle battery condition first.
- If the display's Open/Close button does not work, you must manually open the display to obtain the client's navigation DVD, audio CD, and PC card (see page 23-269).

1. Press the OPEN/CLOSE button.

   Does the display open and/or close normally?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-355). ■

Symptom Troubleshooting (cont'd)

Navigation display will not close

NOTE: Check the vehicle battery condition first.

1. Check the CD slot. Look for foreign objects, stuck CD, broken or sticking slot.

   Is the CD slot OK?

   YES—Go to step 2.

   NO—Replace the navigation unit (see page 23-355). ■

2. Check the PC card.

   Is the PC card fully seated?

   YES—Go to step 3.

   NO—Reseat the card or remove it. If it still won't close, replace the navigation unit (see page 23-355). ■

3. Press the OPEN/CLOSE button.

   Does the display open and/or close normally?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-355). ■

Navigation display does not open or opens part way

NOTE: Check the vehicle battery condition first.

1. Press the OPEN/CLOSE button.

   Does the unit beep?

   YES—Go to step 2.

   NO—Replace the navigation unit (see page 23-355). ■

2. Press the OPEN/CLOSE button.

   Does the display open normally?

   YES—The system is OK at this time. ■

   NO—Replace the navigation unit (see page 23-355). ■

Navigation system will not accept security code

NOTE:
- Check the vehicle battery condition first.
- The system will not operate without the 4-digit security (anti-theft) code. Follow the this procedure. (After 10 consecutive tries, you must cycle the key to continue trying)
- The Navigation System Diagnosis and Core Return From is available online, under Job aids, and can be printed out for recording this information. This information will help the reman facility determine what caused the failure.
- Check the connectors for poor connections or loose terminals.
- Before troubleshooting, make sure you have the anti-theft codes for the navigation system.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic mode, and use Version (see page 23-316).
- Make sure that the correct navigation DVD color and version are installed.
- Check any official Honda service website for more service information about the navigation system.

1. Go into the System diagnosis menu (see page 23-297), select Unit check, and then ECU info. A brief diagnostic runs for 20 seconds, and the serial number is displayed.

   Is the serial number displayed?

   YES—Go to step 4.

   NO—Go to step 2.

2. Remove the navigation unit (see page 23-355).

3. Check the serial number on the label on the underside of the navigation unit.

   Is the serial number confirmed on the underside of the navigation unit?

   YES—Go to step 4.

   NO—Replace the navigation unit (see page 23-355). ■

4. Using the serial number, look up the navigation security code in the Interactive Network. (click: Service, Vehicle Information, Anti-Theft code Inquiry, and then select Navigation from the Product dropdown box). Enter the serial number.

   Is a 4-digit code displayed on the screen?

   YES—Go to step 5.

   NO—Call the Warranty Department to obtain the code (the telephone number is in the PDI service bulletin). Then go to step 5.

5. Check that the obtained code works to bypass the code screen in the navigation system.

   Does the code work?

   YES—The system is OK at this time Return the vehicle to the client, and give them the anti-theft code. ■

   NO—Go to step 6.

6. Try entering four zeros (0000) in place for the code.

   Do the four zeros work to bypass the code screen?

   YES—Replace the navigation unit, and enter Security code is 0000 in the problem description field of the core return form. ■

   NO—Replace the navigation unit, and enter Won't take security code (as proof, enclose the sticker that contains the Serial number and the Code) in the problem description field of the core return form. ■

Symptom Troubleshooting (cont'd)

The Honda Globe Screen (not the Acura Globe Screen) appears every time the vehicle is started

NOTE: The navigation DVD and the navigation unit are correct for the vehicle, but earlier and possibly later versions of the navigation software may have been installed. When this happens, the software may not be recognized by the navigation unit, and could cause the navigation unit to revert to a Honda model profile.

1. Remove the navigation unit (see page 23-355) and verify that the part number printed on the navigation unit label is the correct one for the year/model vehicle you are working on.

   Is the correct navigation unit installed based on the part number?

   YES—Go to step 2.
   NO—Replace the navigation unit with the correct unit for the year/model vehicle you are working on. ■

2. Reinstall the navigation unit.

3. Remove the navigation DVD (see page 23-354).

4. Note the software version marked on the navigation DVD label and verity if it is the correct version for the vehicle year/model you are working on by checking any official Honda service website for more service information about the navigation system and navigation software.

   Is the software version marked on the navigation DVD label the correct one for the vehicle year/model you are working on?

   YES—Replace the navigation unit (see page 23-355). ■
   NO—Go to step 5.

5. Obtain the correct version DVD (see page 23-269) and install it.

   Does the navigation system boot-up with the Acura Globe Screen?

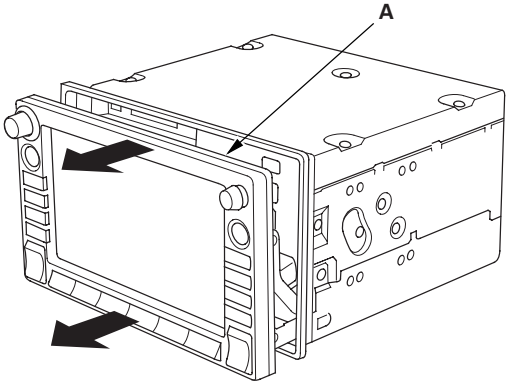
   YES—The problem is resolved, troubleshooting is complete. ■
   NO—The system still shows a Honda Globe Screen. Replace the navigation unit (see page 23-355). ■

CD, DVD, and PC Card Removal/ Installation

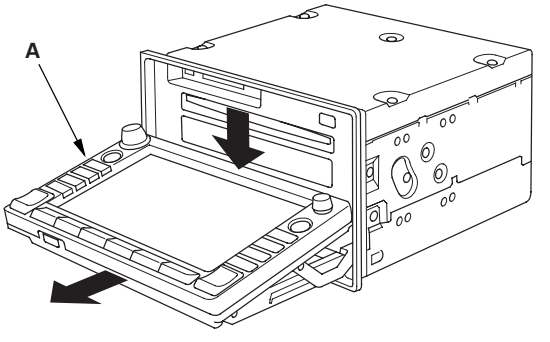
If the displays Open and Close buttons do not work, you must manually open the display to remove the client's Navigation DVD, CD, and possibly their PC card. Follow to the steps.

1. Remove the navigation unit from the vehicle (see page 23-255).

2. On the bench, carefully pull the display (A) straight out (about 1/2 inch).



3. Fold down the display (A).



Symptom Troubleshooting (cont'd)

The Honda Globe Screen (not the Acura Globe Screen) appears every time the vehicle is started

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   Is the correct navigation unit installed based on the part number?

   YES—Go to step 2.
   NO—Replace the navigation unit with the correct unit for the year/model vehicle you are working on. ■

2. Reinstall the navigation unit.

3. Remove the navigation DVD (see page 23-354).

4. Note the software version marked on the navigation DVD label and verity if it is the correct version for the vehicle year/model you are working on by checking any official Honda service website for more service information about the navigation system and navigation software.

   Is the software version marked on the navigation DVD label the correct one for the vehicle year/model you are working on?

   YES—Replace the navigation unit (see page 23-355). ■
   NO—Go to step 5.

5. Obtain the correct version DVD (see page 23-269) and install it.

   Does the navigation system boot-up with the Acura Globe Screen?

   YES—The problem is resolved, troubleshooting is complete. ■
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If the displays Open and Close buttons do not work, you must manually open the display to remove the client's Navigation DVD, CD, and possibly their PC card. Follow to the steps.

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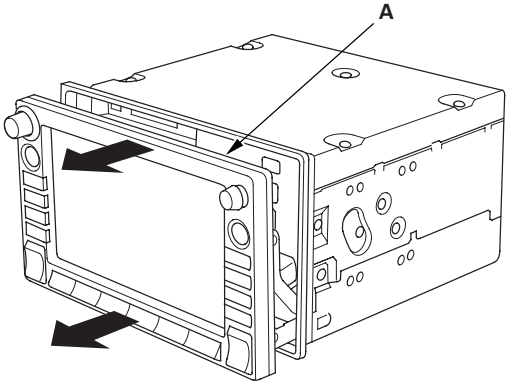
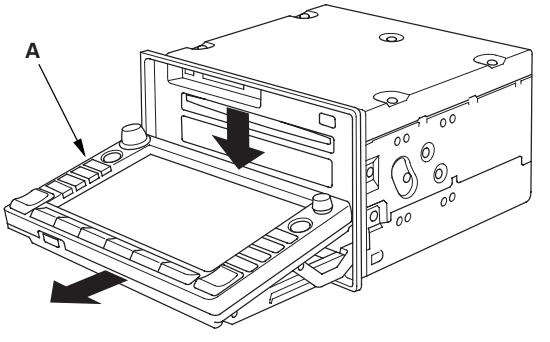
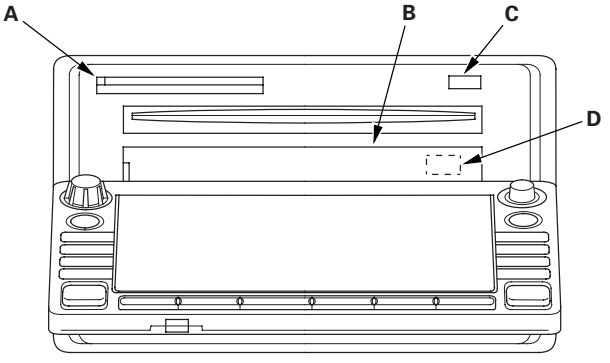
2. On the bench, carefully pull the display (A) straight out (about 1/2 inch).



3. Fold down the display (A).



4. Push the PC card eject button (A) to eject the client's PC card (if installed). Power is not required for this function.



5. Remove the plastic cover (B) over the navigation DVD slot.

6. With the display open, temporarily reconnect the unit in the dash (to power it up).

7. Push the CD eject button (C), and navigation DVD eject button (D) (the button is behind the plastic cover and works only when the unit is powered) and remove the discs (hold the discs by their edges to avoid fingerprints). To avoid scratches, place the navigation DVD and the client's CD in a jewel case if available.

8. Re-attach the plastic lid that hides the navigation DVD slot.

9. Close the display by first returning the display to the upward position, and then pushing the entire display straight back into the unit.

10. After installing the new navigation unit, re-insert the navigation DVD, the client's CD, and the PC card.

Navigation Unit Removal/ Installation

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board(s) with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)
- Before replacing the navigation unit, make sure to remove the client's navigation DVD, and their audio CD, or PC card. Remanufactured navigation units do not come with a navigation DVD. Re-install the client's navigation DVD, audio CD, and audio PC card into the new remanufactured unit. If the navigation display won't open, manually remove the navigation DVD, audio CD, and PC card (see page 23-354).
- If you are replacing the navigation unit, write down the audio presets (if possible), then enter them into the new navigation unit.

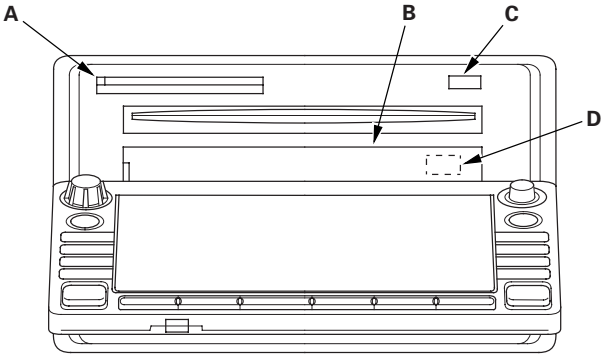
1. Make sure you have the 4-digit anti-theft code for the navigation system.

2. Eject the DVD from the original navigation unit. To avoid scratching or damaging the DVD, temporarily place the DVD in jewel case.

3. Remove the subdisplay visor (see page 20-100).

(cont'd)

4. Push the PC card eject button (A) to eject the client's PC card (if installed). Power is not required for this function.



5. Remove the plastic cover (B) over the navigation DVD slot.

6. With the display open, temporarily reconnect the unit in the dash (to power it up).

7. Push the CD eject button (C), and navigation DVD eject button (D) (the button is behind the plastic cover and works only when the unit is powered) and remove the discs (hold the discs by their edges to avoid fingerprints). To avoid scratches, place the navigation DVD and the client's CD in a jewel case if available.

8. Re-attach the plastic lid that hides the navigation DVD slot.

9. Close the display by first returning the display to the upward position, and then pushing the entire display straight back into the unit.

10. After installing the new navigation unit, re-insert the navigation DVD, the client's CD, and the PC card.

Navigation Unit Removal/ Installation

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

NOTE:
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a workshop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board(s) with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)
- Before replacing the navigation unit, make sure to remove the client's navigation DVD, and their audio CD, or PC card. Remanufactured navigation units do not come with a navigation DVD. Re-install the client's navigation DVD, audio CD, and audio PC card into the new remanufactured unit. If the navigation display won't open, manually remove the navigation DVD, audio CD, and PC card (see page 23-354).
- If you are replacing the navigation unit, write down the audio presets (if possible), then enter them into the new navigation unit.

1. Make sure you have the 4-digit anti-theft code for the navigation system.

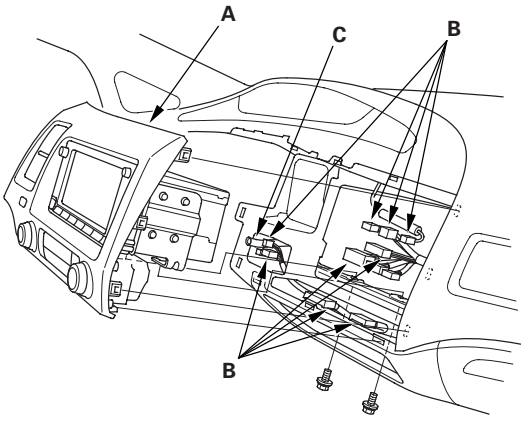
2. Eject the DVD from the original navigation unit. To avoid scratching or damaging the DVD, temporarily place the DVD in jewel case.

3. Remove the subdisplay visor (see page 20-100).

(cont'd)

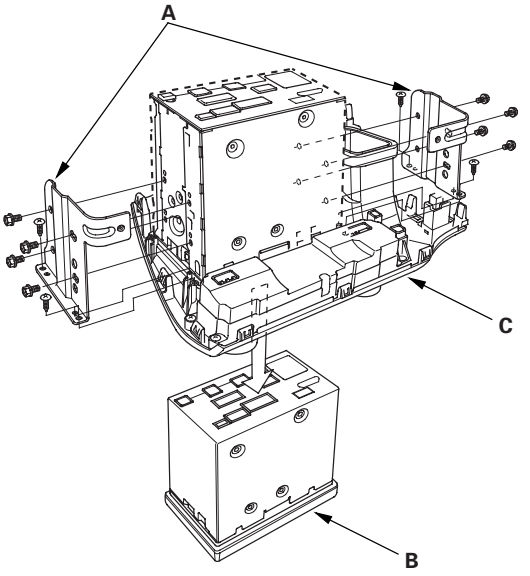
Navigation Unit Removal/Installation (cont'd)

4. Remove the center pocket hole lid and bolts, then pull out the center panel (A).



5. Disconnect the connectors (B) and air hose (C), then remove the center panel.

6. Remove the screws, brackets (A), and the navigation unit (B) from the center panel (C).



7. Install the navigation unit in the reverse order of removal and make sure all connectors are secure.

8. Turn the ignition switch to ON (II), then reinstall the client's original DVD, verifying than the DVD is free of scratches or smudges.

9. Check any official Honda service website for more service information about the navigation system.

   NOTE: Simply transferring the DVD from the original navigation unit to the new navigation unit does not assure the correct software for the vehicle will be loaded into the new navigation unit. Doing the DVD transfer without doing software patches may cause the new navigation unit to appear to be malfunctioning.

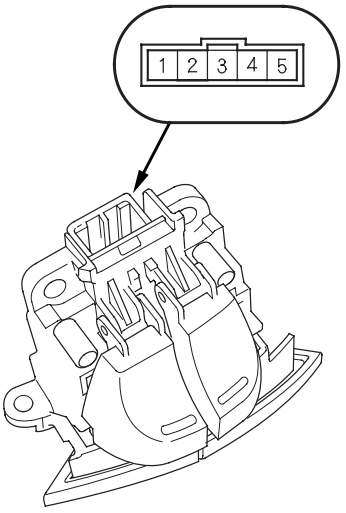
10. Enter the new navigation anti-theft code.

11. Park the vehicle outside, and do the GPS initialization (see page 23-268).

12. Give the new navigation anti-theft code to the client.

Voice Control Switch Test

1. Remove the voice control switch (see page 23-357).



2. Measure the resistance between terminals No. 2 and No. 4 in each switch position according to the table.

Position	Resistance
No button pressed	About 10 kΩ
TALK	About 2.9 kΩ
BACK	About 680 Ω

3. If the resistance is not as specified, replace the voice control switch (see page 23-357).

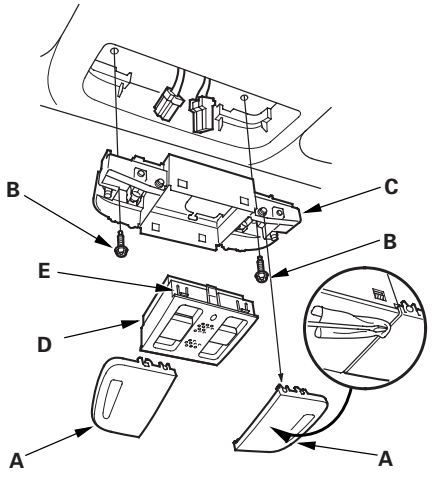
Voice Control Switch Replacement

SRS components are located in this area. Review the SRS component location (see page 24-11).
Also review the precautions and procedures (see page 24-13) in the SRS section before doing repairs or service.

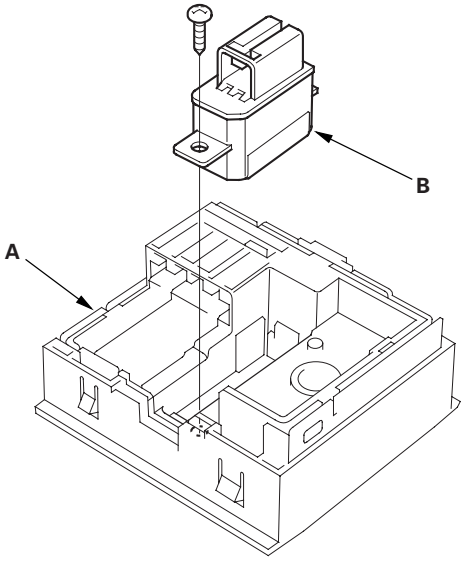
1. Remove the steering wheel (see page 17-6).
2. Remove the voice control switch (see page 17-7).
3. Install the voice control switch in the reverse order of removal.

HFL-Navigation Microphone Removal/Installation

1. Remove the front individual map light lens (A).



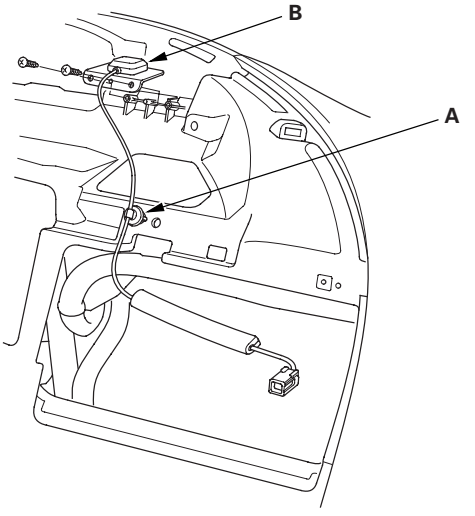
2. Remove the bolts (B), then disconnect the connectors, and remove the map lights housing (C).
3. Carefully pry off the moonroof switch (D) from the map light housing while pressing in on the retaining tabs (E).
4. From the moonroof switch (A), remove the screw and microphone (B).



5. Install the microphone in the reverse order of removal.

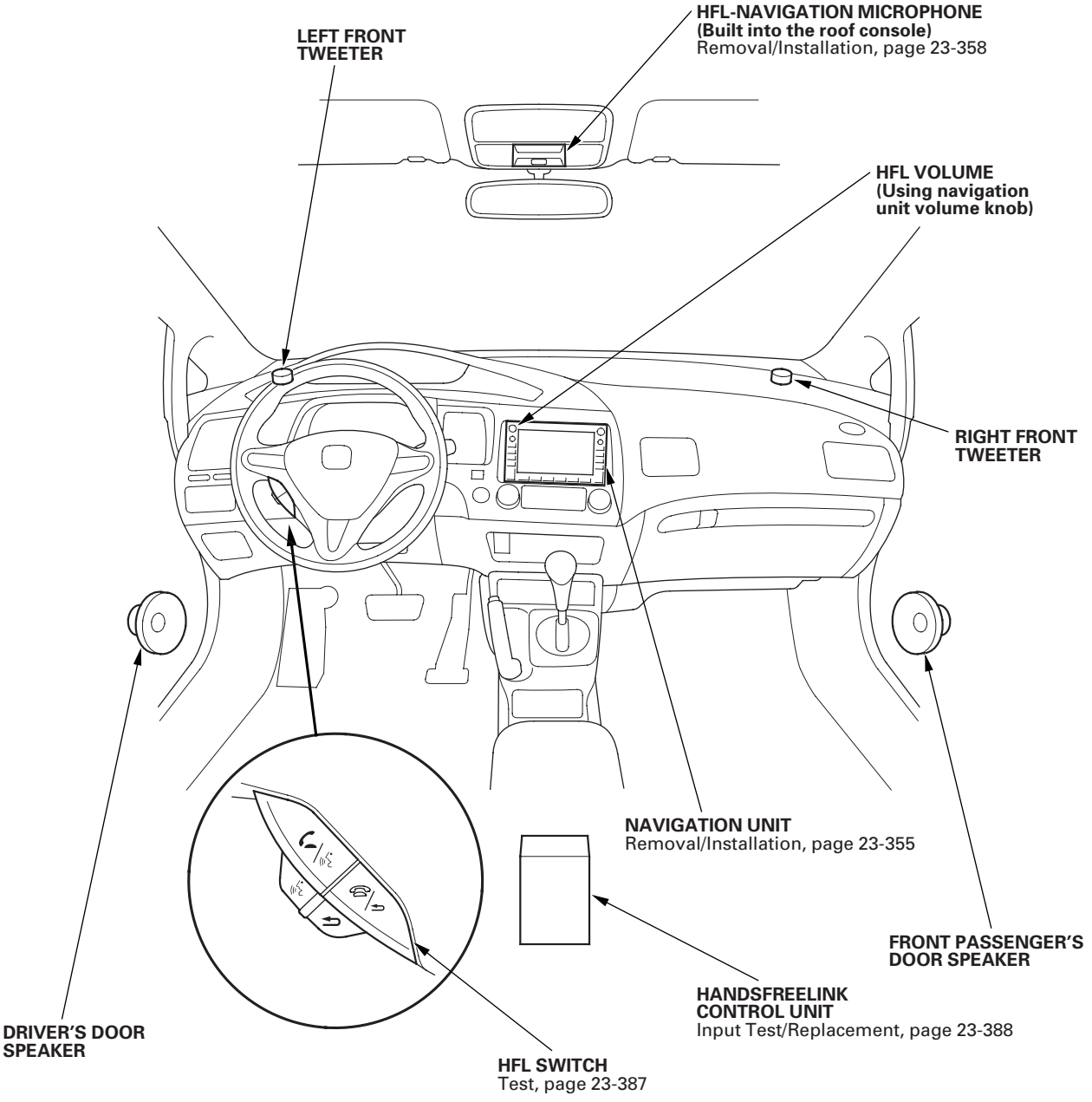
GPS Antenna Removal/Installation

1. Remove the navigation unit (see page 23-355).
2. Remove the instrument panel visor (see page 20-98).
3. Remove the wire harness clip (A), screws, and GPS antenna (B).



4. Install the antenna in the reverse order of removal.

Component Location Index

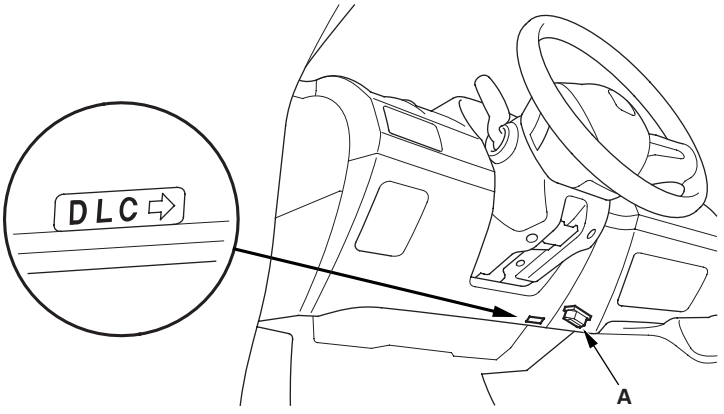


General Troubleshooting Information

How to Check for DTCs with the HDS

NOTE: Check the vehicle battery condition first.

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the HandsFreeLink control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
5. Select HandsFreeLink in the BODY ELECTRICAL menu.
6. Select DTCs in the HandsFreeLink menu.
7. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting. If no DTCs are indicated, refer to symptom troubleshooting.

   NOTE:
   - After troubleshooting, clear the DTCs with the HDS.
   - For specific operations, refer to the user's manual that came with the HDS.

Introduction

The HFL system works only with Honda approved Bluetooth®-enabled cell phones with a hands-free profile. If you are not sure if a particular cell phone is compatible with the HFL system, Acura has a dedicated call center at 888-528-7876 and website www.acura.com/handsfreelink to answer your questions.

The HFL system allows you to make and receive hands-free calls. It cannot control the phone's performance (call quality and signal strength). For more information about performance and performance problems, refer to Dropped Calls.

Checking Cell Phone Compatibility

The most important step in troubleshooting HFL issues is to identify the model, software version, and wireless carrier of the phone in question. Not all phones with the Bluetooth feature and a hands-free profile are compatible with the HFL system.

Go to handsfreelink.com, and check if the client phone is approved to work with Honda HFL system.

NOTE:
- The lists of approved, archived, and currently testing phones are constantly changing, so make sure you view them frequently.
- Phones are added as they are approved.
- Phones can be removed from the approved list if a software bug is discovered that makes the phone incompatible. These phones can be added back to the approved list if the phone manufacturer corrects the bug.
- If the software bug is corrected, a new software version is created and may be listed in the Supported Features section of the phone.
- The software versions that are approved are now being listed in the Software Version field.
- If you cannot access the Acura website, call the HFL call center at 888-528-7876 for further assistance. The call center is open Monday thru Friday from 6:00 a.m. to 6:00 p.m. CT; Saturday from 7:00 a.m. to 6:00 p.m. CT; and Sunday from 8:00 a.m. to 6:00 p.m. CT.

Voice Control Tips and Improving Voice Recognition

To give a voice command to the HFL system, press and release the HFL TALK button. Always wait for the beep, then give your command in a clear, natural voice. The HFL microphone is on the ceiling by the map lights. If the HFL system doesn't recognize your voice command, you'll hear ''Pardon.'' If your command isn't recognized a second time, you'll hear ''Please repeat.'' If your command isn't recognized a third time, the HFL system sends you to its Help menu.

To hear a list of available options at any time, press the HFL TALK button and say ''Hands-free help.''

The HFL system may have problems recognizing some voices. To improve voice recognition:

- Close the windows and the moonroof.
- Set the fan speed to low (1 or 2) or off.
- Adjust the airflow from the center vents down, so that it's not blowing against the microphone on the ceiling.
- Speak in a clear and natural voice. If the system cannot recognize your command, try speaking louder, in a deeper tone.
- If the background noise is too loud, you may need to speak louder.
- If you speak with something in your mouth, or your voice is too high, the system may not interpret your command correctly.
- Find out if the problem is with one person or with everyone who uses the system. If the system has a problem with only one person's voice, this is a system limitation.

(cont'd)

General Troubleshooting Information (cont'd)

Many issues result from the client not using the system properly. Make sure the client is using the HFL buttons and not the navigation buttons. When the HFL TALK button is pressed, the client hears one audible tone. When the HFL BACK button is pressed, the client hears two audible tones. Make sure to press the HFL BACK button to exit the HFL main menu after completing a call and before giving any navigation commands.

The HFL system may experience a number recognition issue, such as when a client says a set of numbers in a group unrecognized by the system. The HFL system understands phone numbers in specific blocks of 1, 3, 4, 7, and 10 numbers. For example, the system understands:

1234567890
123-456-7890
1-2-3-4-5-6-7-8-9-0

The system may become confused if numbers are stated in other blocks, as following:

1234-567-890
12-34-56-78-90
12345-67890
123-4567-890

Navigation Through Menus

To skip a voice prompt, press and release the HFL TALK button while the HFL system is speaking. The system beings listening for your next voice command.

To go back a step in a voice command sequence, press and release the HFL BLACK button, or press the HFL TALK button and say ''Go back.'' If you don't say anything while the HFL system is listening for your voice command, it times out and stops voice recognition. The next time you press and release the HFL TALK button, the HFL system begins listening from the point it timed out.

If you've finished or want to stop a voice command sequence at any time, press and release the HFL BACK button, or press and release the HFL TALK button, wait for the beep, and say ''Cancel.'' The next time you press and release the HFL TALK button, the HFL system begins from its main menu. To avoid keeping the audio system muted, press and release the HFL BACK button when you are finished.

NOTE: You can say multiple commands in one sequence, like ''Phone setup-pair'' after pressing the HFL TALK button.

Pairing a Cell Phone

You must pair an approved Bluetooth-compatible phone to the HFL system before you can make and receive calls. For a current list of approved phones and specific phone pairing instructions for each phone, see Checking Cell Phone Compatibility, go to www.acura.com/handsfreelink, or call 888-528-7876.

The following procedure works for most phones. If you cannot pair a phone to the HFL system with this procedure, refer to the phone's operating manual, visit www.acura.com/handsfreelink, or call 888-528-7876.

NOTE:
- You cannot pair a phone while the vehicle is moving.
- Your phone must be in Discovery Mode.
- A maximum of six Bluetooth-compatible phones can be paired to the system.

1. With the phone on and the ignition switch in ACCESSORY (I) or ON (II), press and release the HFL TALK button. After the beep, say ''Phone setup.'' The HFL responds, ''Phone setup options are status, pair, edit, delete, and list.''

2. Press and release the HFL TALK button. After the beep, say ''Pair.'' The HFL responds, ''The pairing process requires operation of your mobile phone. For safety, only perform this function while the vehicle is stopped. State a four-digit code for pairing. Note this code. It will be requested by the phone.''

3. Press and release the HFL TALK button. After the beep, say the four-digit code you want to use. This can be any four-digit number you want. For example, say ''1, 2, 3, 4.'' The HFL responds, ''1, 2, 3, 4. Is this correct?''

4. Press and release the TALK button. After the beep, say ''Yes.'' The HFL responds, ''HFL is now searching for a Bluetooth phone. Make sure the phone you are trying to pair is in Discovery mode.'' If these steps do not work on the phone you are pairing, refer to the phone's operating manual.

5. Follow the prompts on your phone to get it into its Discovery mode. The phone will search for the HFL. When it comes up, select HandsFreeLink from the list of options displayed on your phone.

6. When asked by the phone, enter the four-digit code from step 3 into your phone. The HFL responds, ''A new phone has been found. What would you like to name this phone?''

7. Press and release the HFL TALK button. After the beep, say the name you want to use. For example, say ''Tom's phone.'' The HFL responds, ''Tom's phone has been successfully paired. Returning to the main menu.''

(cont'd)

General Troubleshooting Information (cont'd)

Pairing Troubleshooting

Many pairing issues are resolved by altering the client's phone settings.

Bluetooth feature settings must be turned on. Phone manufacturers set the default to disable Bluetooth features to conserve battery life. Cell phones may provide procedures to Temporary Power On Bluetooth, or Power On Bluetooth. Turn the Bluetooth feature on, pair the phone to the vehicle, and confirm the phone is linked. Do this by turning the phone off and back on. Make or receive a call to confirm that the cell phone is successfully paired.

When the phone's Bluetooth feature is on, other handsfree accessories such as earpieces or headsets may automatically reconnect to the phone when you turn on the accessory or move it within range of the cell phone. This results in the phone not connecting to the HFL system when the client's enters the vehicle. You must unlink the hands-free accessory from the phone before the HFL system can reconnect.

Some phones have an Auto Answer setting that functions with a headset. This setting must be turned off or the HFL system cannot accept any incoming calls. When this setting is on, it blocks the HFL system from answering the call, and the call goes to voice mail. This can cause the client to think that the cell phone is not paired properly.

If the HFL system has six phones paired, it will not tell you that it has reached its maximum, and will not allow you to pair a new phone. To check how many phones are paired, press and release the HFL TALK button. After the beep, say ''Phone setup list.'' The HFL system lists every assigned phone name paired with it, then finishes by saying ''The entire list has been read. Returning to the main menu.'' Count the number of phones listed. If there are six, you must delete one phone before adding a new one.

Pairing Checks

For more information about pairing, refer to the cell phone owner's manual, or go to handsfreelink.com.

1. Is the cell phone compatible with the HFL?
2. Is the Bluetooth feature turned on?
3. Is the client using the HFL buttons, not the navigation buttons, when pairing?
4. Is the cell phone battery fully charged, and is there good signal strength when pairing?
5. Do a soft reset on the cell phone.
6. If the client is trying to pair a Blackberry® or Palm Treo™ device, make sure the client uses the shift key when entering the pass code. If the shift key is not pressed, the client may be entering letters. The HFL does not recognize letters.

Dropped Calls

Clients may perceive dropped calls as being an HFL system fault, but most dropped calls are from cell phone and cell phone carrier issues. The HFL system does not directly handle the cell phone signal. It allows the cell phone to transmit the cell phone audio over the vehicle's audio system.

Before troubleshooting for dropped calls, confirm the cell phone settings:

- Disable Audio Answer. If Auto Answer is enabled, incoming calls are routed to voice mail.
- Disable Always Ask/Trust, Authorize Device, or similar setting, If these settings are enabled, each time the HFL system attempts to link to the phone, the phone will ask if you want to connect. If you do not allow the connection, the HFL will not operate. The phone must be set to Never Ask, Authorize Device, etc. (based on the phone manufacturer and carrier) for permission. Refer to the cell phone owner's manual for more information.
- Disable Flip Open to Answer. If this setting is enabled, the phone must remain open in the vehicle. If it is closed, the incoming calls are routed to voice mail.

Always confirm with the client if the number of dropped calls is higher while using the HFL system as opposed to using the cell phone only. Clients often confuse problems with their phone or carrier as a problem with the HFL system. The HFL system cannot control or determine:

- Cellular connection quality.
- Signal strength.
- Cellular coverage.
- Ambient weather conditions that affect cellular signals.

When a client complains about dropped calls, ask questions about when or where the calls are dropped, such as:

- Do you drive the same route on a regular basis?
- Does the call drop in the same location?
- Where do you keep your cell phone?
- Have you compared the number of dropped calls using the HFL versus making calls from the handset?
- Does your phone have an antenna that needs to be extended?

(cont'd)

General Troubleshooting Information (cont'd)

Many reasons for a dropped call are not related to the HFL system. Here are some causes for dropped calls:

- If the quantity of dropped calls is about the same when the client uses the HFL system versus the handset, the issue is likely due to the cellular phone or carrier.
- If the phone is equipped with a retractable antenna, it needs to be extended to maximize signal strength.
- If a client also notices that the calls tend to drop in the same areas, the HFL system may be operating normally, but something about the area diminishes cellular coverage to a point where the call drops.
- Hills or mountains can block or interfere with cellular signals.
- High-rise buildings, bridges, or other large structures may block or interfere with cellular signals.
- Placing the cell phone in a purse, in a metal briefcase, under the seat, in the glove box, or in the trunk can all affect signal reception.
- There are coverage gaps in the cellular service. When driving, a call is typically passed from one tower to another. If the client drives through an area where there is a coverage gap between towers, the call drops.
- Electrical storms, heavy rain, or overcast conditions interfere with signal strength.
- The cell phone battery's state of change can affect signal reception. A low battery may reduce the phone's ability to boost the antenna's power and function properly, especially in low signal strength areas. Some phone manufacturers trade off signal transmission and reception strength for battery life. As the battery weakens, the signal strength may also weaken. Some cell phones may operate more effectively than others in low signal strength areas, especially with a partially charged battery, and depending on whether or not the retractable antenna is fully extended (if applicable). On these models, make sure the antenna is always extended to maximize signal strength and extend battery life.

Phone Will Not Automatically Connect the HFL

If a client complains that their cell phone is not automatically connecting to the HFL system when they enter the vehicle, do this:

1. Make sure the Bluetooth feature is turned on in the cell phone.
2. Make sure the cell phone is properly painted to the HFL system.
3. Do a soft reset to the cell phone.
4. Check if the phone has an Authorized Connection or Trusted option.
5. Check the battery and signal strength on the cell phone. Pairing a phone requires optimal signal strength and a nearly full battery.

Incoming Calls

If a client complains that they cannot receive incoming calls through the HFL system, see if the call is routing to the cell phone instead of the HFL system. An easy way to know if the call is routed to the cell phone is when the client says, ''I can't hear the caller, but they can hear me.''

1. Make sure the Bluetooth feature is turned on in the cell phone.
2. Make sure the cell phone is paired to the HFL system and linked.
3. Make sure the answer settings in the cell phone are set to multi-key or any-key answer. If the phone is set to flip open to answer, recommend changing the setting to Any Key or leaving the phone flipped open when using the HFL system.
4. Make sure the Auto Answer feature is turned off in the cell phone.
5. Do a soft reset to the phone.
6. Make sure the battery is fully charged and there is adequate signal strength.
7. Ask the client if they have set specific ring tones or ringer IDs to specific contacts. If they have, recommend using one standard ring tone for all calls.
8. Make sure the client is pressing the HFL TALK button and not the HFL BACK button or the navigation buttons.

Outgoing Calls

If a client says that they cannot place a call using the HFL system, ask if the call was initiated through the HFL system or the cell phone itself.

If the call is placed by the HFL system:

1. Make sure the Bluetooth feature is turned on in the cell phone.
2. Make sure the cell phone is paired to the HFL system and linked.
3. Make sure the client is pressing the HFL TALK button before each command and going through the calling process correctly.
4. Make sure the client is pressing the HFL TALK button and not the HFL BACK button or the navigation buttons.
5. Check if the cell phone has an Authorized Connections or Trusted option.
6. Do a soft reset to the cell phone.

If the call is placed by the cell phone:

The call will remain on the handset until you transfer it over to the HFL system. To continue the call on the HFL system, you must use the Transfer command by pressing and releasing the HFL TALK button during an active call and saying ''Transfer.'' The client can now continue the call using the HFL system.

Clearing the HFL System

NOTE:
- This operation clears the HFL system of all passcode(s), any paired phones, and all names in the HFL phonebook.
- Clearing the HFL system is recommend before selling the vehicle.
- If the system is locked and the pass code is lost or forgotten, see the symptom troubleshooting.

1. Press and release the HFL TALK button. After the beep, say ''System clear'' and the HFL system responds, ''This process will clear all paired phone, clear all entries in the phonebook, clear the passcode and restore all defaults in the system setup. Is this what you would like to do?''
2. Press and release the HFL TALK button. After the beep, say ''Yes'' and the HFL system responds, ''Preparing to clear all paired phone, all phonebook entries, the passcode. This may take up to 2 minutes to complete''.
3. Press and release the HFL TALK button. After the beep, say ''OK'' to proceed, or say ''Go back'' or ''Cancel''.
4. If you said ''OK'', after a short period of time, the HFL system responds, ''System has been cleared. Returning to the main menu, the Clearing HFL system procedure is now complete''.

(cont'd)

General Troubleshooting Information (cont'd)

Self-diagnostic Function

NOTE: This procedure should be used only if HDS is unavailable.

To run the self-diagnostic function, do the following:

1. Turn the ignition switch to ON (II).
2. Press and hold the HFL BACK button for more than 5 seconds.
3. When the HandsFreeLink system enters the self-diagnostic function, the following will occur.
   - If the system has not completed testing for DTCs, the HandsFreeLink system says ''The hands free system test is in progress''.
   - If there is no DTC, the HandsFreeLink system says ''The hands free system is OK''.
   - If there is any DTC, the HandsFreeLink system says ''The hands free system needs to be serviced''.

NOTE:
- The self-diagnostic function can only be initiated while the HFL is in its idle state.
- The self-diagnostic function is considered start once the 5 seconds press and hold is detected, and ends when the units returns to idle state.

Glossary of Terms

Auto Answer

This cell phone setting forces incoming calls to automatically be answered by the handset. Disable this feature on the phone when using the HFL system, as it may interfere with the HFL system answering incoming calls. Set the phone setting to:

- Send Key
- Any Key
- Multi Key answer

Answer Options

These cell phone settings allow you to select how you would like to answer an incoming call on the handset. The answer option in the phone can affect inbound calls on the HFL system.

Authorized Connection

This cell phone setting allows the phone to connect automatically with the HFL system without prompting the client for permission to connect. In some instances, it can affect the ability of the phone to properly route sound to the HFL system.

Bluetooth Power

This cell phone function enables or disables the Bluetooth application. When using a hands-free device such as HFL, the Bluetooth application needs to be enabled.

Discovery Mode

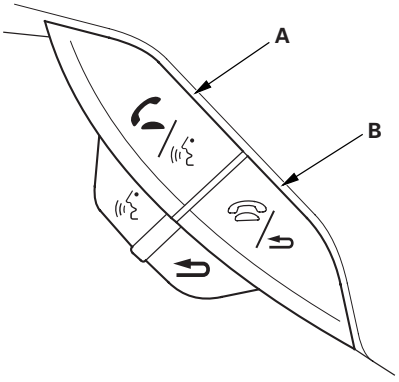
You need to have the cell phone in Discovery Mode to allow other devices with Bluetooth capabilities (such as the HFL system) to find the phone during the pairing process.

Downloaded Ringtones

A client gets these ringtones from an outside source, such as the internet or a mobile phone store.

HFL Buttons

- HFL TALK button (A): Use this button on the steering wheel to give commands. Press the button before a voice command is given.
- HFL BACK button (B): Use this button on the steering wheel to end a call or return to a previous prompt in the HFL menu. Pressing the button twice or holding it down returns you to the HFL main menu.



Hard Reset

Hard resets clear the saved settings in the cell phone and restores it to the factory defaults. A hard reset should be done only as a last resort (see the sell phone owner's manual for more information).

Linking

This is when your paired phone is actively ready to use the HFL system. You can pair up to six phones to the HFL system, but only one phone can be linked at a time. If two paired phones are in the vehicle, only the phone that is linked can use the HFL system and functions. The second phone must be used as a normal handset.

Pairing

A description for linking two Bluetooth devices together. In this case, you are linking a cell phone with the HFL system. After the pairing process is complete, the devices are able to recognize each other and communicate wirelessly via Bluetooth.

Soft Reset (cellular phone)

This helps to restore the basic functions of the phone. To do a soft reset, turn the phone power off, remove and reinsert the cell phone battery, then turn the phone back on.

Software Version

This refers to the software version loaded in the cell phone. The software version that was tested and determined to be compatible with the HFL system may be listed on the HFL website. Not all software versions are compatible with the HFL system.

Standard Ringtone

These ringtones come factory-installed on the cell phone.

DTC Troubleshooting Index

HandsFreeLink Control Unit

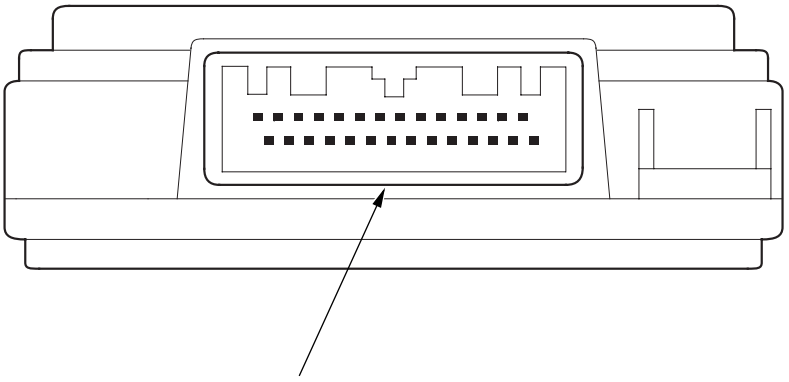
DTC	Description	DTC type	Page
B1750	Communication bus line error (Bus-off)	Loss of communication	(see page 22-107)
B1775	Microphone input/output short to power/open	Signal error	(see page 23-376)
B1776	Microphone input/output short to ground/open	Signal error	(see page 23-377)
B1779	HFL switch (HFL TALK/HFL BACK buttons) circuit open/short	Signal error	(see page 23-379)
B1780	HFL switch (HFL TALK/HFL BACK buttons) circuit short	Signal error	(see page 23-381)
B1792	HandsFreeLink control unit internal error	Internal error	(see page 23-382)

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
HFL does not respond	Control Unit Input Test (see page 23-388)	Check and repair all CAN related DTCs
The Bluetooth icon in the navigation display is grayed-out	There is no HFL-compatible phone paired to the vehicle. Pair an approved HFL-compatible phone to the vehicle	The phone must be on the Honda list of approved Bluetooth phones and configured correctly. For a current list of approved phones, go to www.acura.com/handsfreelink, or call 888-528-7876 for further assistance. Check the Diagnostic Menu and use the Navi System Link
The Honda approved Bluetooth phone is having problems pairing to the vehicle	HFL System Troubleshooting (see page 23-373)	The phone must be on the Honda list of approved Bluetooth phones and configured correctly. For a current list of approved phones, go to www.acura.com/handsfreelink, or call 888-528-7876 for further assistance. Check the Diagnostic Menu and use the Navi System Link
The Honda approved Bluetooth phone cannot use all its functions	HFL System Troubleshooting (see page 23-373)	The phone must be on the Honda list of approved Bluetooth phones and configured correctly. For a current list of approved phones, go to www.acura.com/handsfreelink, or call 888-528-7876 for further assistance. Check the Diagnostic Menu and use the Navi System Link
The Honda approved Bluetooth phone does not place or receive calls using the HFL system	HFL System Troubleshooting (see page 23-373)	The phone must be on the Honda list of approved Bluetooth phones and configured correctly. For a current list of approved phones, go to www.acura.com/handsfreelink, or call 888-528-7876 for further assistance. Check the Diagnostic Menu and use the Navi System Link
The client wants the HFL system reset (all phones and address information cleared from the HFL system)	Clearing the system (see page 23-367)	See the owner's manual for additional information.
The HFL system is locked and the pass code has been lost or forgotten	Symptom Troubleshooting (see page 23-383)	
The HFL system does not recognize all voice prompts	Symptom Troubleshooting (see page 23-382)	Also see Voice control tips.
The address book does not transfer from Honda approved Bluetooth phone to HFL system	There is no HFL compatible phone paired to the vehicle or the approved phone does not support the function. Pair an approved HFL compatible phone to the vehicle.	The phone must be on the Honda list of approved Bluetooth phones and configured correctly. For a list of approved phones, go to www.acura.com/handsfreelink, or call 888-528-7876.
The HFL messages cannot be heard or are weak	Symptom Troubleshooting (see page 23-383)	Excessive interior noise (open windows, vents blowing on microphone, etc.).
The Bluetooth icon does not display (the Bluetooth phone is linked)	Symptom Troubleshooting (see page 23-386)	

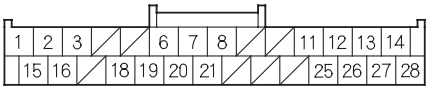
System Description

HandsFreeLink Control Unit Inputs and Outputs



HANDSFREELINK CONTROL UNIT 28P CONNECTOR

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Cavity	Wire Color	Connect to
1	BLK	Body ground to G501 (GND)
2	BLU	HFL switch (HFL STRG SW)
3	LT BLU	Navigation unit (HFL MUTE)
6	WHT	Navigation unit (HFL/NAVI COMM4)
7	RED	Navigation unit (HFL/NAVI COMM3)
8	GRY*	Shield for terminals No. 6, No. 7, No. 20, and No. 21 (HFL/NAVI COMM SH)
11	BLU	Navigation unit (TELM SIG+)
12	GRY*	Shield for terminals No. 13 and No. 14 (MIC SH)
13	YEL	HFL-navigation microphone (MIC+)
14	BRN	HFL-navigation microphone (MIC−)
15	WHT	No. 23 (10 A) fuse in the under-dash fuse/relay box (+B)
16	PUR	No. 35 (7.5 A) fuse in the under-dash fuse/relay box (ACC)
18	PNK	B-CAN communication (B-CAN)
19	LT GRN	Navigation unit (HFL icon)
20	BLK	Navigation unit (HFL/NAVI COMM1)
21	GRN	Navigation unit (HFL/NAVI COMM2)
25	PNK	Navigation unit (TELM SIG−)
26	GRY*	Shield for terminals No. 11 and No. 25 (TELM SIG SH)
27	GRN	Navigation unit (MIC SIG+)
28	RED	Navigation unit (MIC SIG−)

*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.

HFL System Troubleshooting

NOTE:
- You must be able to duplicate the client's concern to successfully diagnose the problem.
- Always use the client's phone.
- Make sure the phone is approved and configured correctly. Online, go to www.acura.com/handsfreelink, or call the HFL support desk at 888-528-7876.

1. Connect the HDS to the DLC.

2. Turn the ignition switch to ON (II).

3. Check for DTCs.

   Are any DTCs indicated?

   YES—Repair the indicated DTCs and recheck. ■

   NO—Go to step 4.

4. Try to duplicate the problem.

   Can you duplicate the problem?

   YES—Go to step 5.

   NO—The system is OK at this time. ■

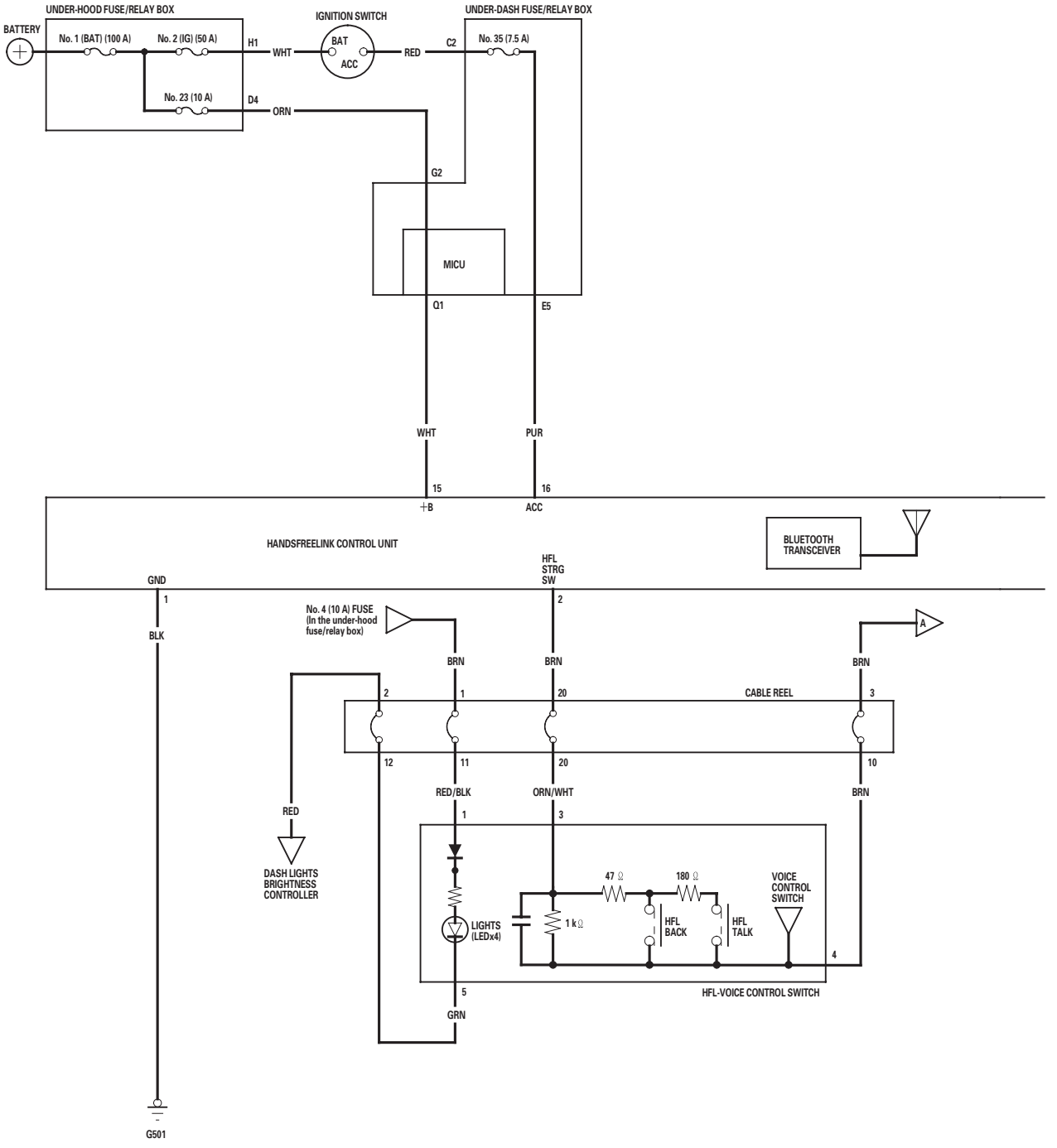
5. Pair the phone to a known-good vehicle (same model, year, and trim), and try duplicate the problem.

   Does the phone have the same problem on the known-good vehicle?

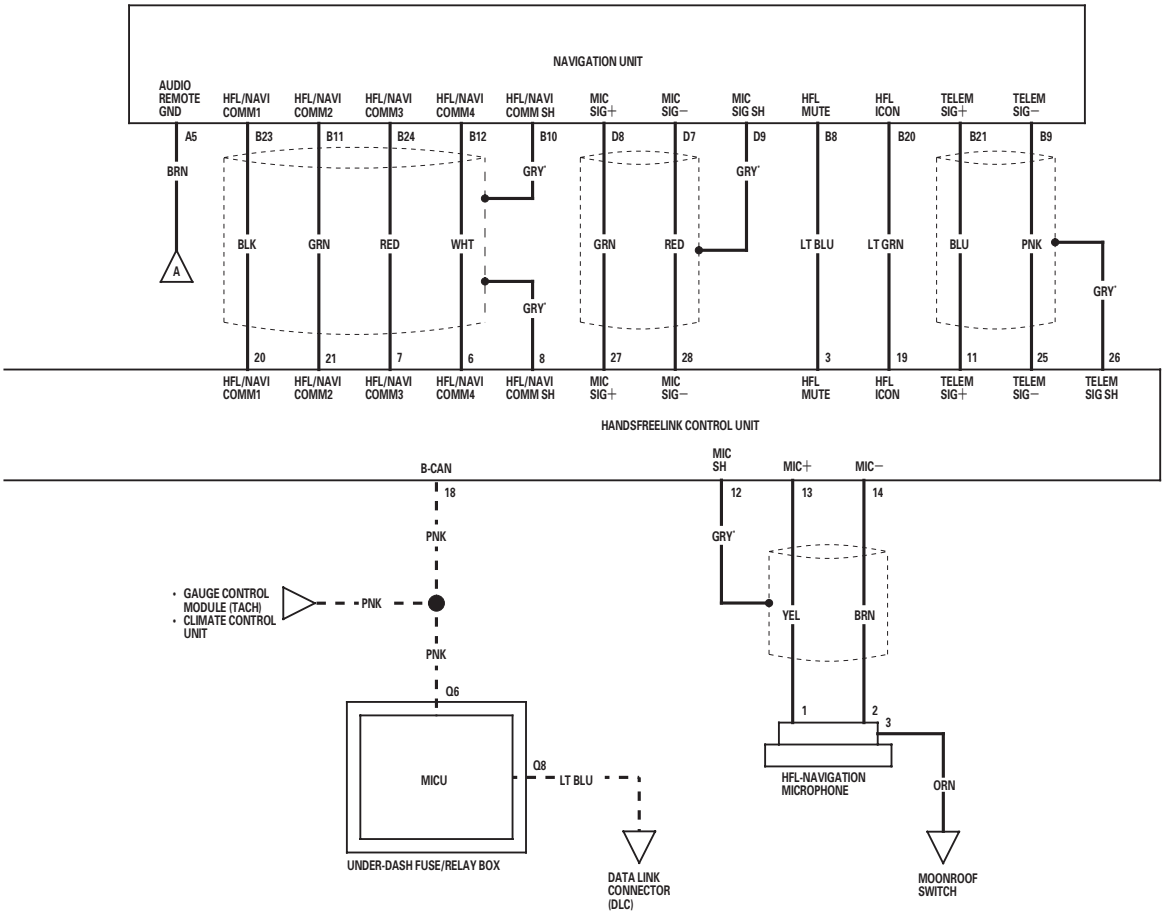
   YES—Call the HFL support desk at 888-528-7876 to make sure the phone is configured correctly and has the correct software. If the phone is configured correctly, it is either a characteristic of the HFL system, or a characteristic of the particular approved phone being used. Explain to your client that this is a system characteristic. Another phone from the approved phone list may give more favorable results. ■

   NO—Substitute a known-good HandsFreeLink control unit and recheck. If the problem goes away, replace the original HandsFreeLink control unit. ■

Circuit Diagram



*: The shielded wires have a heat-shrunk tube insulating the outside of the wire. The color of the insulating tube, typically black or dark gray, may not match the color of the wire listed on the schematic.
- - - - : CAN line
- - - - : Shielding



DTC Troubleshooting

DTC B1775: Microphone Input/Output Short to Power/Open

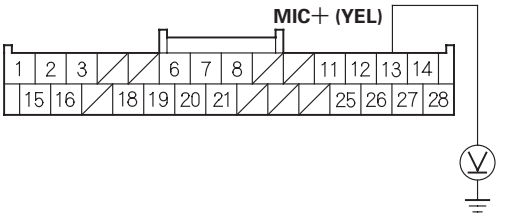
1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), then turn it to ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1775 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Turn the ignition switch to LOCK (0).
5. Disconnect the HandsFreeLink control unit 28P connector.
6. Disconnect the HFL-navigation microphone 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between HandsFreeLink control unit 28P connector terminal No. 13 and body ground.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

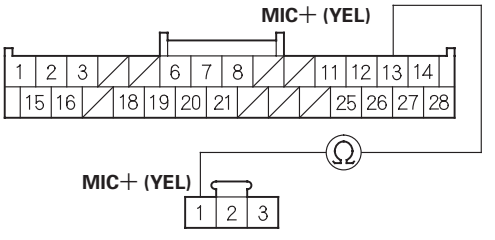
Is there voltage?

YES—Short to power in the wire between the HandsFreeLink control unit and the HFL-navigation microphone. Replace the affected shielded harness. ■

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 13 and the HFL-navigation microphone 3P connector terminal No. 1.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR
Wire side of female terminals



HFL-NAVIGATION MICROPHONE 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 11.

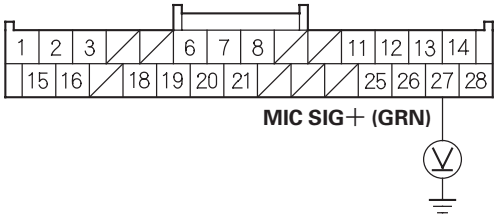
NO—Open in the wire between the HandsFreeLink control unit and the HFL-navigation microphone. Replace the affected shielded harness. ■

11. Disconnect navigation unit connector D (12P).

12. Turn the ignition switch to ON (II).

13. Measure the voltage between HandsFreeLink control unit 28P connector terminal No. 27 and body ground.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Short to power in the wire between the HandsFreeLink control unit and the navigation unit. Replace the affected shielded harness. ■

NO—Substitute a known-good microphone (see page 23-358), then recheck. If the symptom goes away, replace the original HFL-navigation microphone. ■

DTC B1776: Microphone Input/Output Short to Ground/Open

1. Clear the DTCs with the HDS.

2. Turn the ignition switch to LOCK (0), then turn it to ON (II).

3. Check for DTCs with the HDS.

   Is DTC B1776 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■

4. Turn the ignition switch to LOCK (0).

5. Disconnect the HandsFreeLink control unit 28P connector.

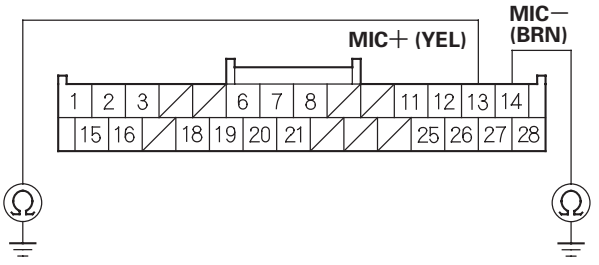
6. Disconnect the HFL-navigation microphone 3P connector.

(cont'd)

DTC Troubleshooting (cont'd)

7. Check for continuity between body ground and HandsFreeLink control unit 28P connector terminals No. 13 and No. 14 individually.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

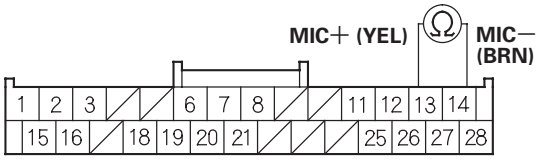
Is there continuity?

YES—Short to body ground in the wire(s) between HandsFreeLink control unit and HFL-navigation microphone. Replace the affected shielded harness. ■

NO—Go to step 8.

8. Check for continuity between HandsFreeLink control unit the 28P connector terminal No. 13 and No. 14.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Is there continuity?

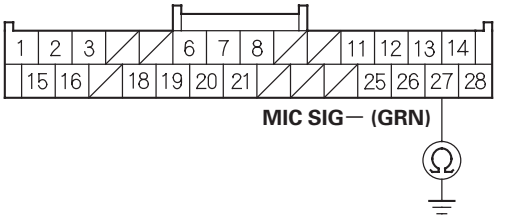
YES—Short in the wire(s) between the HandsFreeLink control unit and HFL-navigation microphone. Replace the affected shielded harness. ■

NO—Go to step 9.

9. Disconnect navigation unit connector D (12P).

10. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 27 and body ground.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Short to body ground in the wire(s) between the HandsFreeLink control unit and the navigation unit. Replace the affected shielded harness. ■

NO—Substitute a known-good navigation unit (see page 23-355), then recheck. If the symptom goes away, replace the original navigation unit (see page 23-355). ■

DTC B1779: HFL Switch (HFL TALK/HFL BACK Buttons) Circuit Open/Short

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), then start the vehicle, and turn the steering wheel back and forth several times.
3. Check for DTCs with the HDS.

   Is DTC B1779 indicated?

   YES—Go to step 4.

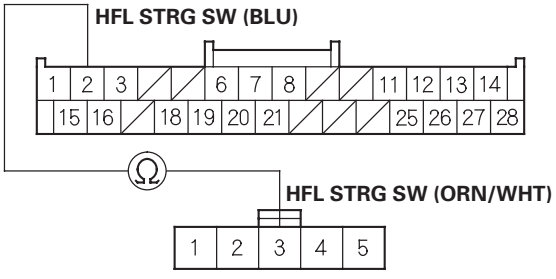
   NO—Intermittent failure, the system is OK at this time. ■
4. Turn the ignition switch to LOCK (0).
5. Do the HFL switch test (see page 23-387).

   Is the switch OK?

   YES—Go to step 6.

   NO—Replace the HFL-voice control switch (see page 23-357). ■
6. Disconnect the HandsFreeLink control unit 28P connector.
7. Disconnect the HFL-voice control switch 5P connector.
8. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 2 and the HFL-voice control switch 5P connector terminal No. 3.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR
Wire side of female terminals



HFL-VOICE CONTROL SWITCH 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the switch, the cable reel, and the HandsFreeLink control unit. ■

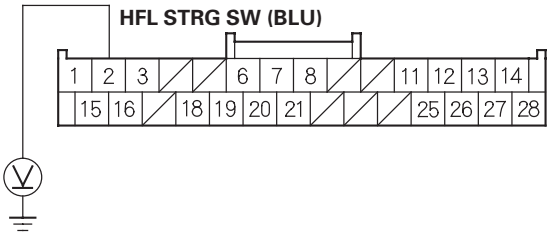
(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to ON (II).

10. Measure the voltage between HandsFreeLink control unit 28P connector terminal No. 2 and body ground.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wire between the HandsFreeLink control unit and the HFL-voice control switch. ■

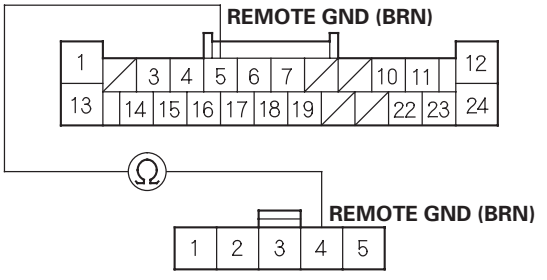
NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).

12. Disconnect navigation unit connector A (24P).

13. Check for continuity between navigation unit connector A (24P) terminal No. 5 and HFL-voice control switch 5P connector terminal No. 4.

NAVIGATION UNIT CONNECTOR A (24P)
Wire side of female terminals



HFL-VOICE CONTROL SWITCH 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Replace the HandsFreeLink control unit. ■

NO—Repair open in the wire between the switch, the cable reel, and the navigation unit . ■

DTC B1780: HFL Switch (HFL TALK/HFL BACK Buttons) Circuit Short

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), then start the vehicle, and turn the steering wheel back and forth several times.
3. Check for DTCs with the HDS.

   Is DTC B1780 indicated?

   YES—Go to step 4.

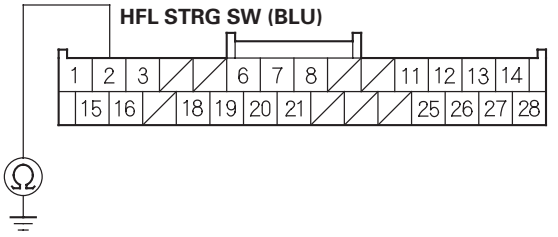
   NO—Intermittent failure, the system is OK at this time. ■
4. Turn the ignition switch to LOCK (0).
5. Do the HFL switch test (see page 23-387).

   Is the switch OK?

   YES—Go to step 6.

   NO—Replace the HFL-voice control switch (see page 23-357). ■
6. Disconnect the HandsFreeLink control unit 28P connector.
7. Disconnect the HFL-voice control switch 5P connector.
8. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 2 and body ground.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the HandsFreeLink control unit and the HFL-voice control switch. ■

NO—Replace the HandsFreeLink control unit (see page 23-388). ■

DTC Troubleshooting (cont'd)

DTC B1792: HandsFreeLink Control Unit Internal Error

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), then turn it to ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1792 indicated?

   YES—Replace the HandsFreeLink control unit. ■

   NO—Intermittent failure, the system is OK at this time. ■

Symptom Troubleshooting

The HFL system does not recognize all voice prompts

1. Connect the HDS to the DLC.
2. Clear the DTCs with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II).
4. Check for DTCs.

   Are there any DTCs indicated?

   YES—Repair the indicated DTCs. ■

   NO—Go to step 5.

5. Check if the problem is duplicated.

   Can the client's problem be duplicated?

   YES—Go to step 6.

   NO—The system is OK at this time. Ask the customer to demonstrate the problem. ■

6. Check if the navigation system can recognize voice prompts.

   Can the voice prompts be recognized?

   YES—Go to step 7.

   NO—Refer to the navigation system troubleshooting (see page 23-342). ■

7. Pair the client's phone to a known-good vehicle and try to duplicate the problem.

   Can you duplicate the problem?

   YES—Call the HFL support desk at 888-528-7876, and inquire if there are any known issues for the problem. If there are no known issues, explain to the client's this is a system characteristic and cannot be improved at this time. ■

   NO—Substitute a known-good HFL-navigation microphone (see page 23-358). If the problem is still present, substitute a known-good HandsFreeLink control unit (see page 23-388). If the problem goes away, replace the original HFL-navigation microphone. ■

DTC Troubleshooting (cont'd)

DTC B1792: HandsFreeLink Control Unit Internal Error

1. Clear the DTCs with the HDS.
2. Turn the ignition switch to LOCK (0), then turn it to ON (II).
3. Check for DTCs with the HDS.

   Is DTC B1792 indicated?

   YES—Replace the HandsFreeLink control unit. ■

   NO—Intermittent failure, the system is OK at this time. ■

Symptom Troubleshooting

The HFL system does not recognize all voice prompts

1. Connect the HDS to the DLC.
2. Clear the DTCs with the HDS.
3. Turn the ignition switch to LOCK (0), then turn it to ON (II).
4. Check for DTCs.

   Are there any DTCs indicated?

   YES—Repair the indicated DTCs. ■

   NO—Go to step 5.

5. Check if the problem is duplicated.

   Can the client's problem be duplicated?

   YES—Go to step 6.

   NO—The system is OK at this time. Ask the customer to demonstrate the problem. ■

6. Check if the navigation system can recognize voice prompts.

   Can the voice prompts be recognized?

   YES—Go to step 7.

   NO—Refer to the navigation system troubleshooting (see page 23-342). ■

7. Pair the client's phone to a known-good vehicle and try to duplicate the problem.

   Can you duplicate the problem?

   YES—Call the HFL support desk at 888-528-7876, and inquire if there are any known issues for the problem. If there are no known issues, explain to the client's this is a system characteristic and cannot be improved at this time. ■

   NO—Substitute a known-good HFL-navigation microphone (see page 23-358). If the problem is still present, substitute a known-good HandsFreeLink control unit (see page 23-388). If the problem goes away, replace the original HFL-navigation microphone. ■

The HFL system is locked and the pass code has been lost or forgotten

1. Connect the HDS to the DLC.
2. Turn the ignition switch to ON (II).
3. From the Body Electrical menu, select HandsFreeLink.
4. Select Miscellaneous Tests, then select Pass code reset.
5. Follow the HDS prompts to reset the pass code.

HFL message cannot be heard or are weak

1. Turn the ignition switch to ON (II).
2. Check that the audio system is operating normally, and the speaker sound levels from different audio sources (AM/FM, CDs, etc.).

   Does the audio system work normally, and is the audio output from the speaker normal when playing various audio sources?

   YES—Go to step 3.

   NO—Refer to the audio system symptom troubleshooting. ■
3. Check the navigation voice recognition system.

   Does the voice recognition system work properly?

   YES—Go to step 4.

   NO—Refer to the navigation system troubleshooting. ■
4. Check the audio system when HFL messages are played.

   Dose the audio system mute when HFL messages are being played?

   YES—Go to step 5.

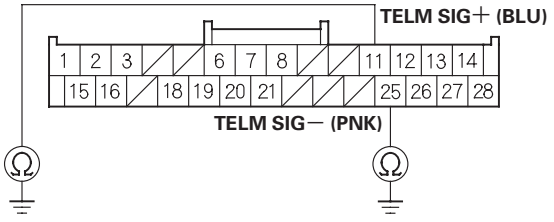
   NO—Go to step 10.
5. Turn the ignition switch to LOCK (0).
6. Disconnect navigation unit connector B (24P) and the HandsFreeLink control unit 28P connector.

(cont'd)

Symptom Troubleshooting (cont'd)

7. Check for continuity between body ground and HandsFreeLink control unit 28P connector terminal No. 11 and No. 25 individually.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Is there continuity?

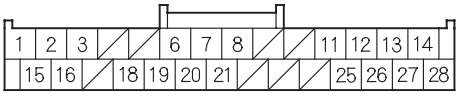
YES—Short to body ground in the wire(s) between the HandsFreeLink control unit and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 8.

8. Check for continuity between terminals of the HandsFreeLink control unit 28P connector according to the table.

From terminal	To terminals
11 (BLU)	25 (PNK), 26 (GRY)
25 (PNK)	26 (GRY)

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

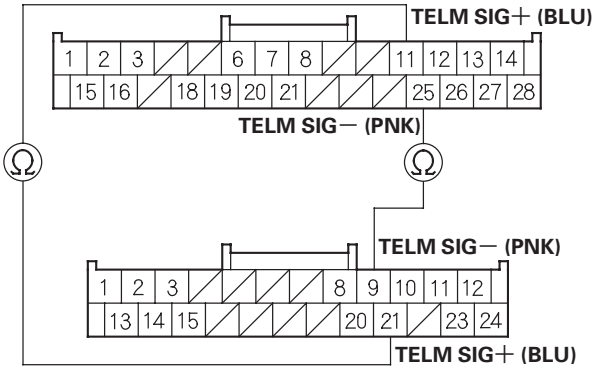
Is there continuity between any of the terminals?

YES—Short in the wire(s) between the HandsFreeLink control unit and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 9.

9. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 11 and No. 25 and navigation unit connector B (24P) terminal No. 21 and No. 9.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR B (24P)
Wire side of female terminals

Is there continuity?

YES—Substitute a known-good HandsFreeLink control unit (see page 23-388), and recheck. If the symptom/indication goes away, replace the original HandsFreeLink control unit. If the symptom/indication is still present, replace the navigation unit (see page 23-355). ■

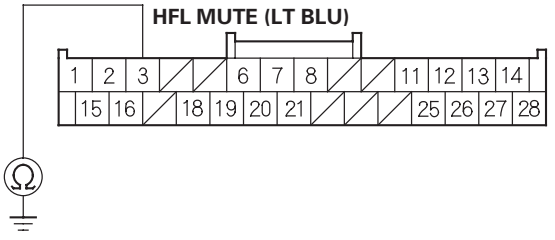
NO—Open in the wire(s) between HandsFreeLink control unit and the navigation unit. Replace the affected shielded harness. ■

10. Turn the ignition switch to LOCK (0).

11. Disconnect navigation unit connector B (24P) and the HandsFreeLink control unit 28P connector.

12. Check for continuity between body ground and HandsFreeLink control unit 28P connector terminal No. 3.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the HandsFreeLink control unit and the navigation unit. ■

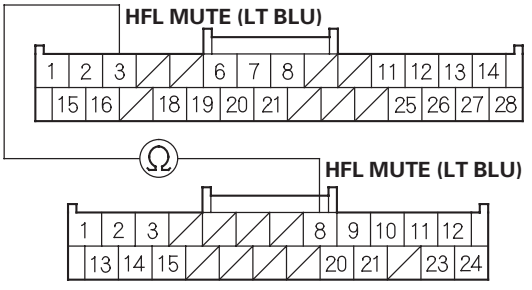
NO—Go to step 13.

(cont'd)

Symptom Troubleshooting (cont'd)

13. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 3 and navigation unit connector B (24P) terminal No. 8.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR B (24P)
Wire side of female terminals

Is there continuity?

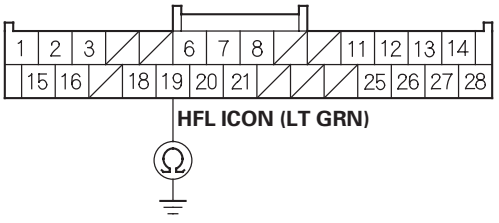
YES—Substitute a known-good HandsFreeLink control unit (see page 23-388), and recheck. If the symptom/indication goes away, replace the original HandsFreeLink control unit. If the symptom/indication is still present, replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between HandsFreeLink control unit and the navigation unit. ■

The Bluetooth icon does not display (the Bluetooth phone is linked)

1. Turn the ignition switch to ON (II).
2. Disconnect navigation unit connector B (24P) and the HandsFreeLink control unit 28P connector.
3. Check for continuity between body ground and HandsFreeLink control unit 28P connector terminal No. 19.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR



Wire side of female terminals

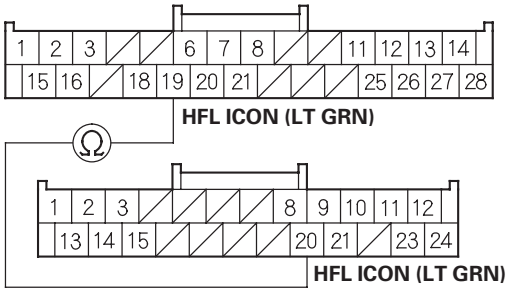
Is there continuity?

YES—Repair short to body ground in the wire between the HandsFreeLink control unit and the navigation unit. ■

NO—Go to step 4.

4. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 19 and navigation unit connector B (24P) terminal No. 20.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR B (24P)
Wire side of female terminals

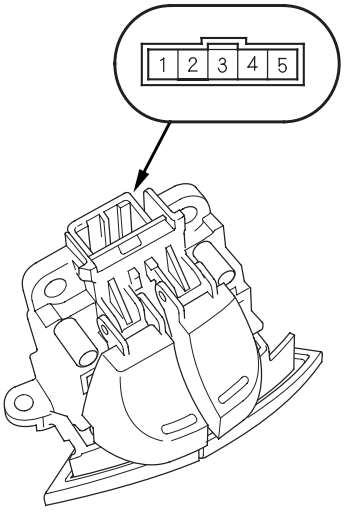
Is there continuity?

YES—Substitute a known-good HandsFreeLink control unit (see page 23-388) and recheck. If the symptom/indication goes away, replace the original HandsFreeLink control unit. If the symptom /indication is still present, replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between HandsFreeLink control unit and navigation unit. ■

HFL Switch Test

1. Remove the HFL-voice control switch (see page 23-357).



2. Measure resistance between the terminals No. 3 and No. 4 in each switch position according to the table.

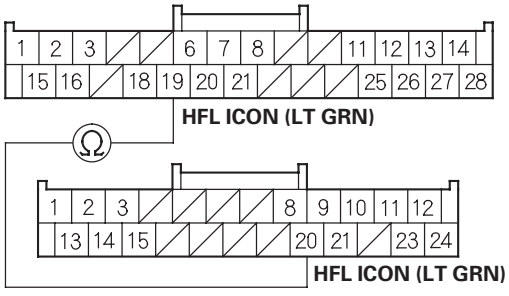
HFL Switch

Position	Resistance
No button pressed	About 1 kΩ
HFL Talk button pressed	About 185 Ω
HFL Back button pressed	About 45 Ω

3. If the resistance is not as specified, replace the HFL-voice control switch.

4. Check for continuity between HandsFreeLink control unit 28P connector terminal No. 19 and navigation unit connector B (24P) terminal No. 20.

HANDSFREELINK CONTROL UNIT 28P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR B (24P)
Wire side of female terminals

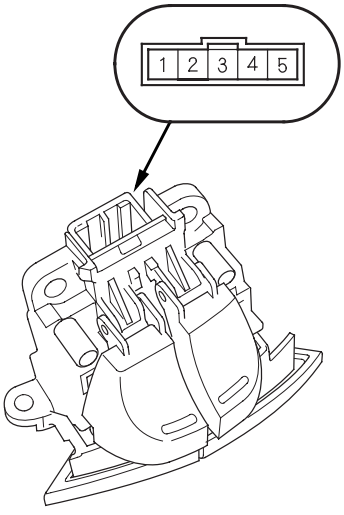
Is there continuity?

YES—Substitute a known-good HandsFreeLink control unit (see page 23-388) and recheck. If the symptom/indication goes away, replace the original HandsFreeLink control unit. If the symptom /indication is still present, replace the navigation unit (see page 23-355). ■

NO—Repair open in the wire between HandsFreeLink control unit and navigation unit. ■

HFL Switch Test

1. Remove the HFL-voice control switch (see page 23-357).



2. Measure resistance between the terminals No. 3 and No. 4 in each switch position according to the table.

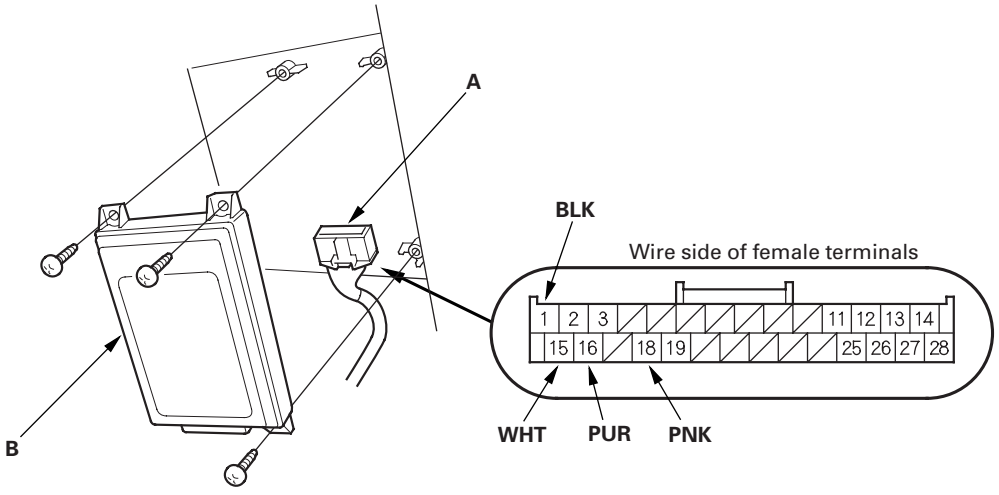
HFL Switch

Position	Resistance
No button pressed	About 1 kΩ
HFL Talk button pressed	About 185 Ω
HFL Back button pressed	About 45 Ω

3. If the resistance is not as specified, replace the HFL-voice control switch.

Control Unit Input Test/Replacement

1. Remove the center console (see page 20-92).
2. Remove the console lower box (see page 20-95).
3. Disconnect the 28P connector (A) from the HandsFreeLink control unit (B).



4. Inspect the connector and socket terminals for a good pinfit to be sure they are all making good contact.
   - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
   - If the terminals look OK, go to step 5.
5. Reconnect the connector and make these input tests at the connector.
   - If any test indicates a problem, find and correct the cause, then recheck the system.
   - If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for voltage to ground: There should be less than 0.5 V.	• Poor ground (G501) • An open in the wire
15	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	• Blown No. 23 (10 A) fuse in the under-hood fuse/relay box • An open in the wire
16	PUR	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	• Blown No. 35 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire

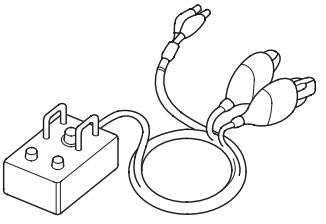
6. Disconnect the 28P connector again, and make this input test at the connector.
   - If the test indicates a problem, find and correct the cause, then recheck the system.
   - If the input test proves OK, the HandsFreeLink control unit must be faulty, replace it.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
18	PNK	Under all conditions	Check for continuity between No. 18 terminal and the driver's under-dash fuse/relay box connector Q (16P) terminal No. 6: There should be continuity.	An open in the wire
		Driver's under-dash fuse/relay box connector Q (16P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

Restraints

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07HAZ-SG00500	Deployment Tool	1
②	07SAZ-TB4011A	SRS Inflator Simulator	1
③	070AZ-SNAA100	SRS Simulator Lead J	1
④	07TAZ-001020A	Backprobe Adapter, 17 mm	2
⑤	070AZ-SNAA200	SRS Simulator Lead K	1
⑥	070AZ-SNAA300	SRS Simulator Lead L	1
⑦	070AZ-SAA0100	SRS Short Canceller	2
⑧	07744-0010300	Pin Driver, 3.5 mm	1
⑨	07PAZ-001010A	SCS Service Connector	1



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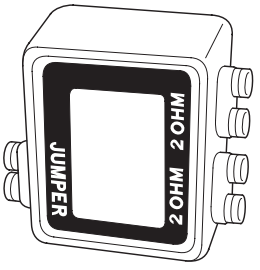

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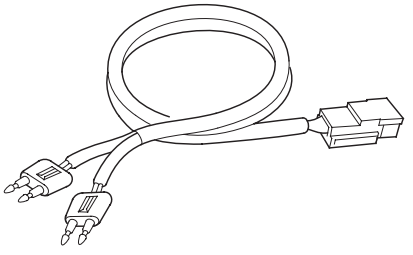

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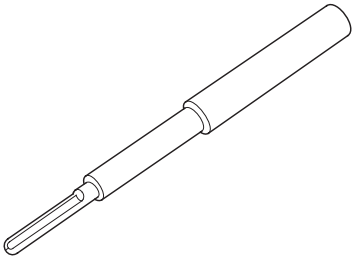

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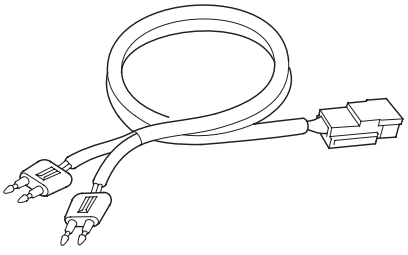

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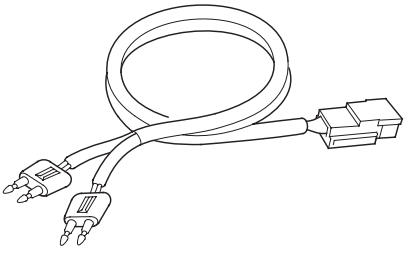

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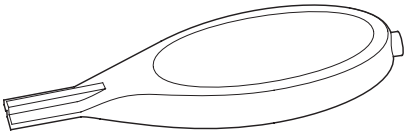

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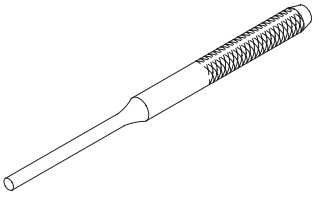

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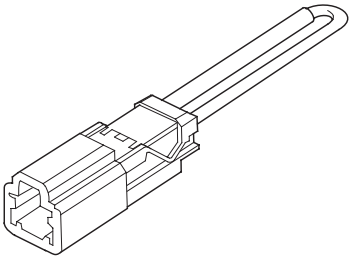

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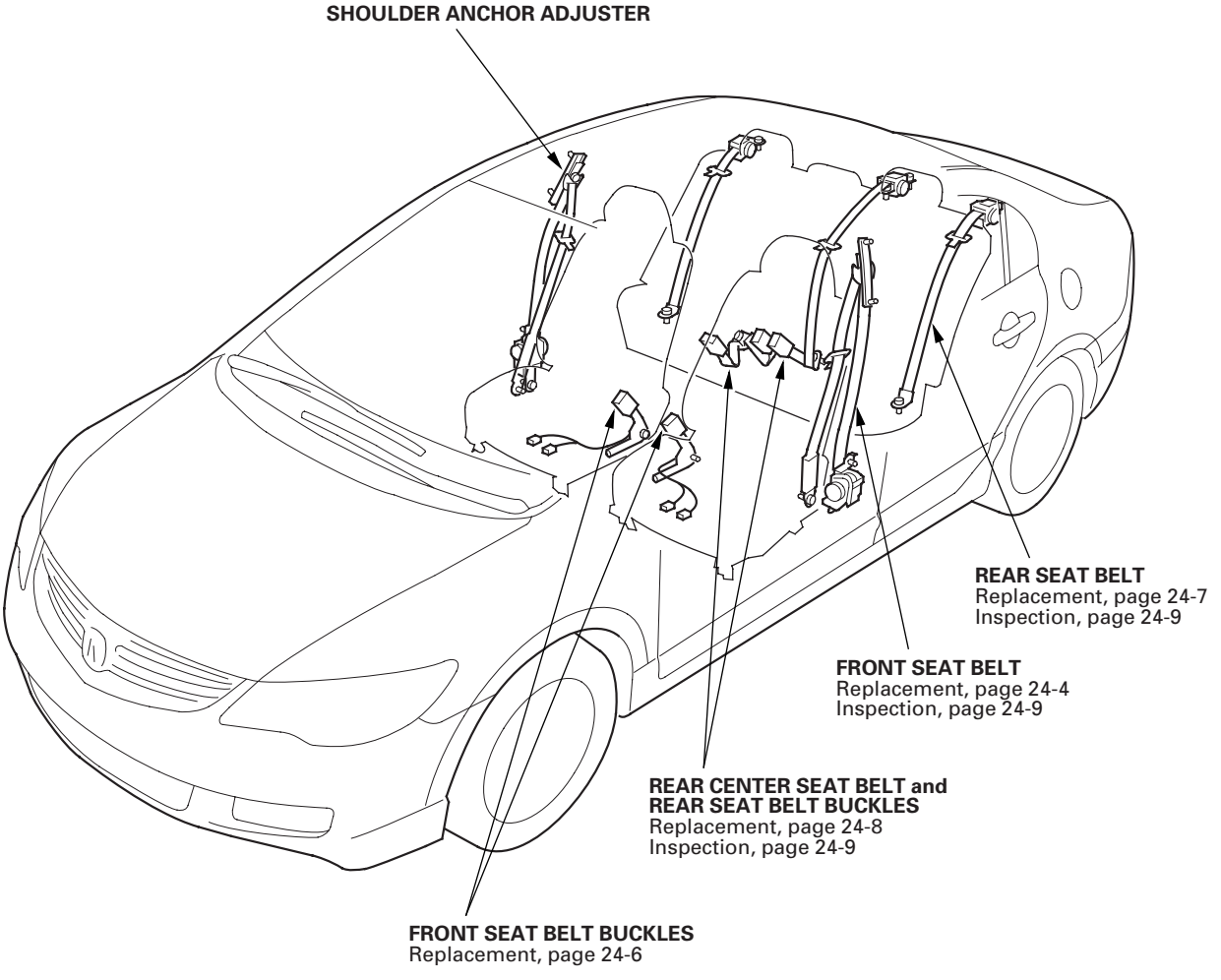
Component Location Index



Front Seat Belt Replacement

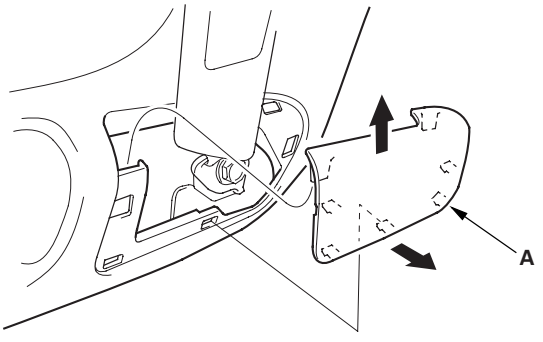
Front Seat Belt

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

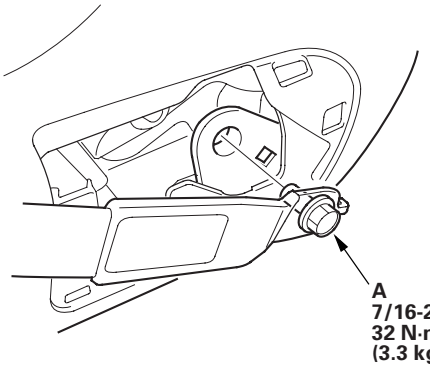
NOTE:
- Check the front seat belts for damage (see page 24-9), and replace them if necessary.
- If replacing the front seat belt after deployment, refer to Component Replacement/Inspection After Deployment (see page 24-185) for a complete list of other parts that must also be replaced.

1. Do the battery terminal disconnection procedure (see page 22-68), and wait at least 3 minutes before beginning work.

2. Slide the front seat forward fully, and remove the anchor cover (A).



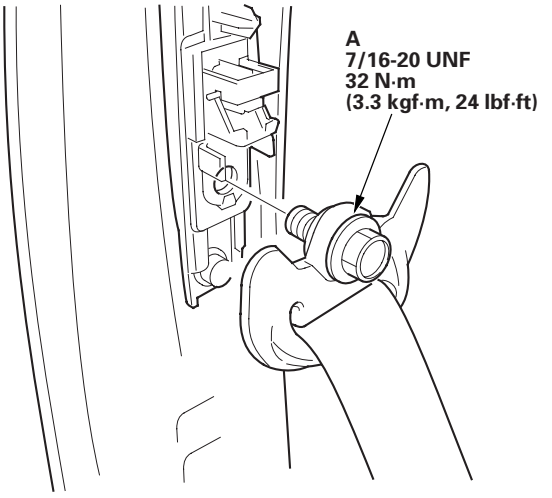
3. Remove the lower anchor bolt (A).



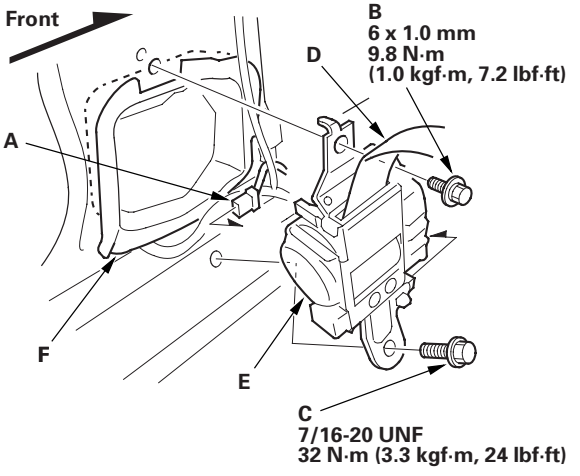
4. Remove the B-pillar lower trim (see page 20-72).

5. Remove the B-pillar upper trim and slider (see page 20-72).

6. Remove the upper anchor bolt (A).

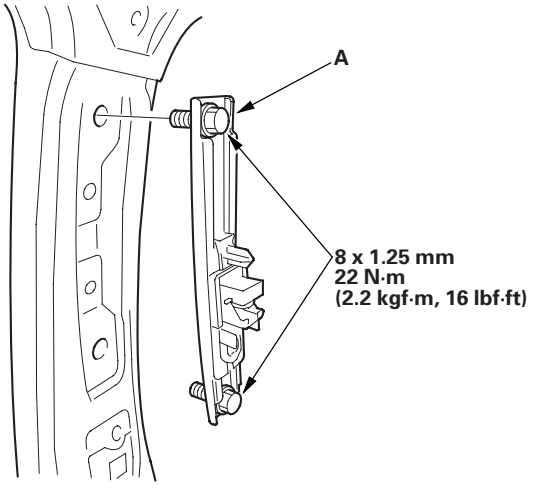


7. Disconnect the seat belt tensioner connector (A). Remove the upper retractor mounting bolt (B) and the lower retractor bolt (C), then remove the front seat belt (D) and retractor (E).



8. If necessary, remove the front seat belt protector (F).

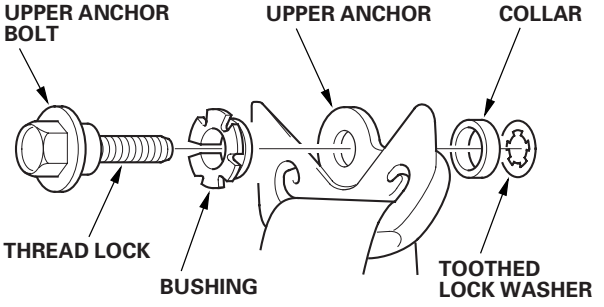
9. Remove the shoulder anchor adjuster (A).



10. Install the seat belt in the reverse order of removal, and note these items:

- Apply medium strength liquid thread lock to the anchor bolts before reinstallation.
- Tighten the bolts by hand first, then tighten to the specification with a torque wrench.
- Check that the retractor locking mechanism functions as described (see page 24-9).
- Assemble the washer, collar, and bushing on the upper anchor bolt as shown.
- If the seat belt tensioner has been deployed, replace the front seat belt protector with a new one.
- Before installing the anchor bolts, make sure there are no twists or kinks in the seat belt.
- Make sure the seat belt tensioner connector is properly plugged in.
- Check for any DTCs that may have been set during repairs, and clear them using the HDS.
- Do the battery terminal reconnection procedure (see page 22-68).

Upper anchor bolt installation



(cont'd)

Front Seat Belt Replacement (cont'd)

Front Seat Belt Buckle

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

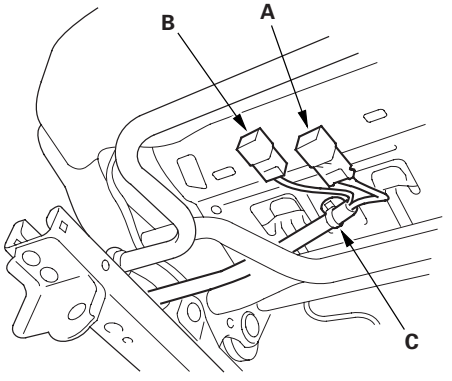
NOTE: If replacing the front seat belt after deployment, refer to Component Replacement/Inspection After Deployment (see page 24-185) for a complete list of other parts that must also be replaced.

1. Do the battery terminal disconnection procedure (see page 22-68), and wait at least 3 minutes before beginning work.

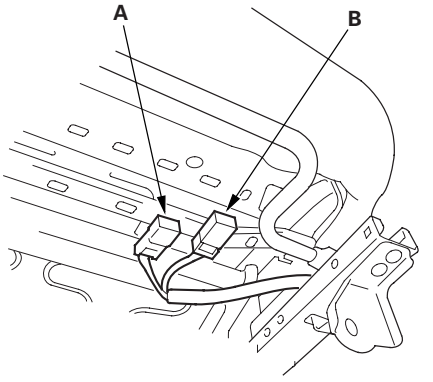
2. Remove the front seat (see page 20-118).

3. Lift up the front seat, then detach the seat belt switch connector (A) and seat belt buckle tensioner connector (B), and on the driver's seat, detach the harness clip (C).

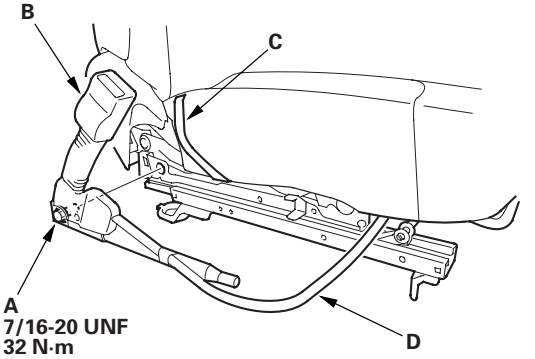
Driver's seat



Passenger's seat



4. Remove the center anchor bolt (A), then remove the seat belt buckle (B) from the elastic band (C).

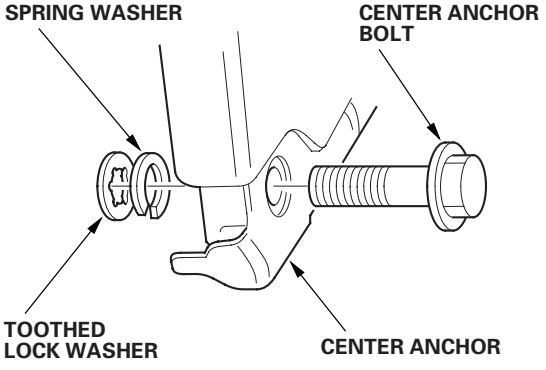


5. Pull the seat belt switch harness (D) out through the space between the seat cushion and the seat track (driver's seat), or through the hole in the seat track (passenger's seat).

6. Install the buckle in the reverse order of removal, and note these items:

   - Assemble the washers on the center anchor bolt as shown.
   - Apply medium strength liquid thread lock to the center anchor bolt before reinstallation.
   - Tighten the bolts by hand first, then tighten to specification with a torque wrench.
   - Make sure the seat belt switch connector and seat belt buckle tensioner connector are plugged in properly.
   - Check for any DTCs that may have been set during repairs, and clear them using the HDS.
   - Do the battery terminal reconnection procedure (see page 22-68).

Center anchor bolt installation



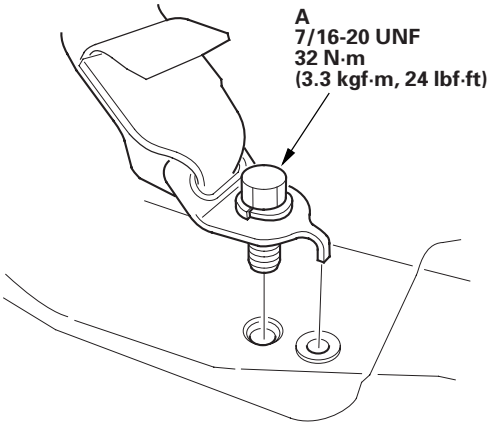
Rear Seat Belt Replacement

NOTE: Check the second row seat belts for damage, and replace them if necessary.

Rear Seat Belt

1. Remove the rear seat cushion (see page 20-133).

2. Remove the lower anchor bolt (A).



3. Remove these items:

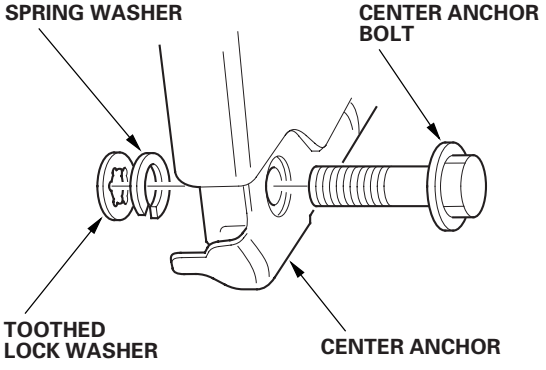
   - Rear seat side bolsters, both sides (see page 20-134)
   - C-pillar trim, both sides (see page 20-75)
   - Rear shelf (see page 20-78)

(cont'd)

6. Install the buckle in the reverse order of removal, and note these items:

   - Assemble the washers on the center anchor bolt as shown.
   - Apply medium strength liquid thread lock to the center anchor bolt before reinstallation.
   - Tighten the bolts by hand first, then tighten to specification with a torque wrench.
   - Make sure the seat belt switch connector and seat belt buckle tensioner connector are plugged in properly.
   - Check for any DTCs that may have been set during repairs, and clear them using the HDS.
   - Do the battery terminal reconnection procedure (see page 22-68).

Center anchor bolt installation



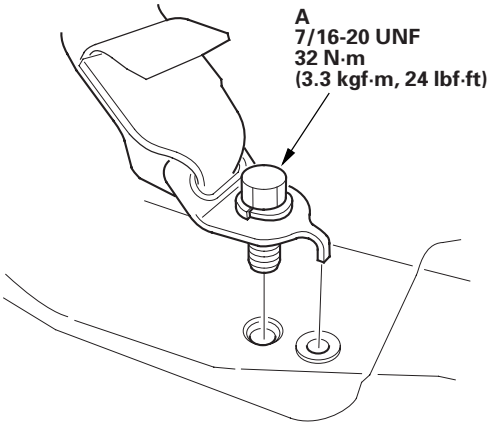
Rear Seat Belt Replacement

NOTE: Check the second row seat belts for damage, and replace them if necessary.

Rear Seat Belt

1. Remove the rear seat cushion (see page 20-133).

2. Remove the lower anchor bolt (A).



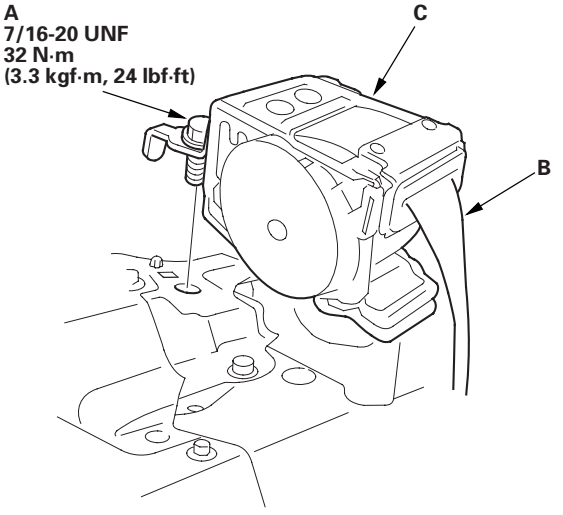
3. Remove these items:

   - Rear seat side bolsters, both sides (see page 20-134)
   - C-pillar trim, both sides (see page 20-75)
   - Rear shelf (see page 20-78)

(cont'd)

Rear Seat Belt Replacement (cont'd)

4. Remove the retractor bolt (A), then remove the rear seat belt (B) and retractor (C).



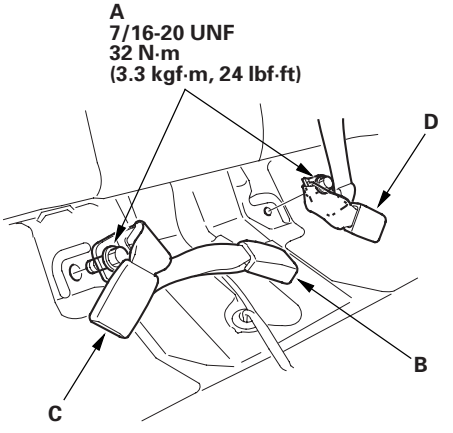
5. Install the rear seat belt and retractor in the reverse order of removal, and note these items:

   - Apply medium strength liquid thread lock to the anchor bolts before reinstallation.
   - Check that the retractor locking mechanism functions as described (see page 24-9).
   - Before installing the anchor bolt, make sure there are no twists or kinks in the rear seat belt.

Center Seat Belt and Seat Belt Buckles

1. Remove the rear seat cushion (see page 20-133).

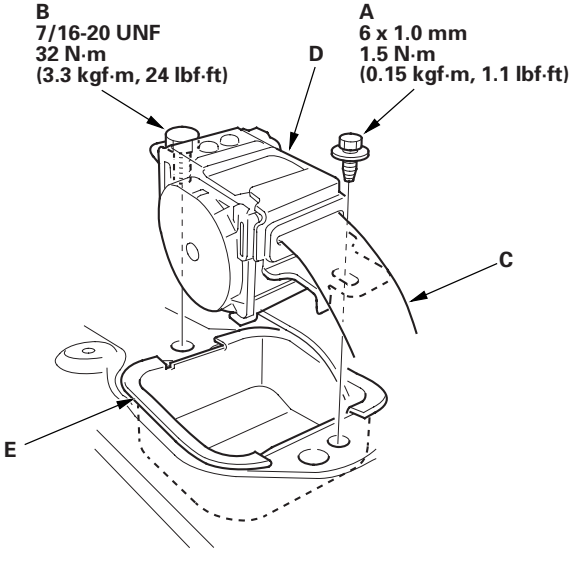
2. Remove the center anchor bolts (A), then remove the right seat belt buckle (B), center seat belt buckle (C), and left seat belt buckle (D).



3. Fold both rear seat-backs forward.

4. Remove the rear shelf (see page 20-78).

5. Remove the retractor mounting ET screw (A) and the retractor bolt (B), then remove the rear seat belt (C) and retractor (D).



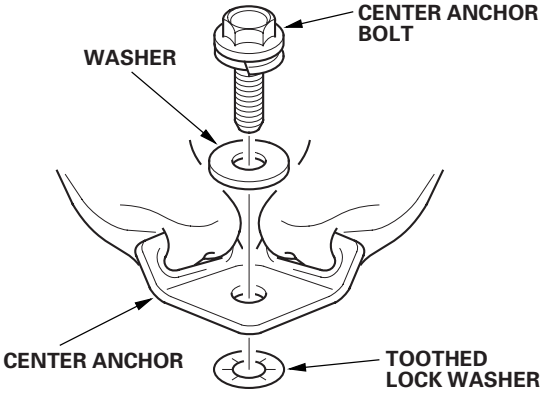
6. Remove the rear center seat belt protector (E).

7. Install the seat belt and buckles in the reverse order of removal, and note these items:

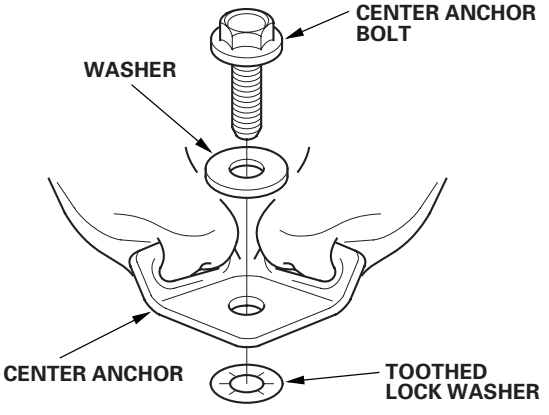
   - If the threads on a retractor mounting ET screw are worn out, use an oversized selftapping ET screw (P/N 90133-SZ4-003) made specifically for this application.
   - Apply medium strength liquid thread lock to the center anchor bolt before reinstallation.
   - Tighten the bolt by hand first, then tighten to the specified torque.
   - Check that the retractor locking mechanism functions as described (see page 24-9).
   - Assemble the washers on the center anchor bolt as shown.
   - Before installing the center anchor bolt, make sure there are no twists or kinks in the center belt.
   - Make sure the rear center emergency locking retractor (ELR) is pointing straight forward.

Center anchor bolt installation

'06 model



'07-09 models



Inspection

Out of Vehicle

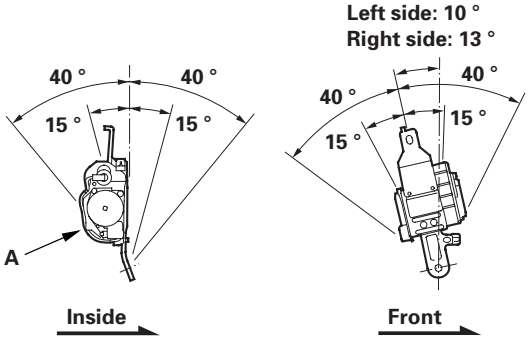
For front seat belt retractor with seat belt tensioner, review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

Retractor

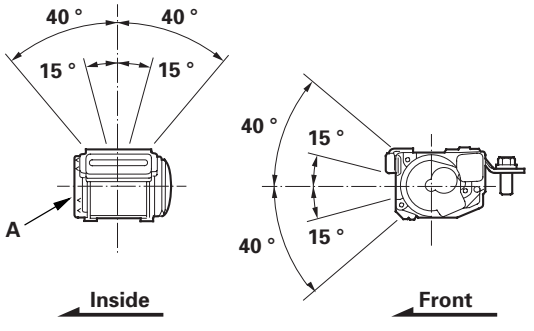
1. Before installing the retractor, check that the seat belt can be pulled out freely.

2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15 ° from the mounted position. The seat belt should lock when the retractor is leaned over 40 °. Do not attempt to disassemble the retractor.

Front



Rear



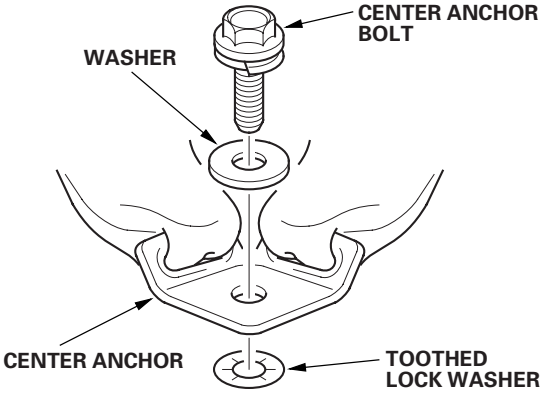
(cont'd)

7. Install the seat belt and buckles in the reverse order of removal, and note these items:

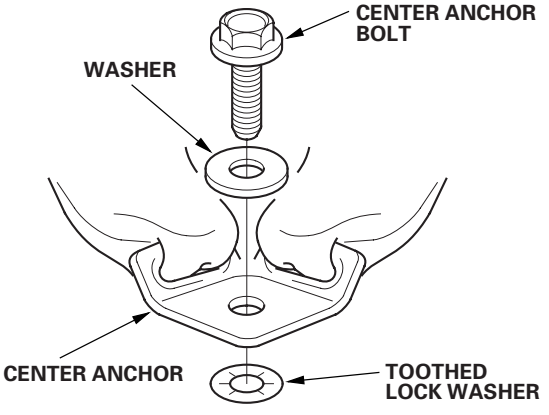
   - If the threads on a retractor mounting ET screw are worn out, use an oversized selftapping ET screw (P/N 90133-SZ4-003) made specifically for this application.
   - Apply medium strength liquid thread lock to the center anchor bolt before reinstallation.
   - Tighten the bolt by hand first, then tighten to the specified torque.
   - Check that the retractor locking mechanism functions as described (see page 24-9).
   - Assemble the washers on the center anchor bolt as shown.
   - Before installing the center anchor bolt, make sure there are no twists or kinks in the center belt.
   - Make sure the rear center emergency locking retractor (ELR) is pointing straight forward.

Center anchor bolt installation

'06 model



'07-09 models



Inspection

Out of Vehicle

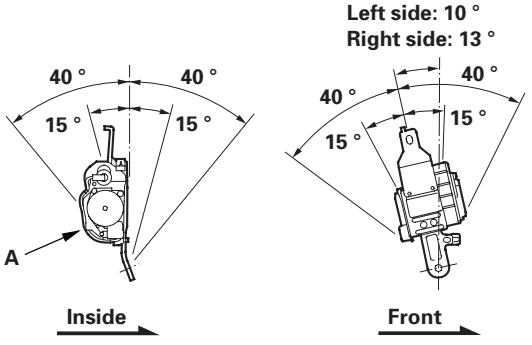
For front seat belt retractor with seat belt tensioner, review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

Retractor

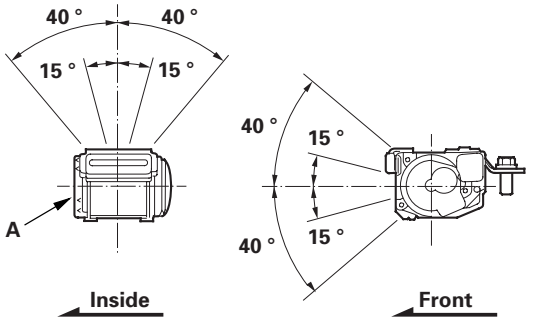
1. Before installing the retractor, check that the seat belt can be pulled out freely.

2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15 ° from the mounted position. The seat belt should lock when the retractor is leaned over 40 °. Do not attempt to disassemble the retractor.

Front



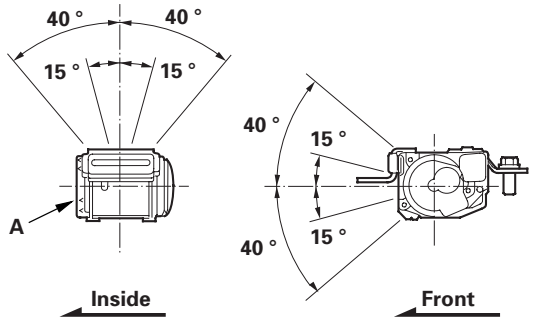
Rear



(cont'd)

Inspection (cont'd)

Rear center



3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

In-vehicle

1. Check that the seat belt is not twisted or caught on anything.

2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.

3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean the seat belts.

   NOTE: Dirt build-up in the loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.

4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.

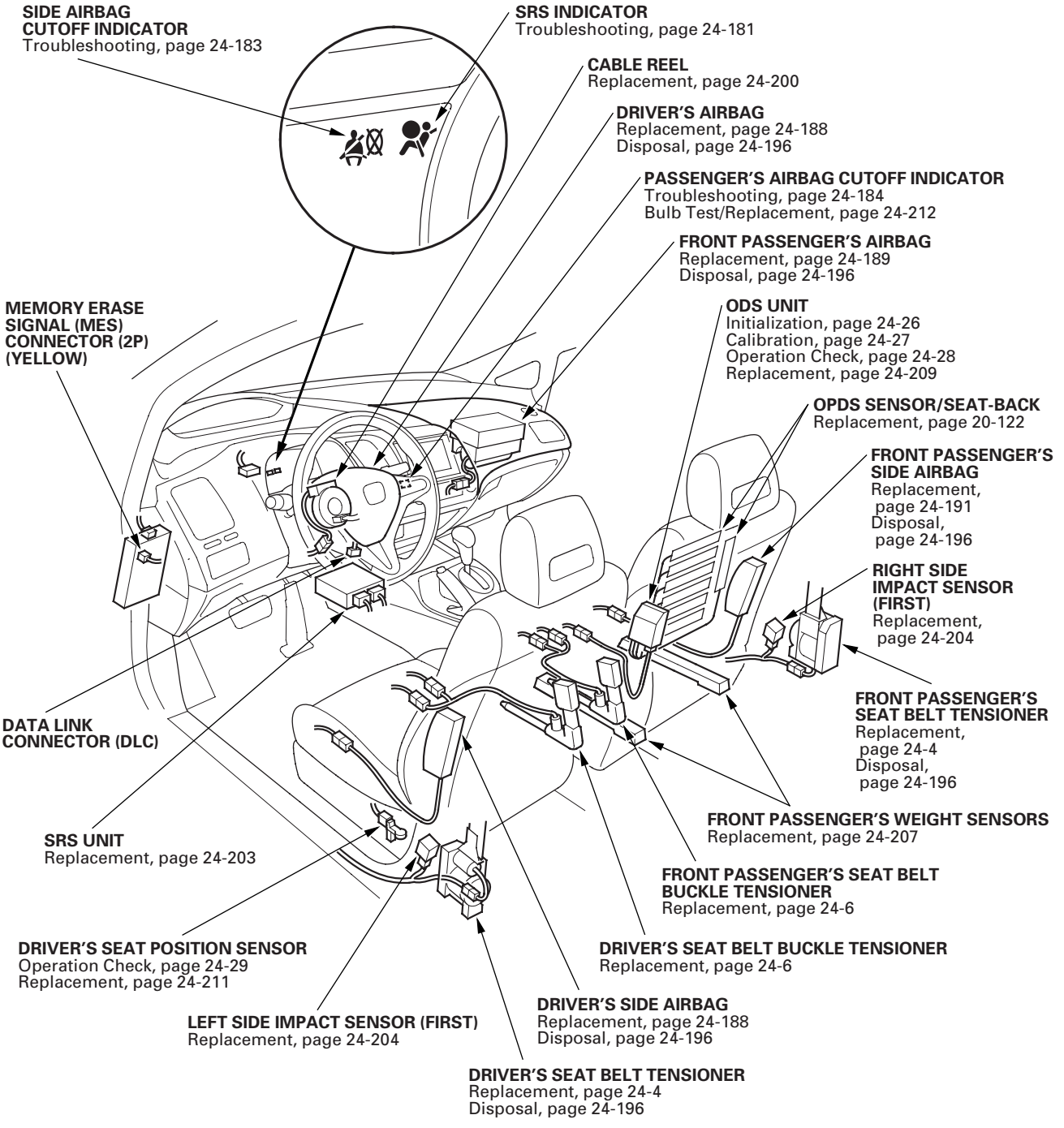
5. Make sure that the seat belt will retract automatically when released.

6. For front passenger's seat belt and all rear seat belts, check the seat belt retractor locking mechanism automatic locking retractor (ALR). This function is for securing child seats.

   -1 Pull the seat belt all the way out to engage the ALR. The seat belt should retract with a ratcheting sound, but not extend. This is normal.
   -2 To disengage the ALR, release the seat belt and allow it to fully retract, then pull the seat belt out part-way. The seat belt should retract and extend normally.

7. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

Component Location Index



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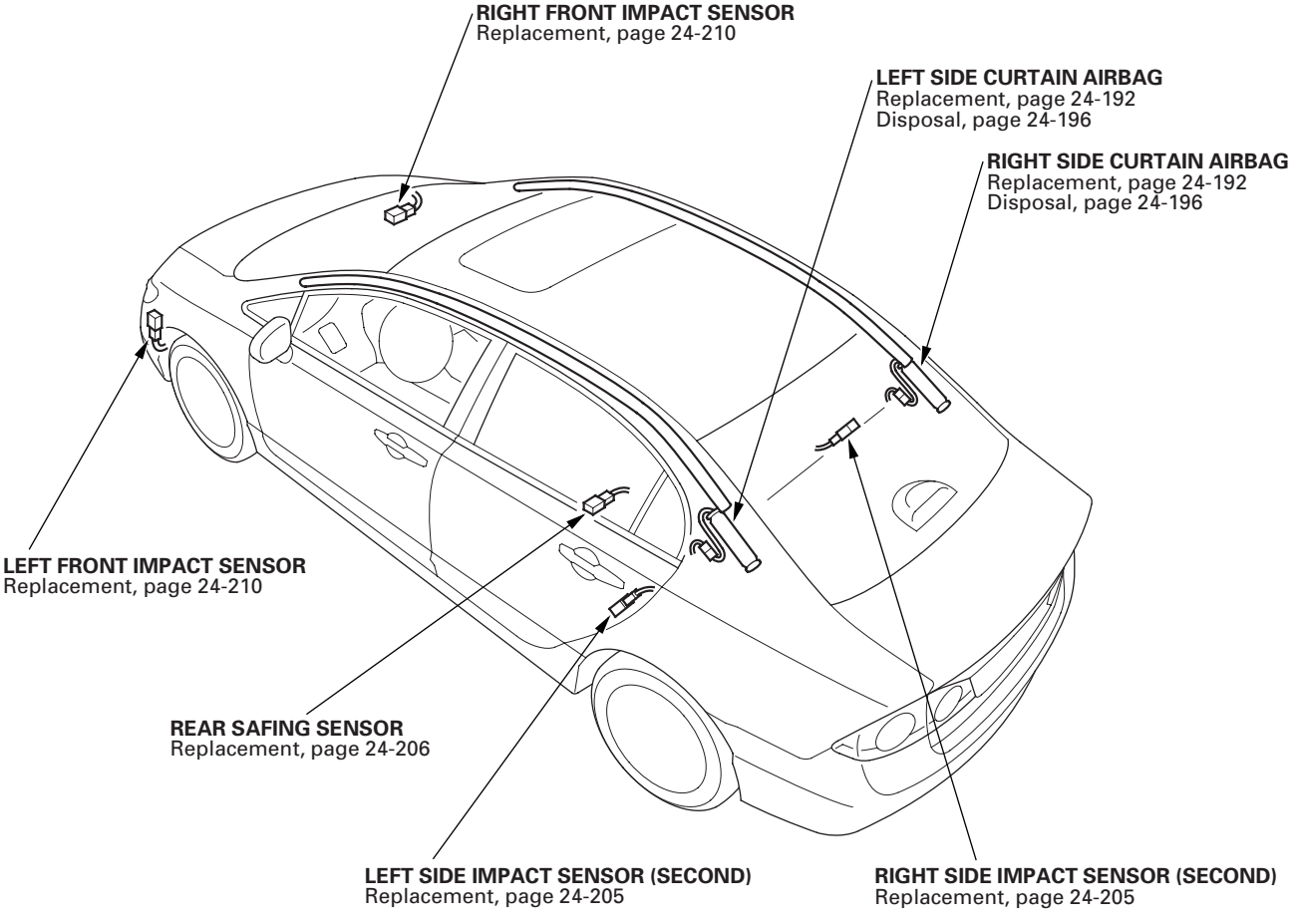
Component Location Index (cont'd)



Precautions and Procedures

General Precautions

NOTE: Some systems store data in memory that is lost when the battery is disconnected. Before disconnecting the battery, refer to Battery Terminal Disconnection and Reconnection (see page 22-68).

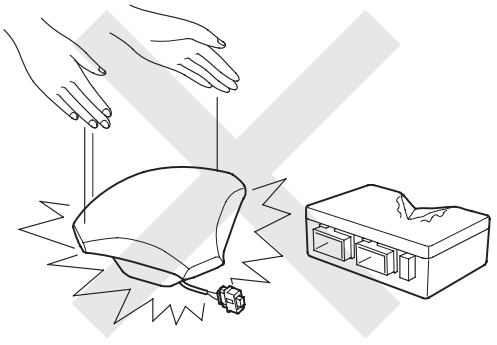
Please read the following precautions carefully before servicing the airbag system. If the instructions described in this manual are not properly followed, or the airbags could accidentally deploy and cause damage or injuries.

- Except when doing electrical inspections, always turn the ignition switch to LOCK (0), disconnect the negative cable from the battery, then wait at least 3 minutes before starting work.

  NOTE: The SRS memory is not cleared even if the ignition switch is turned to LOCK (0), or the battery cables are disconnected from the battery.

- Use replacement parts which are manufactured to the same standards and quality as the original parts. Do not install used SRS parts. Use only new parts when making SRS repairs.

- Carefully inspect any SRS part before you install it. Do not install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.



- Before disconnecting the SRS unit connectors, always disconnect the appropriate SRS parts connectors.

- Use only a digital multimeter to check the system. If it is not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the lowest value in the ohmmeter range. A tester with a higher output could cause accidental deployment and possible injury.

- Do not put objects on the front passenger's airbag.

- The original audio and navigation system have a coded theft protection circuit. Make sure you have the anti-theft codes for the audio system or navigation system (if equipped), then write down the audio presets before disconnecting the negative cable from the battery.

- Before returning the vehicle to the client, enter the anti-theft codes for the audio system or navigation system (if equipped), then enter the audio presets; set the clock.

Steering-related Precautions

Cable Reel Alignment

- Misalignment of the cable reel could cause an open in the wiring, making the SRS system, remote steering wheel controls, or the horn inoperative. Center the cable reel whenever you do the following (see step 6 on page 24-202).
  – Installation of the steering wheel
  – Installation of the cable reel
  – Installation of the steering column
  – Other steering-related adjustment or installation

- Do not disassemble the cable reel.

- Do not apply grease to the cable reel.

- If the cable reel shows any signs of damage, replace it with a new one. For example, if the cable reel does not rotate smoothly, replace it.

(cont'd)

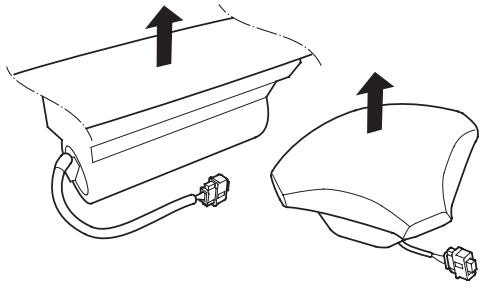
Precautions and Procedures (cont'd)

Airbag Handling and Storage

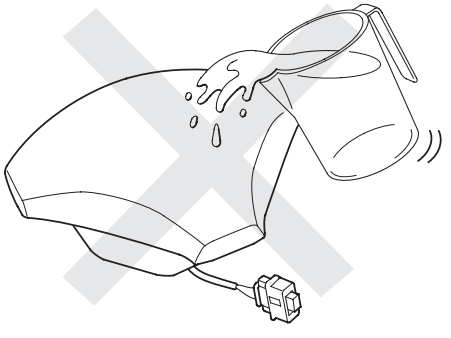
Do not disassemble an airbag. It has no serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused.

For temporary storage of an airbag during service, observe the following precautions.

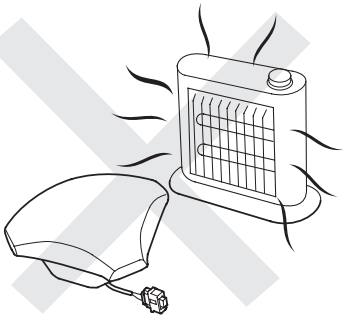
- Store the removed airbag with the pad surface up. Never put anything on the airbag.



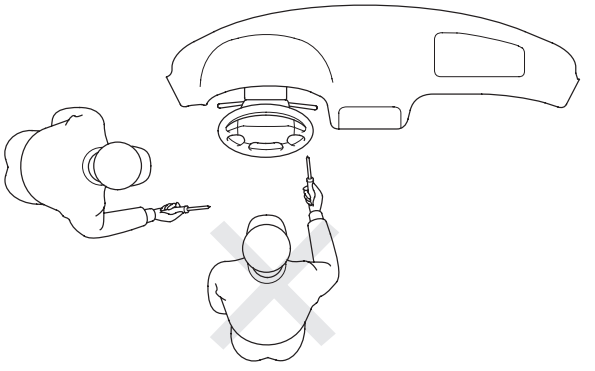
- To prevent damage to the airbag, keep it away from any oil, grease, detergent, or water.



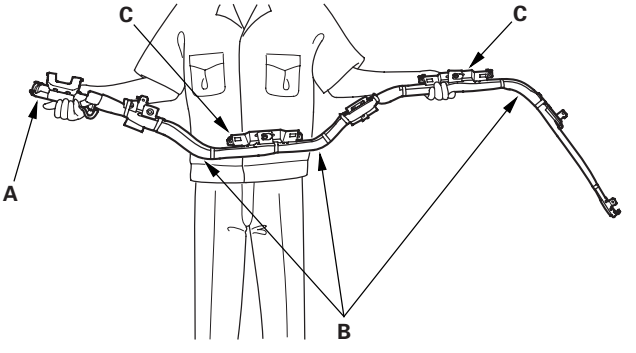
- Store the removed airbag on a secure, flat surface away from any high heat source (exceeding 200 ℉/ 93 ℃).



- Never perform electrical inspections to the airbags, such as measuring resistance.
- Do not position yourself in front of the airbag during removal, inspection, or replacement.



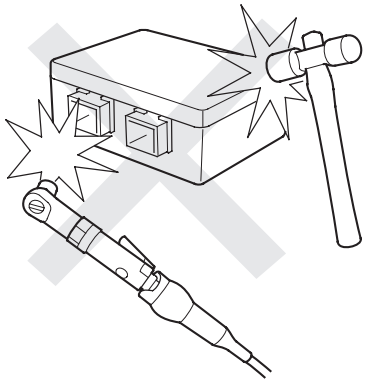
- For proper disposal of a damaged airbag, refer to airbag disposal (see page 24-196).
- The side curtain airbag module assembly is a long, jointed part containing an inflator (A), a flexible bag (B), and brackets (C). When removing or installing the side curtain airbag assembly, never:
  – Handle the flexible bag.
  – Drop the airbag assembly.
  – Cut, tear, or unwrap the taps strips.



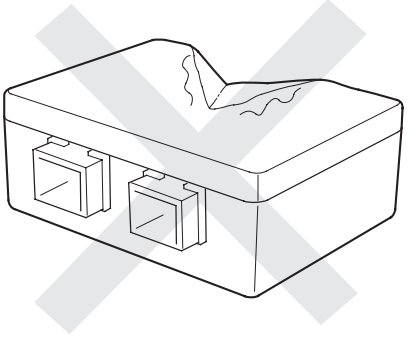
SRS Unit, Front and Side Impact Sensors, Driver's Seat Position Sensor, Front Passenger's Weight Sensors and, Rear Safing Sensor

NOTE: Some systems store data in memory that is lost when the battery is disconnected. Before disconnecting the battery, refer to Battery Terminal Disconnection and Reconnection (see page 22-68).

- Turn the ignition switch to LOCK (0), disconnect the negative cable from the battery, then wait at least 3 minutes before starting installation or replacement of the SRS unit, or disconnecting the connectors from the SRS unit.
- Be careful not to bump or impact the SRS unit, the front impact sensors, the side impact sensors, or the rear safing sensor whenever the ignition switch is in ON (II), or for at least 3 minutes after the ignition switch is turned to LOCK (0).
- During installation or replacement, be careful not to bump (by impact wrench, hammer, etc.) the area around the SRS unit, the front impact sensors, the side impact sensors, or the rear safing sensor. The airbags could accidentally deploy and cause damage or injury.



- After a collision where the front airbag, the side airbag, or a the seat belt tensioner, the seat belt buckle tensioner deployed, go to Component Replacement/Inspection after Deployment (see page 24-185). After a collision where an airbag did not deploy, inspect for any damage or any deformation on the SRS unit, the front impact sensors, the side impact sensors, or the rear safing sensor. If there is any damage, replace the SRS unit and/or the sensors.



- Do not disassemble the SRS unit, front impact sensors, side impact sensors, driver's seat position sensor, front passenger's weight sensors or rear safing sensor.
- Always install the SRS unit, driver's seat position sensor, and all impact sensors and the rear safing sensor securely with new TORX bolts torqued to 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft).
- Do not spill water or oil on the SRS unit or the any of the sensors, and keep them away from dust.

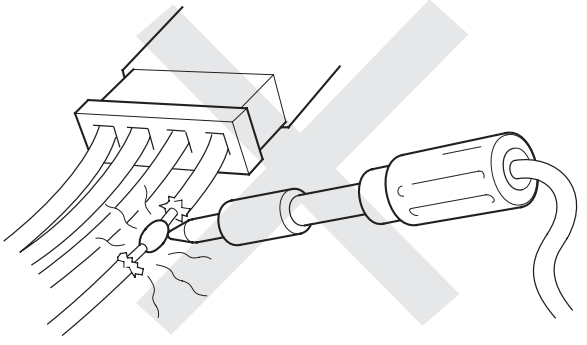
(cont'd)

Precautions and Procedures (cont'd)

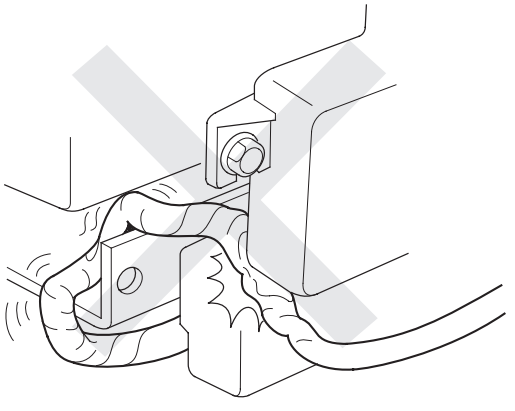
Wiring Precautions

Some of the SRS wiring can be identified by a special yellow outer covering, and the SRS connectors can be identified by their yellow color. Observe the following instructions:

- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage to the SRS wiring, replace the harness.



- Be sure to install the harness wires so they do not get pinched or interfere with other parts.

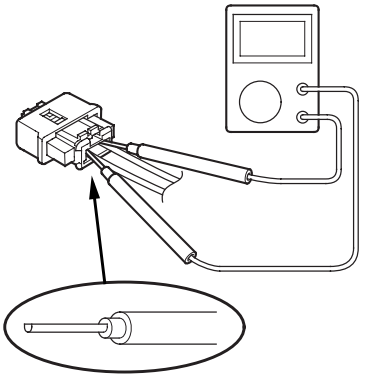


- Make sure all SRS ground locations are clean, and grounds are securely fastened for optimum metal-to-metal contact. Poor grounds can cause intermittent problems that are difficult to diagnose.

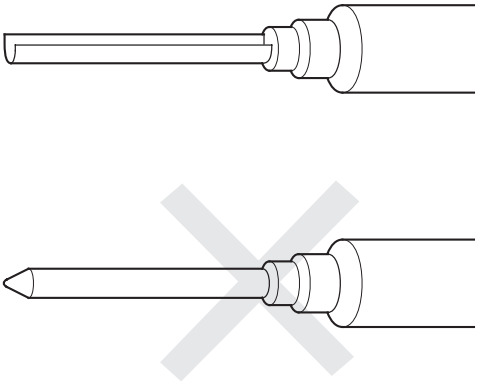
- Do not use any silicone based cleaners or lubricants on any SRS connectors or terminals.

Precautions for Electrical Inspections

- When using electrical test equipment, insert the probe of the tester into the wire side of the connector. Do not insert the probe of the tester into the terminal side of the connector, and do not tamper with the connector.



- Use backprobe adapter 07TAZ-001020A. Do not insert the probe forcibly.



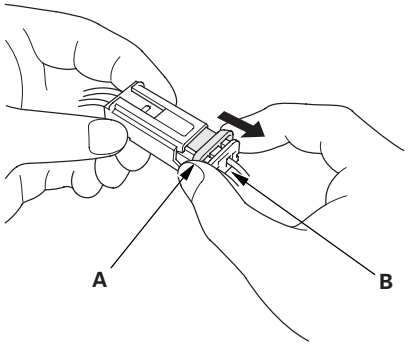
- Use specified service connectors in troubleshooting. Using improper tools could cause a diagnostic error due to poor metal-to-metal contact.

Spring-loaded Lock Connector

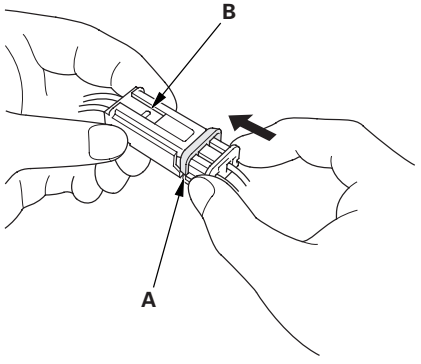
Some SRS system connectors have a spring-loaded lock.

Front Airbag Connectors

Disconnecting
To release the lock, pull the spring-loaded sleeve (A) toward the stop (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector.

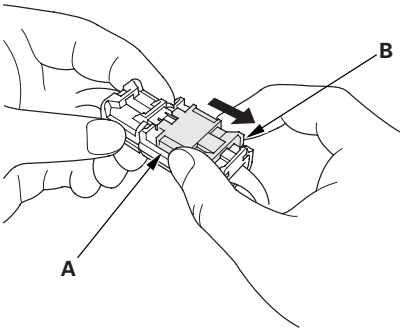


Connecting
To reconnect, hold the pawl-side connector, and press on the back of the sleeve-side connector in the direction shown. As the two connector halves are pressed together, the sleeve (A) is pushed back by the pawl (B). Do not touch the sleeve.

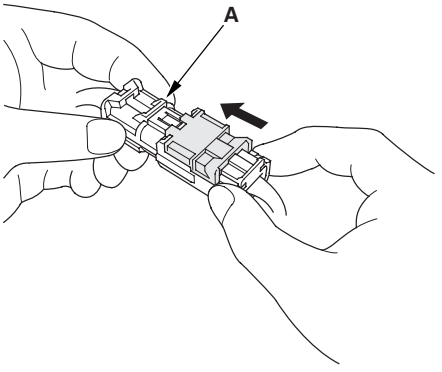


Side Airbag Connector

Disconnecting
To release the lock, pull the spring-loaded sleeve (A) toward the stop (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector half.



Connecting
Hold both connector halves, and press them firmly together until the projection (A) of the sleeve-side connector clicks.



(cont'd)

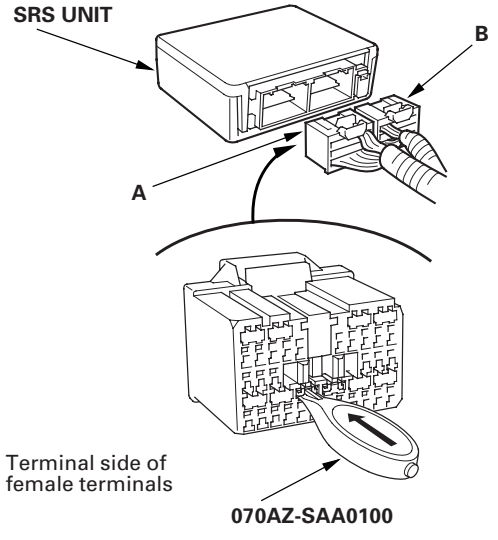
Precautions and Procedures (cont'd)

Opening the SRS Unit Shorting Connectors for Diagnosis

Special Tools Required
SRS short canceller 070AZ-SAA0100

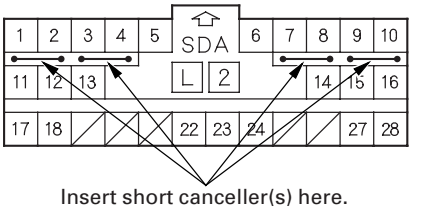
NOTE:
- To prevent damage to the connector cavity, insert short canceller straight into the cavity from the terminal side.
- Before installing a short canceller, wash it with electrical contact cleaner, then dry it with compressed air.
- Do not use a short canceller if it is damaged.
- Make sure to remove the short canceller before reconnection.
- Some systems store data in memory that is lost when the battery is disconnected. Before disconnecting the battery, refer to Battery Terminal Disconnection and Reconnection (see page 22-68).

When SRS unit connectors A (28P) and B (28P) are disconnected, a short circuit is automatically created in the connector by its own function to prevent an airbag deployment. The circuit may need to be open sometimes when testing the system. Insert a short canceller (070AZ-SAA0100) in the specified cavities when necessary to keep the circuit open for testing.



Terminal numbers are shown from the wire side of the female terminals. Insert the short canceller(s) into the cavities on the terminal side of connector.

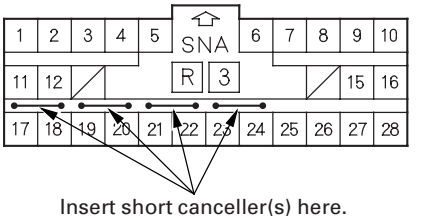
SRS UNIT CONNECTOR A (28P)



Insert short canceller(s) here.

Wire side of female terminals

SRS UNIT CONNECTOR B (28P)



Insert short canceller(s) here.

Wire side of female terminals

Seats with Side Airbags

Seats with side airbags have a ''SIDE AIRBAG'' label on the seat-back.

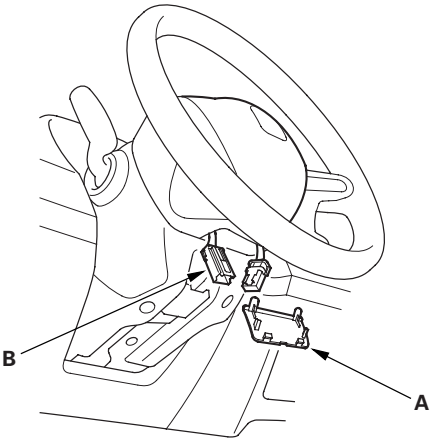
- Clean the seats with a damp cloth. Do not soak the seats with liquid. Do not spray steam on the seats.
- Do not repair a torn or frayed seat-back cover. Replace the seat-back cover if it is damaged.
- After a collision in where the side airbag was deployed, replace the side airbag and the seat frame with new parts. If the seat-back cushion is split, it must be replaced.
- Never put aftermarket accessories on the seats (covers, pads, seat heaters, lights, etc.).

Disconnecting System Connectors

1. Disconnect the negative cable from the battery, when wait at least 3 minutes.

Driver's Airbag

2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.

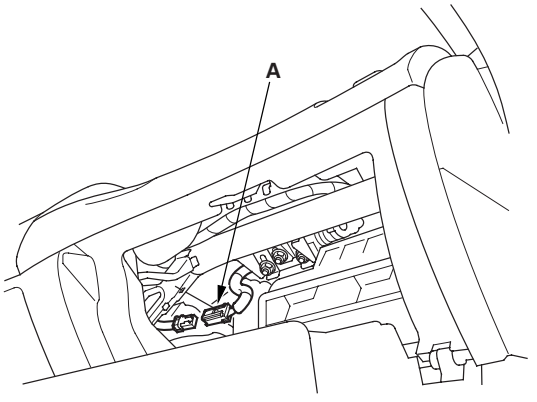


(cont'd)

Precautions and Procedures (cont'd)

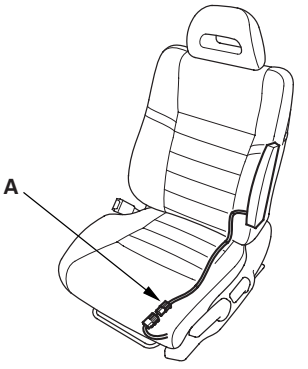
Front Passenger's Airbag

3. Remove the lower glove box (see page 20-104), then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



Side Airbag

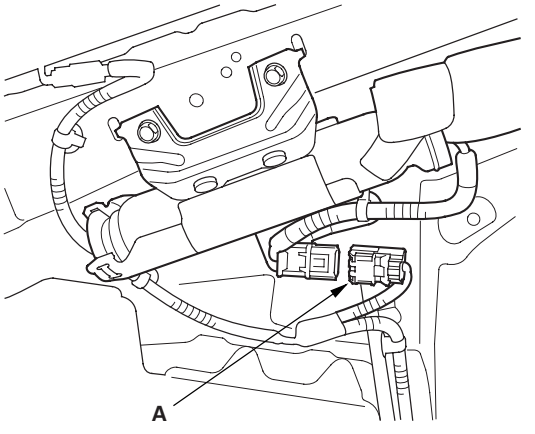
4. Disconnect the driver's and the front passenger's side airbag 2P connectors (A) from the floor wire harness.



Side Curtain Airbag

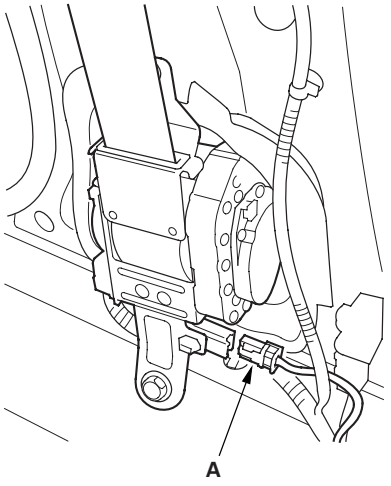
5. Remove the headliner (see page 20-84).

6. Disconnect both floor wire harness 2P connectors (A) from the side curtain airbags.



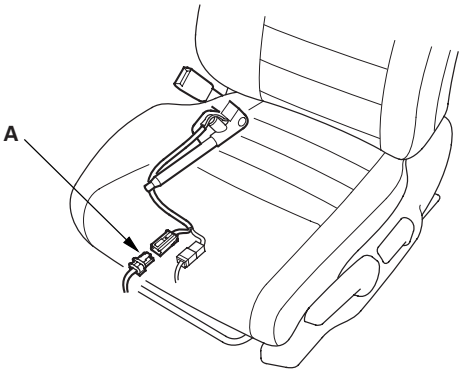
Seat Belt Tensioner

7. Remove the B-pillar lower trim (see page 20-72). Disconnect both floor wire harness 4P connectors (A) from the seat belt tensioners.



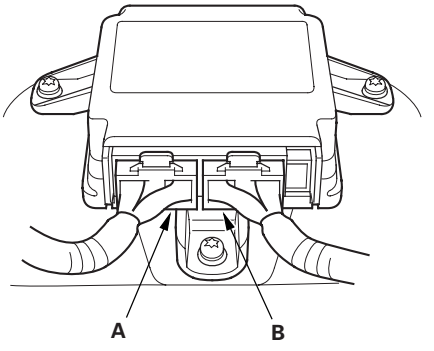
Seat Belt Buckle Tensioner

8. Disconnect both floor wire harness 4P connectors (A), from the seat belt buckle tensioner.



SRS Unit

9. Disconnect both seat belt buckle tensioner 4P connectors and the both seat belt tensioner 4P connector. Remove the center console (see page 20-92).Disconnect SRS unit connector A (28P) and B (28P) from the SRS unit.



General Troubleshooting Information

DTC (Diagnostic Trouble Codes)

The self-diagnostic function of the SRS system allows it to locate the causes of system problems and store this information in memory. For easier troubleshooting, this data can be retrieved via a data link circuit.

- When you turn the ignition switch to ON (II), the SRS indicator comes on. If it goes off after 6 seconds, the system is normal, and is not currently detecting any abnormality.
- If there is an abnormality, the system locates and defines the problem, stores this information in memory, and turns on the SRS indicator. The data remains in memory even if the ignition switch is turned off or the battery is disconnected.
- The data is stored in memory as a diagnostic trouble code (DTC).
- The ''x'' at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that is displayed on the HDS.
- DTCs are either latching or resetting depending on the malfunction. With resetting DTCs, the SRS indicator goes off the next time the ignition switch is turned to ON (II), and the system is normal, but the DTC is still stored. With latching DTCs, the SRS indicator does not turn to LOCK (0) until the malfunction is repaired and the DTC is cleared.
- When you connect the HDS to the data link connector (DLC), you can retrieve a more detailed DTC in the HDS ''SRS'' menu.

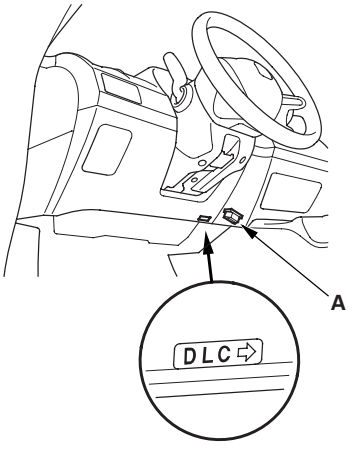
  NOTE: Only read DTCs from the SRS menu, not from the SWS menus. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.
- After reading and recording the DTC, proceed with the troubleshooting procedure for that code.

Precautions

- Use only a digital multimeter to check the system. Make sure its output is 10 mA (0.01 A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit or cause accidental airbag deployment and possible injury.
- Whenever the ignition switch is in ON (II), or has been turned to LOCK (0), for less than 3 minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before removing the dashboard wire harness, floor wire harness, disconnect the driver's airbag connector, the front passenger's airbag connector, both side airbag connectors, both side curtain airbag connectors and both seat belt tensioner connectors.
- Make sure the battery is fully charged. If the battery is dead or low, electrical measurements may not be correct.
- Do not touch a tester probe to the terminals in the SRS unit or harness connectors, and do not connect the SRS unit terminals or the sensor terminals with a jumper wire. Use only the backprobe set and the multimeter. Backprobe spring-loaded lock type connectors correctly.

Reading the DTC

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC) (A).



3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

5. Use the HDS to check for DTCs.

   NOTE: Only read DTCs from the SRS menu, not from the SWS menus. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

6. Read and record the DTC.

7. Turn the ignition switch to LOCK (0), and wait for 10 seconds.

8. Disconnect the HDS from the DLC.

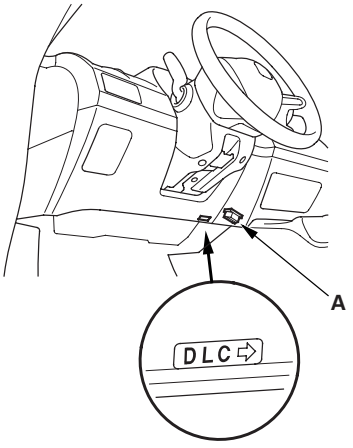
9. Do the troubleshooting procedure for the DTC.

Clear the DTC Memory With the HDS

NOTE: Make sure the battery is fully charged before you begin.

1. Make sure the ignition switch is in LOCK (0).

2. Connect the HDS to the data link connector (DLC) (A).



3. Turn the ignition switch to ON (II).

4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

5. In the SRS MENU of the HDS, select SRS, then DTC to clear DTCs.

6. Turn the ignition switch to LOCK (0), and wait for 10 seconds.

7. Disconnect the HDS from the DLC.

(cont'd)

General Troubleshooting Information (cont'd)

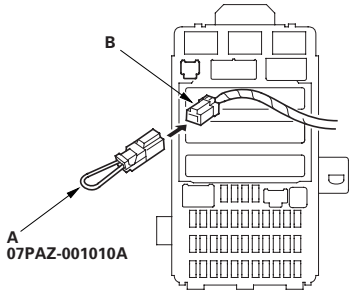
Clear the DTC Memory Using MES Connector Without the HDS

Special Tools Required
SCS Service Connector 07PAZ-001010A

NOTE: Make sure the battery is fully charged before you begin.

To clear the DTCs from the SRS unit, use the HDS or the following procedure.

1. Make sure the ignition switch is in LOCK (0).
2. Connect the SCS service connector (A) to the yellow MES 2P connector (B). Do not use a jumper wire.



3. Turn the ignition switch to ON (II).
4. The SRS indicator will come on for about 6 seconds, and then go off. Remove the SCS service connector from the MES connector (2P) within 4 seconds after the indicator goes off.
5. The SRS indicator will come on again. Reconnect the SCS service connector to the MES connector (2P) within 4 seconds after the indicator comes on.
6. When the SRS indicator goes off, remove the SCS service connector from the MES connector (2P) within 4 seconds.
7. The SRS indicator blinks two times, indicating that the memory has been cleared.
8. Turn the ignition switch to LOCK (0).
9. Turn the ignition switch to ON (II) again. If the SRS indicator comes on for 6 seconds, and then goes off, the system is OK. If the indicator stays on, troubleshoot the DTC, refer to symptom troubleshooting.

Troubleshooting Intermittent Failures

If there was a malfunction, but it does not recur, it will be stored in the memory as an intermittent failure, and the SRS indicator may come on depending on this malfunction detected.

NOTE:
- Check the condition of the battery (see page 22-67) and the charging system (see page 4-23). Low battery voltage may cause some intermittent failures.
- A faulty or damaged cable reel can cause intermittent problems related to the driver's airbag inflator DTCs.

After checking the DTC, troubleshoot as follows:

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
5. In the SRS MENU on the HDS, select SRS, then DTC to clear DTCs.
6. Read the DTC (see ''Reading the DTC'').
7. Clear the DTC memory(see ''Clear the DTC'').
8. Set the parking brake, then start the engine, and let it idle.
9. The SRS indicator comes on for about 6 seconds and then goes off.

10. Shake the related wire harnesses and the connectors, and look for loose connections, poor pinfits, and poor grounds.

11. Take a test-drive (quick acceleration, quick braking, and cornering), turn the steering wheel fully left and right, and hold it there for 5 to 10 seconds. If the problem recurs, the SRS indicator will come on.

12. If you cannot duplicate the concern, ask the client about the conditions when it occurred, or ask the client to demonstrate the concern.

13. If you cannot duplicate the intermittent failure, the system is OK at this time.

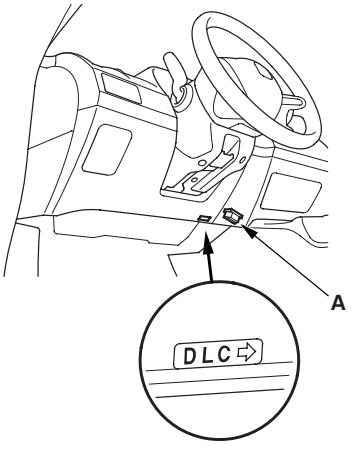
Checking Front Passenger's Weight Sensors After a Vehicle Collision

1. Position the front passenger's seat to the rearmost position, adjust the seat-back to the forwardmost position. Do not move it from this position.

2. Drive the vehicle, accelerate to 20 mph (36 km/h), then stop on level ground.

3. Make sure the ignition switch is in LOCK (0).

4. Connect the HDS to the data link connector (DLC) (A).



5. Turn the ignition switch to ON (II).

6. Make sure the HDS communicates with the vehicle and the SRS unit. If does not communicate, troubleshoot the DLC circuit (see page 11-204).

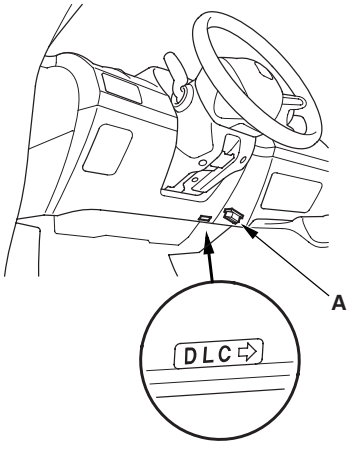
7. From the SRS inspection menu, select Seat Weight Sensor, then Misc test, then SEAT OUTPUT CHK and follow the prompts until the front passenger's weight sensor operation check is complete.

ODS Unit Initialization

When a seat-back cover, seat-back cushion, and/or ODS unit is replaced, initialize the ODS by following the procedure.

NOTE: A new (uninitialized) ODS unit installed with a faulty OPDS sensor can cause DTC 85-71.

1. Clear the DTC memory (see page 24-23).
2. Make sure the front passenger's seat is dry. Set the seat-back in a normal position, and make sure there is nothing on the seat.
3. Make sure the ignition switch is in LOCK (0) and the MES connector is not shorted.
4. Connect the HDS to the data link connector (DLC) (A).



5. Turn the ignition switch to ON (II).
6. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
7. From the HDS Main Menu, select SRS, then SRS, then Calibration. In the Calibration Menu, select ODS INITIALIZATION. Follow the screen prompts to initialize the ODS unit.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the HDS from the DLC.

   NOTE: If the ODS unit fails to initialize after several attempts, replace the OPDS sensor/seat-back and retry. If the ODS unit continues to fail to initialize, replace the ODS unit (see page 24-209).

ODS Unit Calibration

When you replace the SRS unit, front passenger's weight sensors or ODS unit, calibrate the ODS unit.

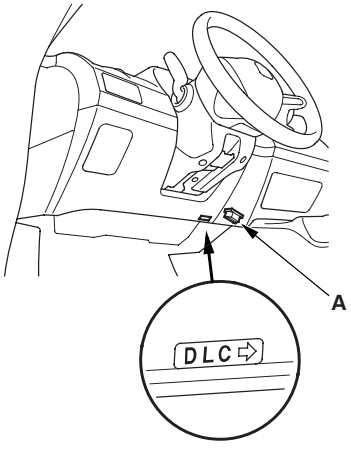
While calibrating the ODS unit, observe these precautions:

- Make sure all components of the front passenger's seat are correctly installed.
- Make sure nothing is on or under the front passenger's seat.
- Make sure there is nothing in the front passenger's seat-back pocket.
- Keep the windows and moonroof closed.
- Do all calibration procedures except, test-driving, in the service bay.
- Make sure the vehicle is on level ground.
- Keep the A/C and the heater off.
- Do not touch the front passenger's seat during calibration, unless you are prompted to or when you have completed the calibration.
- Do not expose the front passenger's seat to sudden temperature changes.

1. Position the front passenger's seat to the rearmost position, and adjust the seat-back to the forwardmost position. Do not move the seat from these positions.

2. Make sure the ignition switch is in LOCK (0).

3. Connect the HDS to the data link connector (DLC) (A).



4. Turn the ignition switch to ON (II).

5. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

6. Drive the vehicle, and accelerate to 20 mph (36 km/h), then stop on level ground.

7. From the Main Menu, select SRS, then Calibration, then Misc Test, then select SWS INITIALIZATION, and follow the prompts until the calibration is complete.

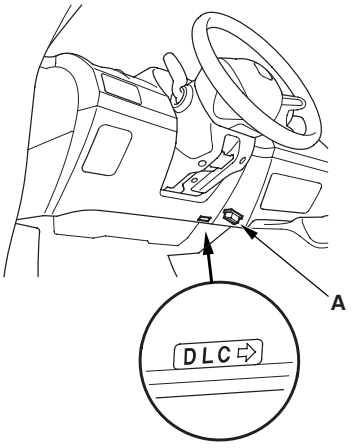
ODS Unit Operation Check

Check the ODS operation after any of these actions.
- Replacement of front passenger's seat component(s) (except ODS unit and/or weight sensors)
- After a vehicle collision
- SRS unit replacement

Pre-operation Check Set-up
- Make sure all the components of the front passenger's seat are correctly installed.
- Position the front passenger's seat to the rearmost position.
- Adjust the seat-back to the forwardmost position.
- Do not move the seat from this position.
- Make sure nothing is on or under the front passenger's seat.
- Make sure there is nothing in the front passenger's seat-back pocket.
- Keep the windows and moonroof closed.
- Do all calibration procedures, except test-driving, in the service bay.
- Make sure the vehicle is on level ground.
- Turn the heater and the A/C off.
- Do not touch the front passenger's seat during the calibration, unless you are prompted to or until you have completed the operation check.
- Do not expose the front passenger's seat to sudden temperature changes.
- Make sure all aftermarket devices such as amplifiers, fluorescent lights, air purifies, CB or HAM radios, etc. are turned off.

After Replacing Front Passenger's Seat Component(s)

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC) (A).



3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
5. Drive the vehicle, accelerate to 20 mph (36 km/h), then stop on level ground.
6. From the HDS Main Menu, select SRS, then Inspection. In the HDS Inspection Menu, select SEAT OUTPUT CHK and follow the prompts until the ODS unit operation check is complete.

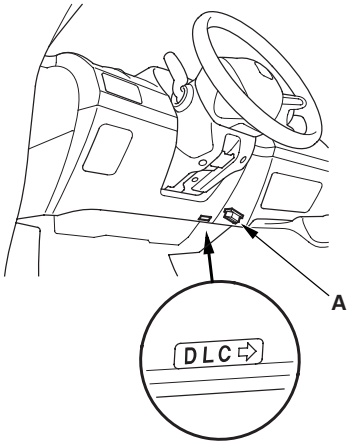
Driver's Seat Position Sensor Operation Check

Check the driver's seat position after any of these actions.
- Driver's seat position sensor replacement
- Cover plate (front side of driver's seat slide rail) replacement

1. Make sure the driver's seat is at its full forward position.

2. Make sure the ignition switch is in LOCK (0).

3. Connect the HDS to the data link connector (DLC) (A).

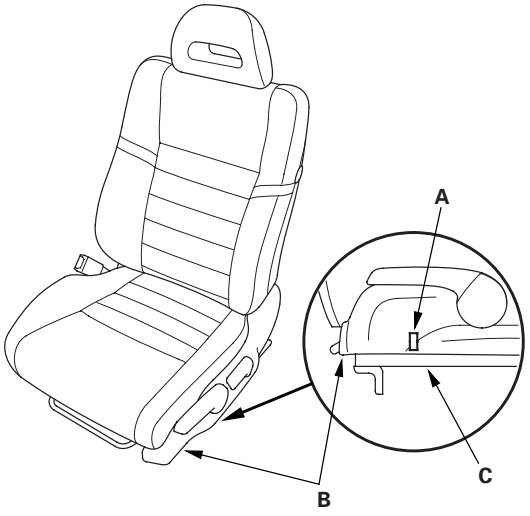


4. Turn the ignition switch to ON (II).

5. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

6. From the HDS Main Menu, select SRS, then Prameter Information, then Buckle Switch, Seat Position Sensor.

7. Using a piece of tape (A), mark the location on the seat's outer cover (B) where the front riser cover meets the seat riser (C). The driver's seat position sensor should read NEAR.



8. Move the seat back in small increments (about 0.2 in., 5 mm) until the driver's seat position sensor reads NOT NEAR. The seat should be about 25 mm (1 in.) from the front.

   NOTE:
   - It takes a few seconds for the HDS to display changes, so wait about 5 seconds between each move.
   - If the driver's seat position sensor data does not work as described, check the driver's seat position sensor or the cover plate for damage, and replace parts as needed.

9. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.

DTC Troubleshooting Index

SRS Unit DTC	Detection Item	Notes
11-1x	Open in the driver's airbag first inflator	(see page 24-48)
11-3x	Short to another wire or decreased resistance in the driver's airbag first inflator	(see page 24-50)
11-4x	Open in the driver's airbag second inflator	(see page 24-48)
11-6x	Short to another wire or decreased resistance in the driver's airbag second inflator	(see page 24-50)
11-8x	Short to power in the driver's airbag first inflator	(see page 24-52)
11-9x	Short to ground in the driver's airbag first inflator	(see page 24-54)
11-Ax	Short to power in the driver's airbag second inflator	(see page 24-52)
11-Bx	Short to ground in the driver's airbag second inflator	(see page 24-54)
12-1x	Open in the front passenger's airbag first inflator	(see page 24-56)
12-3x	Short to another wire or decreased resistance in the front passenger's airbag first inflator	(see page 24-58)
12-4x	Open in the front passenger's airbag second inflator	(see page 24-56)
12-6x	Short to another wire or decreased resistance in the front passenger's airbag second inflator	(see page 24-58)
12-8x	Short to power in the front passenger's airbag first inflator	(see page 24-59)
12-9x	Short to ground in the front passenger's airbag first inflator	(see page 24-61)
12-Ax	Short to power in the front passenger's airbag second inflator	(see page 24-59)
12-Bx	Short to ground in the front passenger's airbag second inflator	(see page 24-61)
21-1x	Open in the driver's seat belt tensioner	(see page 24-62)
21-3x	Short to another wire or decreased resistance in the driver's seat belt tensioner	(see page 24-63)
21-8x	Short to power in the driver's seat belt tensioner	(see page 24-65)
21-9x	Short to ground in the driver's seat belt tensioner	(see page 24-66)
22-1x	Open in the front passenger's seat belt tensioner	(see page 24-68)
22-3x	Short to another wire or decreased resistance in the front passenger's seat belt tensioner	(see page 24-70)
22-8x	Short to power in the front passenger's seat belt tensioner	(see page 24-72)
22-9x	Short to ground in the front passenger's seat belt tensioner	(see page 24-74)
27-1x	Open in the driver's seat belt buckle tensioner	(see page 24-76)
27-3x	Short to another wire or decreased resistance in the driver's seat belt buckle tensioner	(see page 24-78)
27-8x	Short to power in the driver's seat belt buckle tensioner	(see page 24-80)
27-9x	Short to ground in the driver's seat belt buckle tensioner	(see page 24-82)
28-1x	Open in the front passenger's seat belt buckle tensioner	(see page 24-84)
28-3x	Short to another wire or decreased resistance in the front passenger's seat belt buckle tensioner	(see page 24-86)
28-8x	Short to power in the front passenger's seat belt buckle tensioner	(see page 24-88)
28-9x	Short to ground in the front passenger's seat belt buckle tensioner	(see page 24-90)
31-1x	Open in the driver's side airbag inflator	(see page 24-92)
31-3x	Short to another wire or decreased resistance in the driver's side airbag inflator	(see page 24-94)
31-8x	Short to power in the driver's side airbag inflator	(see page 24-96)
31-9x	Short to ground in the driver's side airbag inflator	(see page 24-97)

SRS Unit DTC	Detection Item	Notes
32-1x	Open in the front passenger's side airbag inflator	(see page 24-99)
32-3x	Short to another wire or decreased resistance in the front passenger's side airbag inflator	(see page 24-100)
32-8x	Short to power in the front passenger's side airbag inflator	(see page 24-102)
32-9x	Short to ground in the front passenger's side airbag inflator	(see page 24-104)
33-1x	Open in the left side curtain airbag inflator	(see page 24-106)
33-3x	Short to another wire or decreased resistance in the left side curtain airbag inflator	(see page 24-107)
33-8x	Short to power in the left side curtain airbag inflator	(see page 24-109)
33-9x	Short to ground in the left side curtain airbag inflator	(see page 24-111)
34-1x	Open in the right side curtain airbag inflator	(see page 24-113)
34-3x	Short to another wire or decreased resistance in the right side curtain airbag inflator	(see page 24-115)
34-8x	Short to power in the right side curtain airbag inflator	(see page 24-117)
34-9x	Short to ground in the right side curtain airbag inflator	(see page 24-118)
41-1x	No signal from the left front impact sensor	(see page 24-120)
41-2x	Internal failure of the left front impact sensor	(see page 24-125)
41-3x		
41-Bx		
42-1x	No signal from the right front impact sensor	(see page 24-122)
42-2x	Internal failure of the right front impact sensor	(see page 24-125)
42-3x		
42-Bx		
43-1x	No signal from the left side impact sensor (first)	(see page 24-126)
43-2x	Internal failure of the left side impact sensor (first)	(see page 24-131)
43-3x		
43-Bx		
44-1x	No signal from the right side impact sensor (first)	(see page 24-128)
44-2x	Internal failure of the right side impact sensor (first)	(see page 24-131)
44-3x		
44-Bx		
45-1x	No signal from the left side impact sensor (second)	(see page 24-132)
45-2x	Internal failure of the left side impact sensor (second)	(see page 24-137)
45-3x		
45-Bx		
46-1x	No signal from the right side impact sensor (second)	(see page 24-134)
46-2x	Internal failure of the right side impact sensor (second)	(see page 24-137)
46-3x		
46-Bx		
51-xx	Internal failure of the SRS unit	(see page 24-138)
52-xx		
53-xx		
54-xx		
55-xx		
61-1x	Open in the driver's seat belt buckle switch	(see page 24-139)
61-2x	Short in the driver's seat belt buckle switch	(see page 24-141)
62-1x	Open in the front passenger's seat belt buckle switch	(see page 24-142)
62-2x	Short in the front passenger's seat belt buckle switch	(see page 24-143)
71-1x	Open in the driver's seat position sensor	(see page 24-144)
71-2x	Short in the driver's seat position sensor	(see page 24-145)
81-4x	Internal failure of the ODS unit	(see page 24-149)
81-5x		
81-61	No signal from the ODS unit	(see page 24-147)
81-62	Non-stipulated data from the ODS unit	
81-63	Internal failure of the ODS unit	(see page 24-149)
81-64		
81-71	ODS unit does not calibrate	(see page 24-150)
81-78		
81-79	Front passenger's weight sensors initial check failure	

NOTE: The "x" at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacturer and other detail used for product analysis.

(cont'd)

DTC Troubleshooting Index (cont'd)

SRS Unit DTC	Detection Item	Notes
82-14	No signal from the front passenger's weight sensor (front inner side)	(see page 24-151)
82-15	Internal failure of the front passenger's weight sensor (front inner side)	(see page 24-155)
82-16	No signal from the front passenger's weight sensor (rear inner side)	(see page 24-156)
82-17	Internal failure of the front passenger's weight sensor (rear inner side)	(see page 24-155)
83-24	No signal from the front passenger's weight sensor (front outer side)	(see page 24-159)
82-25	Internal failure of the front passenger's weight sensor (front outer side)	(see page 24-155)
83-26	No signal from the front passenger's weight sensor (rear outer side)	(see page 24-163)
82-27	Internal failure of the front passenger's weight sensor (rear outer side)	(see page 24-155)
85-4x	Internal failure of the ODS unit	(see page 24-166)
85-5x		
85-61	No signal from the ODS unit	(see page 24-147)
85-62	Non-stipulated data from the ODS unit	
85-63	Internal failure of the ODS unit	(see page 24-166)
85-64		
85-71	ODS unit not initialize	(see page 24-167)
85-78		
85-79	OPDS sensor initial check failure	
86-1x	Faulty OPDS seat-back sensor	(see page 24-168)
86-2x	Faulty OPDS seat support sensor	
92-1x	Open in the passenger's airbag cutoff indicator	(see page 24-169)
92-2x	Open or short to ground in the passenger's airbag cutoff indicator	(see page 24-170)
A1-1x	Faulty power supply (VA line)	(see page 24-171)
A2-1x	Faulty power supply (VB line)	(see page 24-173)
B2-1x	No signal from the rear safing sensor	(see page 24-174)
B2-17	Internal failure of the rear safing sensor	(see page 24-177)
B2-8x		
B2-9x		
B2-Ax		
B2-Bx		
Ex-11	Control operation recorded	(see page 24-138)
Fx-11	Airbags and/or tensioners deployment recorded	(see page 24-139)

NOTE: The ''x'' at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacturer and other detail used for product analysis.

Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

SWS DTC Index

SRS Unit DTC	SWS DTC	Detection Item	Notes
81-4x	41-xx	Internal failure of the ODS unit	(see page 24-178)
	42-xx		
	43-xx		
82-14	14-11	Short to power in the front passenger's weight sensor (front inner side) power circuit	(see page 24-179)
	14-12	Short to ground in the front passenger's weight sensor (front inner side) power circuit	
	14-13	Open in the front passenger's weight sensor (front inner side) output circuit	
	14-14	Short to ground in the front passenger's weight sensor (front inner side) output circuit	
82-15	15-3x	Internal failure of the front passenger's weight sensor (front inner side)	(see page 24-181)
82-16	16-11	Short to power in the front passenger's weight sensor (rear inner side) power circuit	(see page 24-179)
	16-12	Short to ground in the front passenger's weight sensor (rear inner side) power circuit	
	16-13	Open in the front passenger's weight sensor (rear inner side) output circuit	
	16-14	Short to ground in the front passenger's weight sensor (rear inner side) output circuit	
82-17	17-3x	Internal failure of the front passenger's weight sensor (rear inner side)	(see page 24-181)
83-24	24-11	Short to power in the front passenger's weight sensor (front outer side) power circuit	(see page 24-180)
	24-12	Short to ground in the front passenger's weight sensor (front outer side) power circuit	
	24-13	Open in the front passenger's weight sensor (front outer side) output circuit	
	24-14	Short to ground in the front passenger's weight sensor (front outer side) output circuit	
83-25	25-3x	Internal failure of the front passenger's weight sensor (front outer side)	(see page 24-181)
83-26	26-11	Short to power in the front passenger's weight sensor (rear outer side) power circuit	(see page 24-180)
	26-12	Short to ground in the front passenger's weight sensor (rear outer side) power circuit	
	26-13	Open in the front passenger's weight sensor (rear outer side) output circuit	
	26-14	Short to ground in the front passenger's weight sensor (rear outer side) output circuit	
83-27	27-3x	Internal failure of the front passenger's weight sensor (rear outer side)	(see page 24-181)
81-71	71-xx	ODS unit does not calibrate	(see page 24-178)

NOTE: The ''x'' at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacturer and other detail used for product analysis.

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
SRS indicator does not come on	Symptom Troubleshooting (see page 24-181)	Communication with the HDS
SRS indicator stays on, but no DTCs are stored	Symptom Troubleshooting (see page 24-182)	• Charging system for under or overcharging • Communication with the HDS
Side airbag cutoff indicator flashes	Check the DTC. If a DTC indicated, go to the DTC troubleshooting	• ODS Initialization • Communication with the HDS
Side airbag cutoff indicator stays on	Symptom Troubleshooting (see page 24-183)	Communication with the HDS
Side airbag cutoff indicator does not come on	Symptom Troubleshooting (see page 24-183)	• Initialize the ODS unit • Communication with the HDS
Passenger's airbag cutoff indicator flashes	Check the DTC. If a DTC indicated, go to the DTC troubleshooting	• Calibration the ODS unit • Communication with the HDS
Passenger's airbag cutoff indicator stays on or comes on suddenly	Symptom Troubleshooting (see page 24-184)	Communication with the HDS
Passenger's airbag cutoff indicator does not come on	Check the DTC. If a DTC indicated, go to the DTC troubleshooting	Communication with the HDS
HDS does not communicate with the SRS unit or the vehicle	Troubleshoot the DLC circuit (see page 11-204).	Communication with the HDS

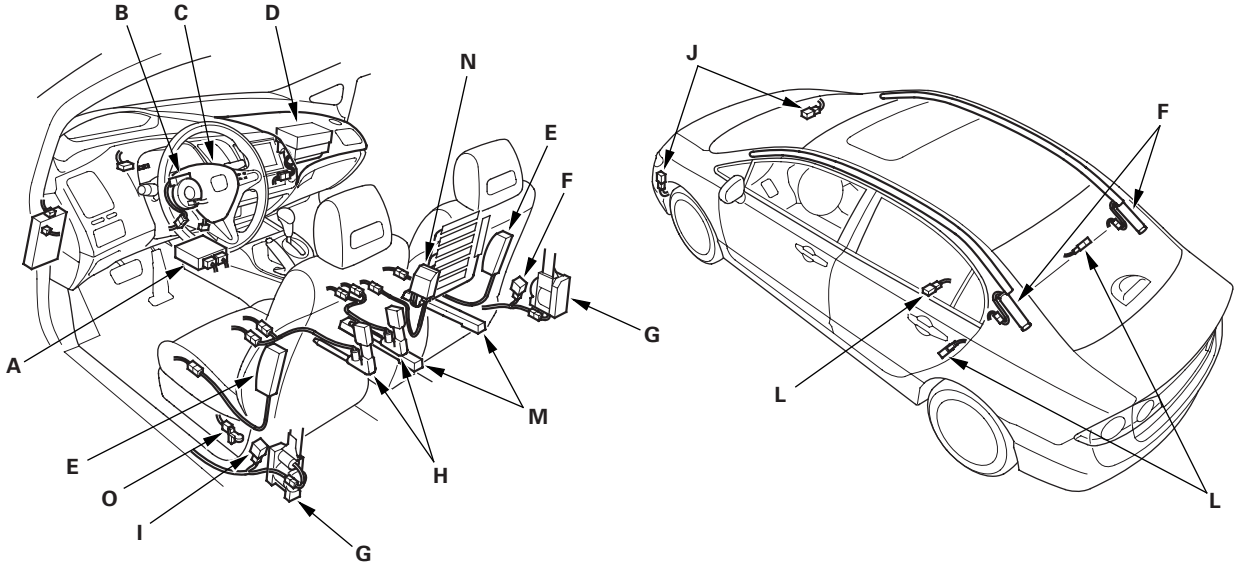
System Description

SRS Components

Airbags
The SRS is a safety device which, when used with the seat belt, is designed to help protect the driver and front passenger in a frontal impact exceeding a certain set limit. The system consists of the SRS unit, including safing sensor and impact sensor (A), the cable reel (B), the driver's airbag (C), the front passenger's airbag (D), side airbags (E), side curtain airbags (F), seat belt tensioners (G), seat belt buckle tensioners (H), side impact sensors (first) (I), front impact sensors (J), rear safing sensor (K) and side impact sensors (second) (L).
Since the driver's and front passenger's airbags use the same sensors, both normally inflate at the same time. However, it is possible for only one airbag to inflate. This can occur when collision severity is near the threshold for airbag deployment. In such cases, the SRS system will only deploy airbags when the protection provided by the seat belt is insufficient.

Front Passenger's Weight Sensors
The front passenger's weight sensors (M) are part of seat base. The front passenger's weight sensors detect the weight on the seat, and send the information to the ODS unit (N). If the total weight is about 30 kg (65 lbs) or less, the ODS unit sends a signal to the SRS unit to prevent the passenger's airbag from deploying. When the passenger's airbag is disabled, the passenger airbag cutoff indicator on the center panel comes on to alert the driver that the front passenger's airbag will not deploy in a front-end collision.

Driver's Seat Position Sensor
The driver's seat position sensor (O) is under the driver's seat on the left side. When the driver's seat is moved to its full forward position, the deployment of the driver's airbag is moderated to decrease its force of impact during a front-end collision.



(cont'd)

System Description (cont'd)

Rear Safing Sensor
The rear safing sensor is located under the rear seat. The rear safing sensor performs the same basic function as the safing sensor in the SRS unit. It measures sideways G force, such as the force the vehicle would receive in a side collision in the rear, and sends that information to the SRS unit. The SRS unit uses that information, and the information from the second side impact sensors to determine the side that is impacted and the force. If the threshold is met, the SRS unit deploys the side airbag, the side curtain airbag, and the seat belt tensioner on that side.

Side Airbag Cutoff Indicator/OPDS Operation
The indicator comes on when the front passenger's seat is occupied by a small adult or child who is leaning into the deployment path, or when an object (grocery bag, briefcase, purse, etc.) is in the seat. This indicates the passenger's side airbag is off and will not deploy; there is no problem with the side airbag. If the passenger sits upright or moves to another seat, or you remove the object from the seat, the light should go off. There will be some delay between the occupant's repositioning and when the indicator will turn on or off.

Passenger Airbag Cutoff Indicator
The indicator comes on if the weight on the front passenger's seat is about 30 kg (65 lbs) or less. This indicates the passenger's front airbag is off and will not deploy. The front airbag is shut off to reduce the chance of airbag-caused injuries.

SRS Operation
The main circuit in the SRS unit senses and analyzes the force of impact and, if necessary, ignites the inflator charges. If battery voltage is too low or power is disconnected due to the impact, the voltage regulator and the back-up power circuit will keep voltage at a constant level.

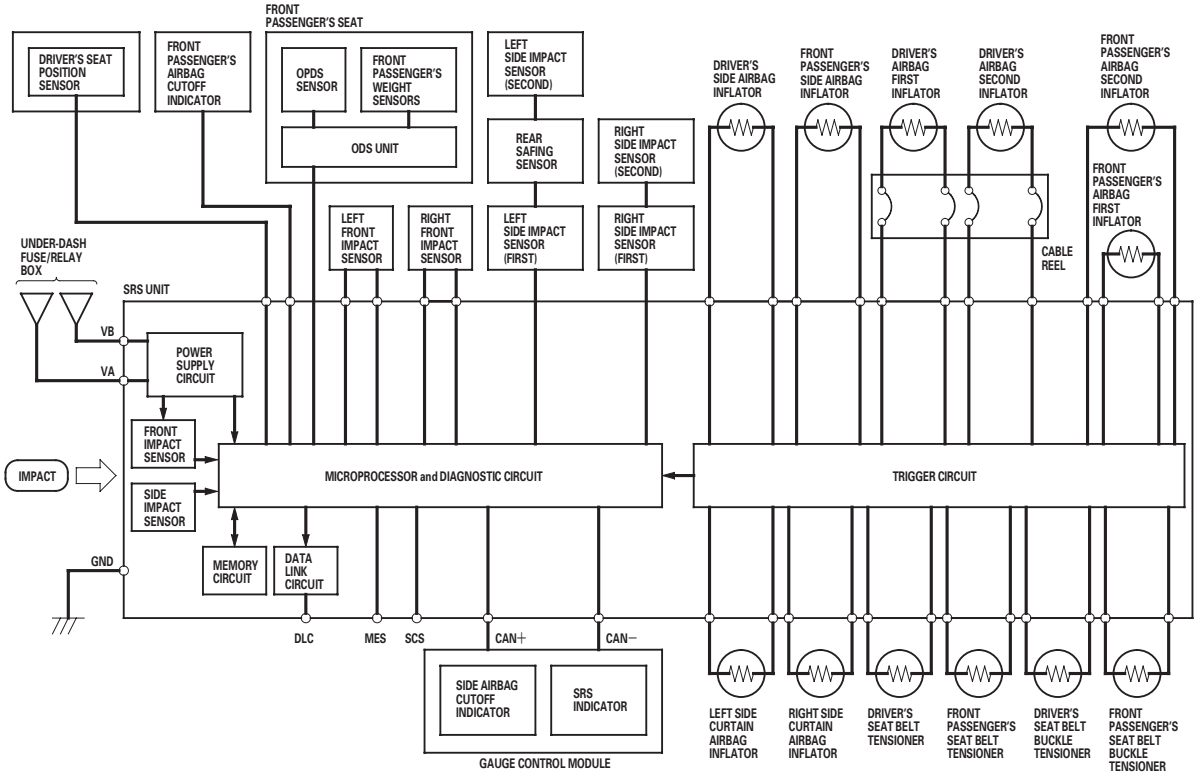
For the SRS to operate:

Seat Belt Tensioners and Seat Belt Buckle Tensioners
(1) A front impact sensor, side impact sensor, or the rear safing sensor must activate and send electric signals to the microprocessor.
(2) The microprocessor must compute the signals and trigger the tensioners.
(3) The charges must ignite and deploy the tensioners.

Driver's and Front Passenger's Airbag(s)
(1) A front impact sensor must activate and send electric signals to the microprocessor.
(2) The microprocessor must compute the signals and trigger the airbag inflator(s).
(3) The triggered inflators must ignite and deploy the airbags.

Side Airbag(s)
(1) A side impact sensor must activate and send electric signals to the microprocessor.
(2) The microprocessor must compute the signals and trigger the side airbag inflator(s). However, the microprocessor does not trigger the front passenger's side airbag if the SRS unit determines that the front passenger's head is in the deployment path of the side airbag.
(3) The inflator that receives the signal must ignite and deploy the side airbags.

Side Curtain Airbag(s)
(1) A side impact sensor or the rear safing sensor must activate, and send electrical signals to the microprocessor.
(2) The microprocessor must compute the signals and trigger the side curtain airbag and side airbag inflator(s).
(3) The triggered inflators must ignite and deploy the side curtain airbag and side airbag at the same time.



Self-diagnostic System

A self-diagnostic circuit is built into the SRS unit; when the ignition switch is turned to ON (II), the SRS indicator comes on and goes off after about 6 seconds if the system is operating normally.

If the indicator does not come on, or does not go off after 6 seconds, or comes on while driving, it indicates an abnormality in the system. The system must be inspected and repaired as soon as possible.

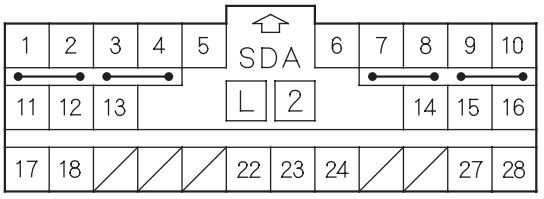
For better serviceability, the SRS unit memory stores a DTCs related to the cause of the malfunction, and the unit is connected to the data link connector (DLC). This information can be read with the HDS when it is connected to the DLC (see page 24-22).

NOTE: Before you disconnect the negative cable from battery for troubleshooting, review Battery Terminal Disconnection and Reconnection (see page 22-68).

(cont'd)

System Description (cont'd)

SRS Unit Inputs and Outputs at Connector A (28P)

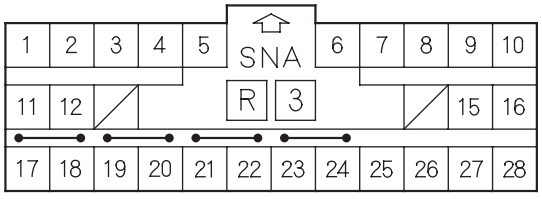


Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description
1	GRN	LA2+	Power source for the driver's airbag second inflator
2	PUR	LA2−	Ground for the driver's airbag second inflator
3	LT GRN	RA2+	Power source for the front passenger's airbag second inflator
4	LT BLU	RA2−	Ground for the front passenger's airbag second inflator
5	LT GRN	MES	Memory clear signal input
6	ORN	SCS	Service check signal input
7	LT BLU	LA1+	Power source for the driver's airbag first inflator
8	BRN	LA1−	Ground for the driver's airbag first inflator
9	YEL	RA1+	Power source for the front passenger's airbag first inflator
10	BLU	RA1−	Ground for the front passenger's airbag first inflator
11	WHT	CAN HI	Sends and receives communication signal with gauge control module
12	RED	CAN LO	Sends and receives communication signal with gauge control module
13	BLU	PTT	Passenger's airbag cutoff indicator output line
14	GRN	ODS	Sends and receives communication signal with the ODS unit
15	BRN	LFS−	Ground for the left front impact sensor
16	LT BLU	RFS−	Ground for the right front impact sensor
17	YEL	VA	SRS system sub power (common with ODS)
18	RED	VB	SRS dedicated power (dedicated booster circuit)
22	BLK	SRS GND (1)	Ground circuit for the SRS (G506)
23	BLK	SRS GND (2)	Ground circuit for the SRS (G506)
24	LT BLU	K-LINE	Sends and receives scan tool signal (serial data)
27	RED	LFS+	Power source for the left front impact sensor
28	GRN	RFS+	Power source for the right front impact sensor

NOTE: BLU or BRN wires may be substituted for the wire colors in this table.

SRS Unit Inputs and Outputs at Connector B (28P)



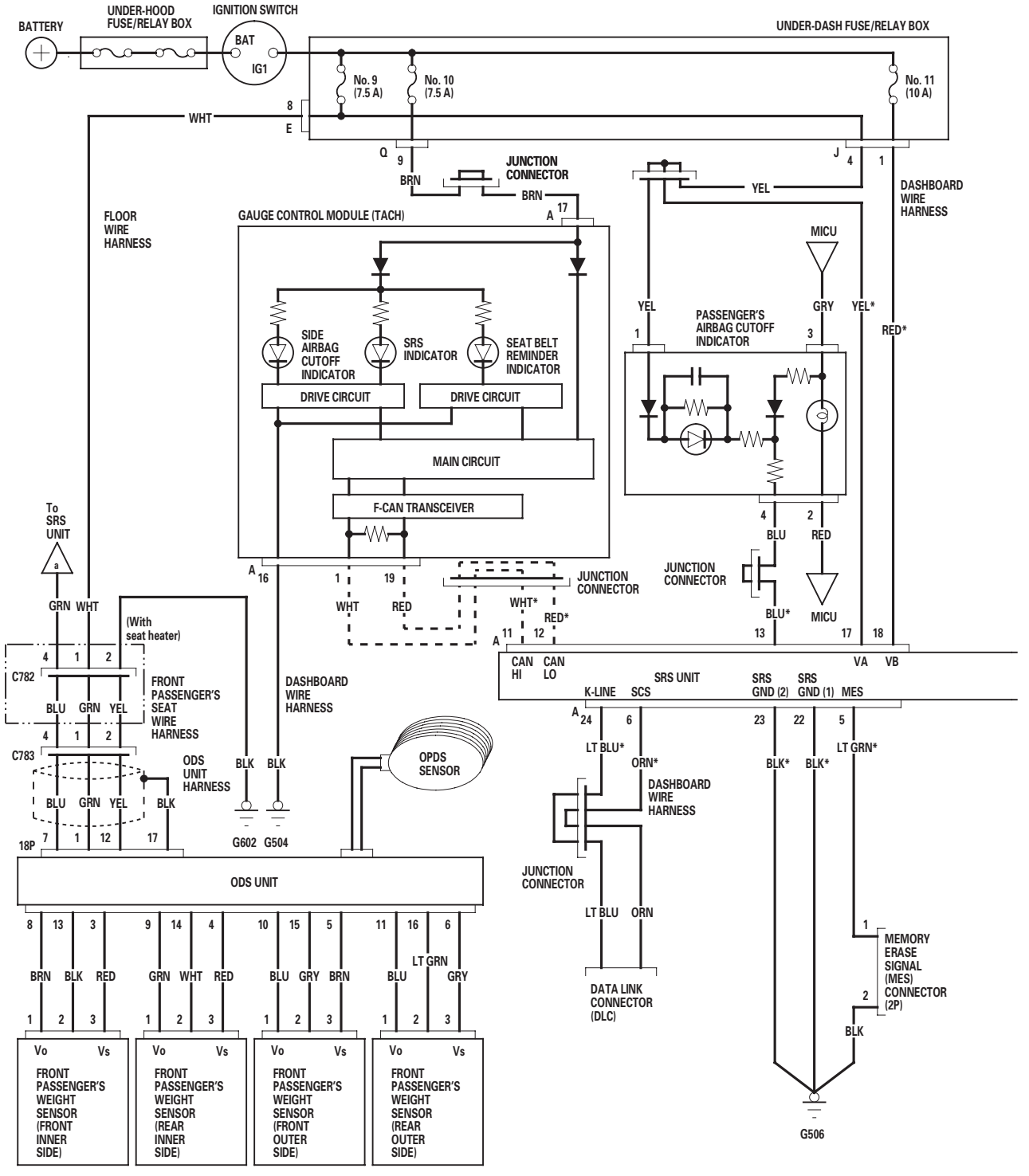
Wire side of female terminals

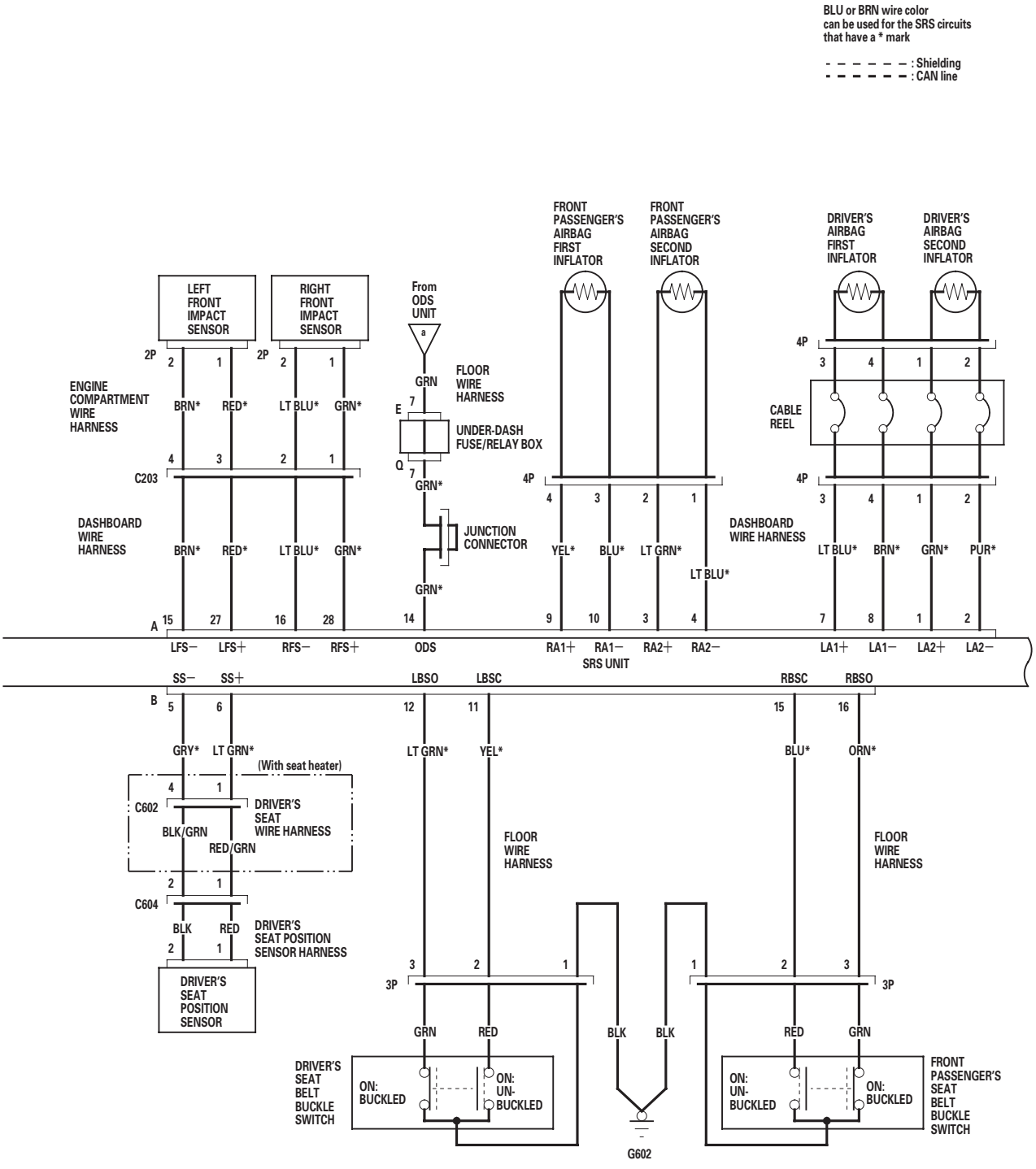
Terminal Number	Wire Color	Terminal Name	Description
1	RED	LRP+	Power source for the driver's seat belt tensioner
2	BRN	LRP−	Ground for the driver's seat belt tensioner
3	GRN	RRP+	Power source for the front passenger's seat belt tensioner
4	LT BLU	RRP−	Ground for the front passenger's seat belt tensioner
5	GRY	SS−	Ground for the driver's seat position sensor
6	LT GRN	SS+	Power source for the driver's seat position sensor
7	ORN	LBP+	Power source for the driver's buckle tensioner
8	GRN	LBP−	Ground for the driver's buckle tensioner
9	YEL	RBP+	Power source for the front passenger's buckle tensioner
10	WHT	RBP−	Ground for the front passenger's buckle tensioner
11	YEL	LBSC	Driver's seat belt buckle switch un-buckled signal
12	LT GRN	LBSO	Driver's seat belt buckle switch buckled signal
15	BLU	RBSC	Front passenger's seat belt buckle switch un-buckled signal
16	ORN	RBSO	Front passenger's seat belt buckle switch buckled signal
17	GRN	LSA+	Power source for the driver's side airbag inflator
18	RED	LSA−	Ground for the driver's side airbag inflator
19	WHT	RSA+	Power source for the front passenger's side airbag inflator
20	BLU	RSA−	Ground for the front passenger's side airbag inflator
21	BRN	LCA1+	Power source for the left side curtain airbag inflator
22	BLU	LCA1−	Ground for the left side curtain airbag inflator
23	GRY	RCA1+	Power source for the right side curtain airbag inflator
24	RED	RCA1−	Ground for the right side curtain airbag inflator
25	PNK	LBS1+	Power source for the left side impact sensor (first), left side impact sensor (second), and rear safing sensor
26	BLU	LBS1−	Ground for the left side impact sensor (first), left side impact sensor (second), and rear safing sensor
27	BRN	RBS1+	Power source for the right side impact sensor (first), right side impact sensor (second)
28	YEL	RBS1−	Ground for the right side impact sensor (first), right side impact sensor (second)

NOTE: BLU or BRN wires may be substituted for the wire colors in this table.

Circuit Diagram

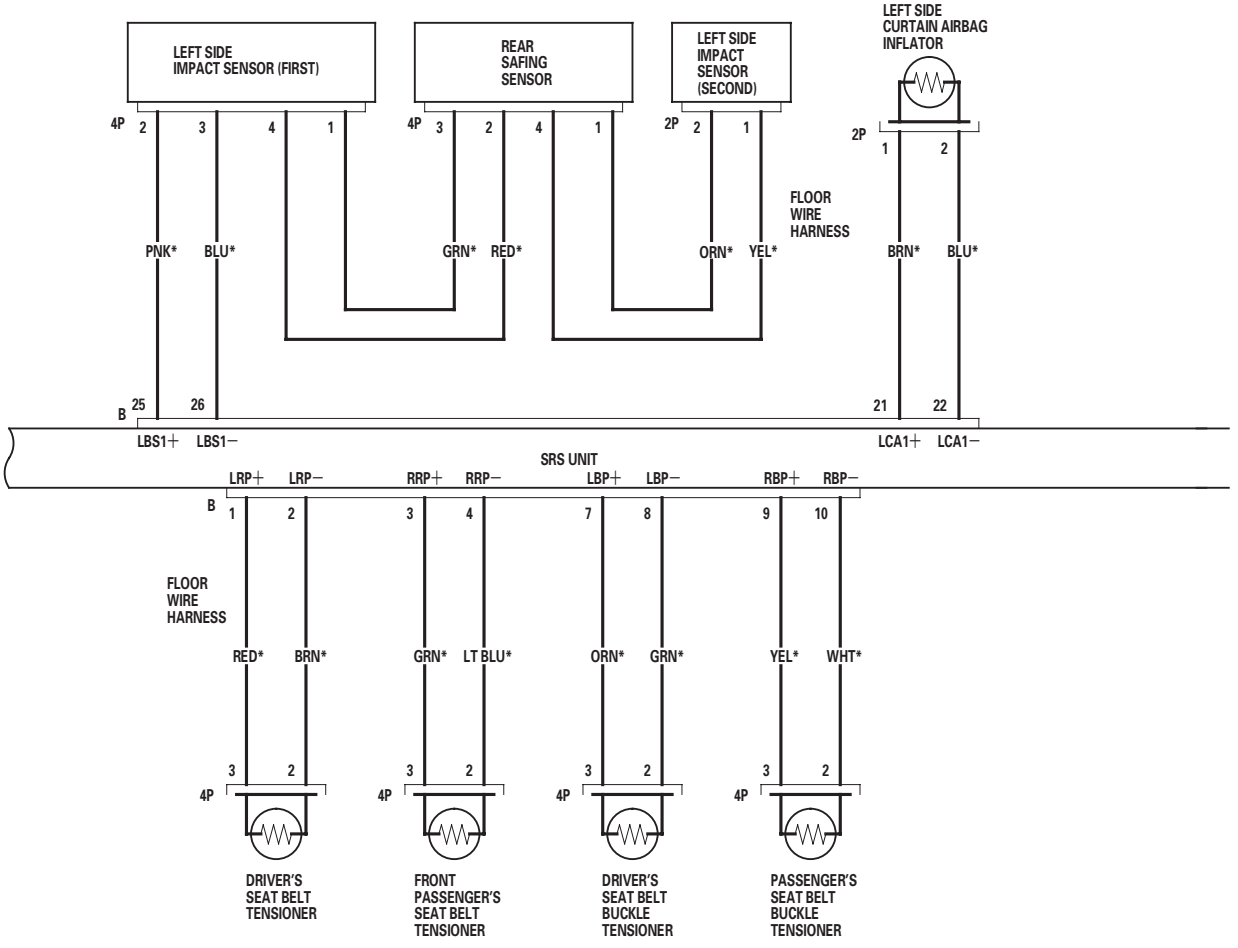
'06 model



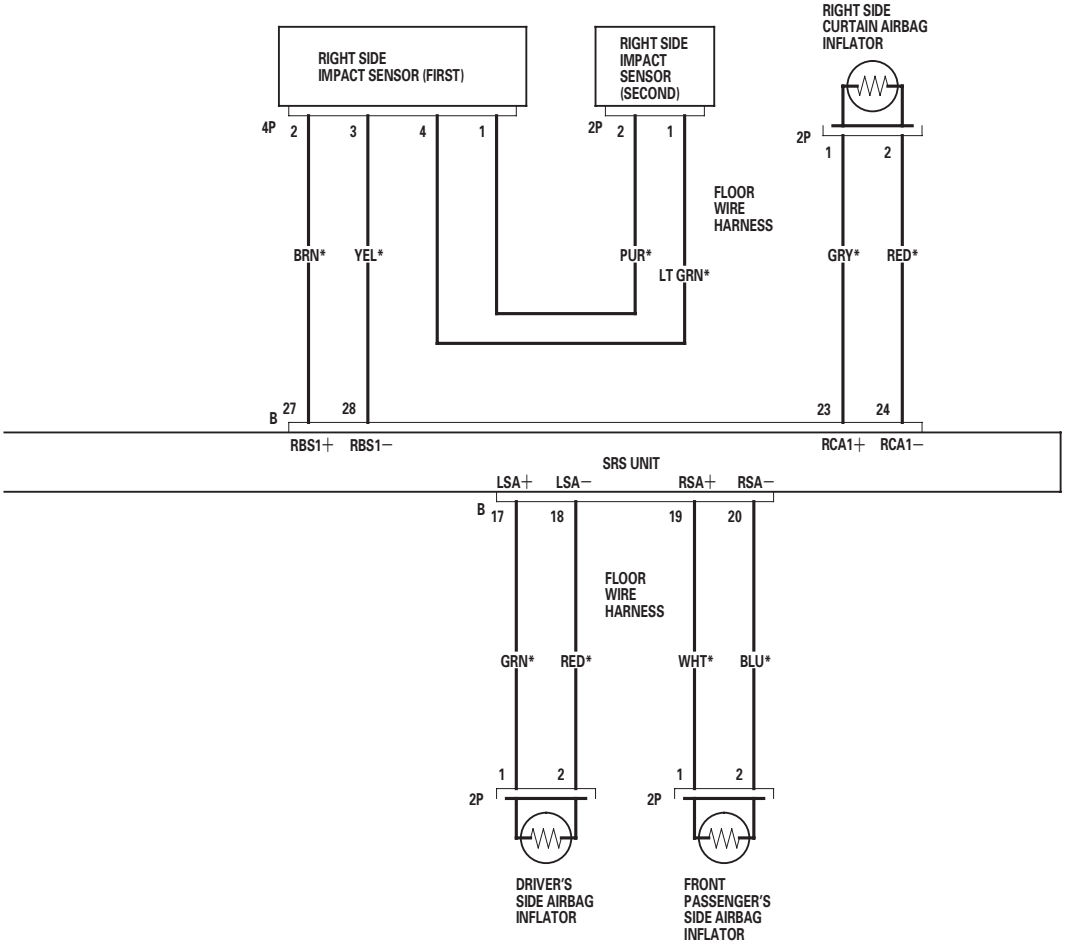

BLU or BRN wire color
can be used for the SRS circuits
that have a * mark
: Shielding
: CAN line
LEFT FRONT IMPACT SENSOR
RIGHT FRONT IMPACT SENSOR
From ODS UNIT
FRONT PASSENGER'S AIRBAG FIRST INFLATOR
FRONT PASSENGER'S AIRBAG SECOND INFLATOR
DRIVER'S AIRBAG FIRST INFLATOR
DRIVER'S AIRBAG SECOND INFLATOR
ENGINE COMPARTMENT WIRE HARNESS
FLOOR WIRE HARNESS
UNDER-DASH FUSE/RELAY BOX
JUNCTION CONNECTOR
CABLE REEL
DASHBOARD WIRE HARNESS
SRS UNIT
LFS− LFS+ RFS− RFS+ ODS RA1+ RA1− RA2+ RA2− LA1+ LA1− LA2+ LA2−
SS− SS+ LBSO LBSC RBSC RBSO
(With seat heater)
DRIVER'S SEAT WIRE HARNESS
DRIVER'S SEAT POSITION SENSOR HARNESS
DRIVER'S SEAT POSITION SENSOR
DRIVER'S SEAT BELT BUCKLE SWITCH
FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH
ON: BUCKLED
ON: UN-BUCKLED
G602

(cont'd)

Circuit Diagram (cont'd)

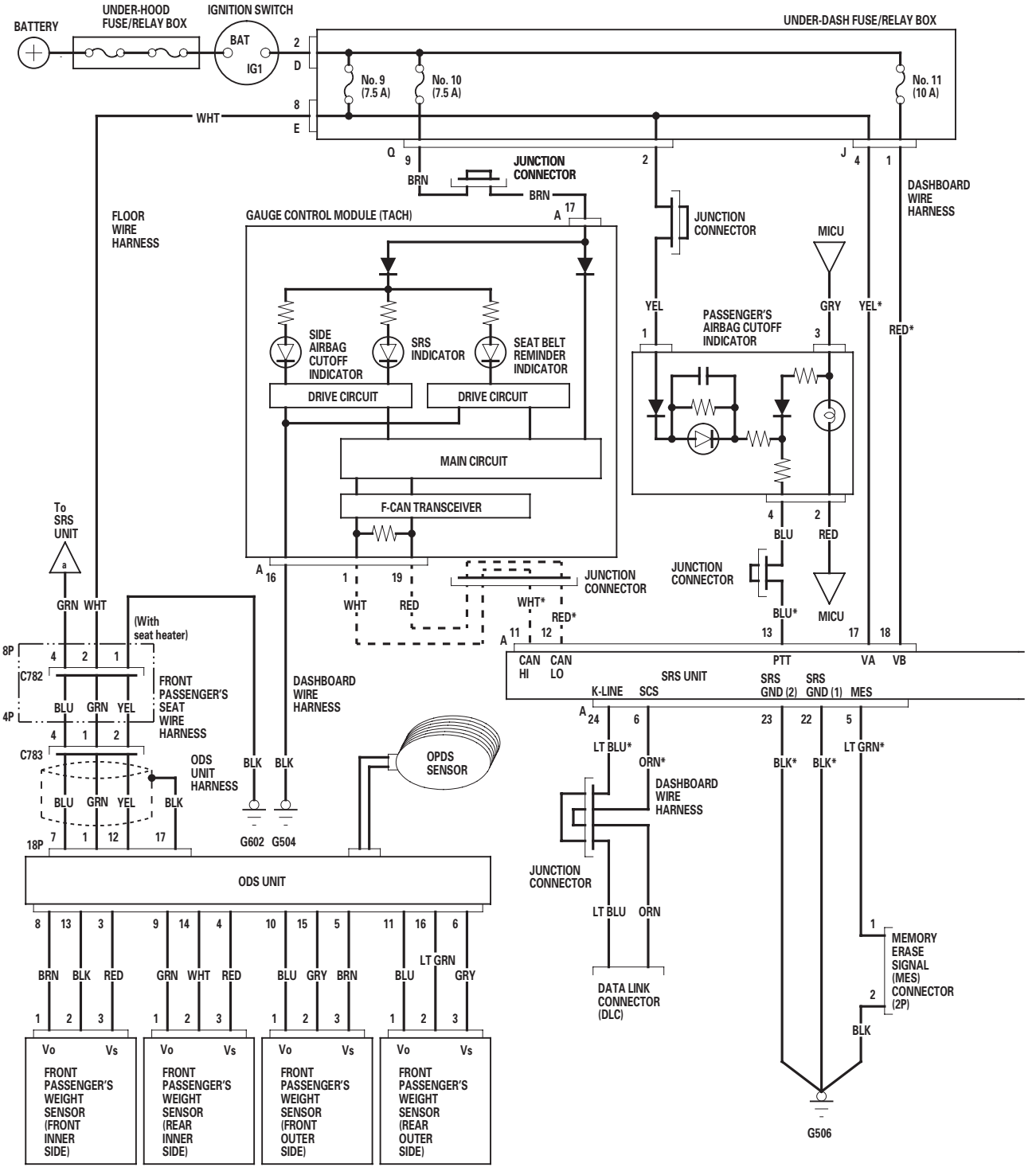


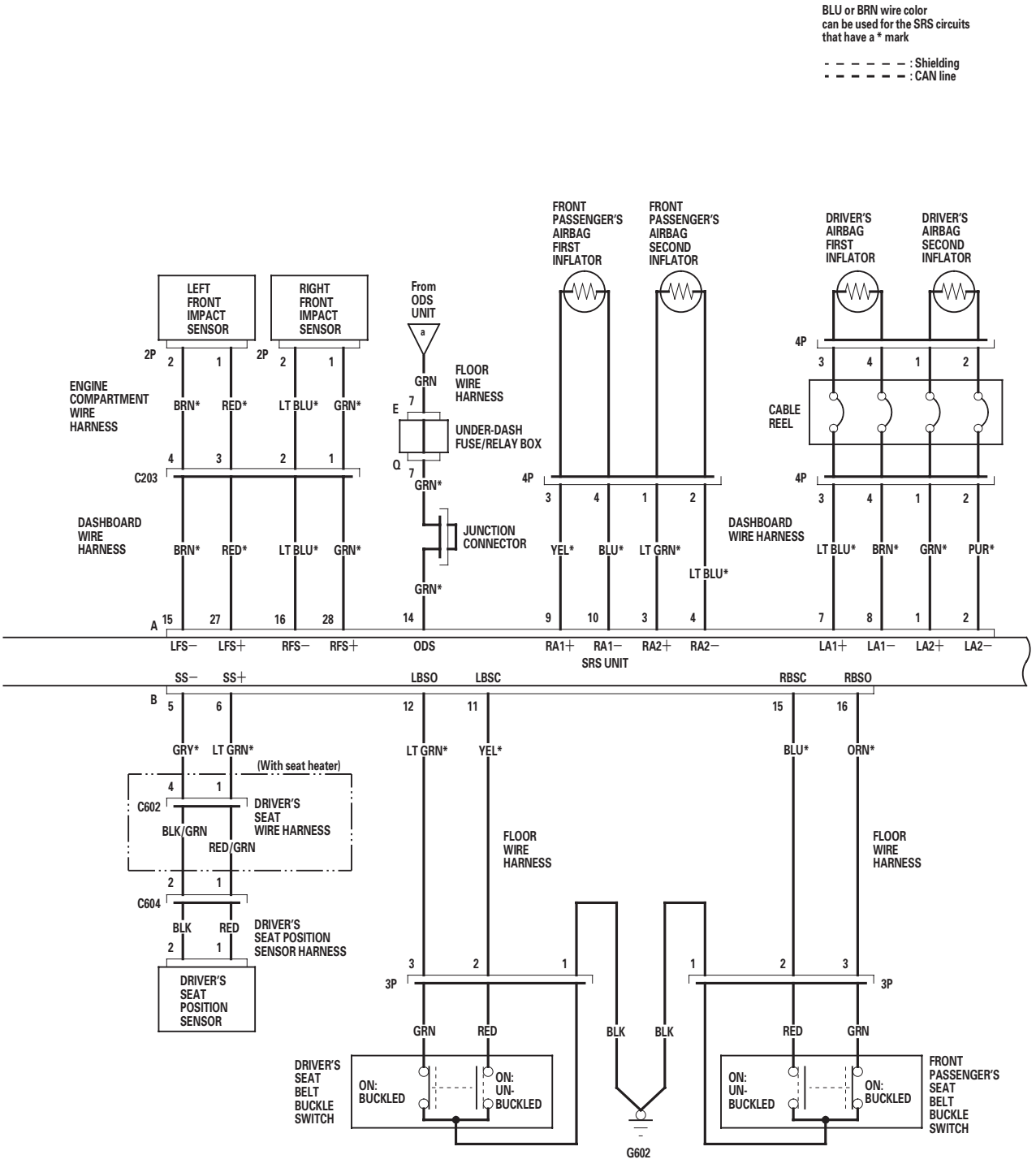
BLU or BRN wire color
can be used for the SRS circuits
that have a * mark



Circuit Diagram (cont'd)

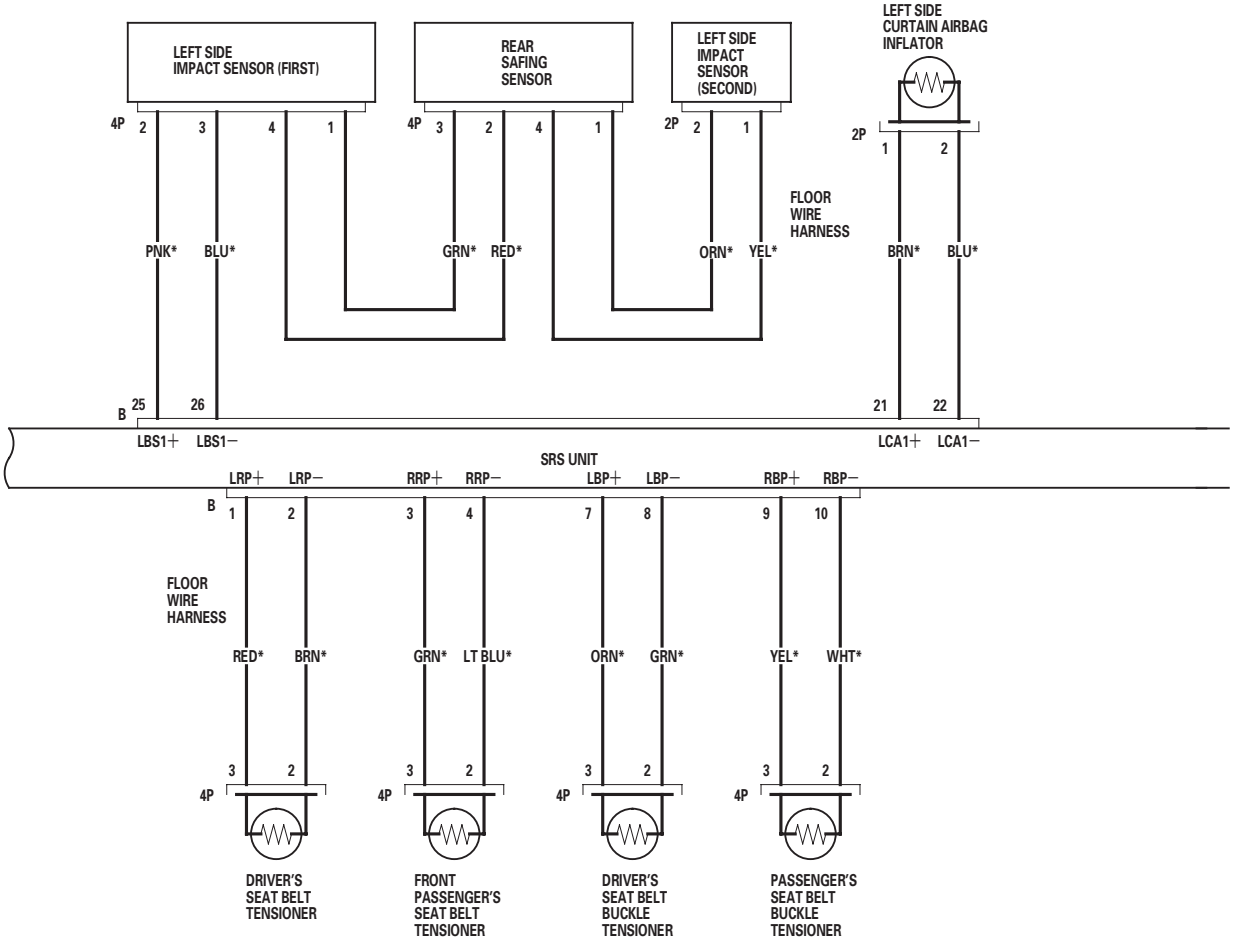
'07-09 models



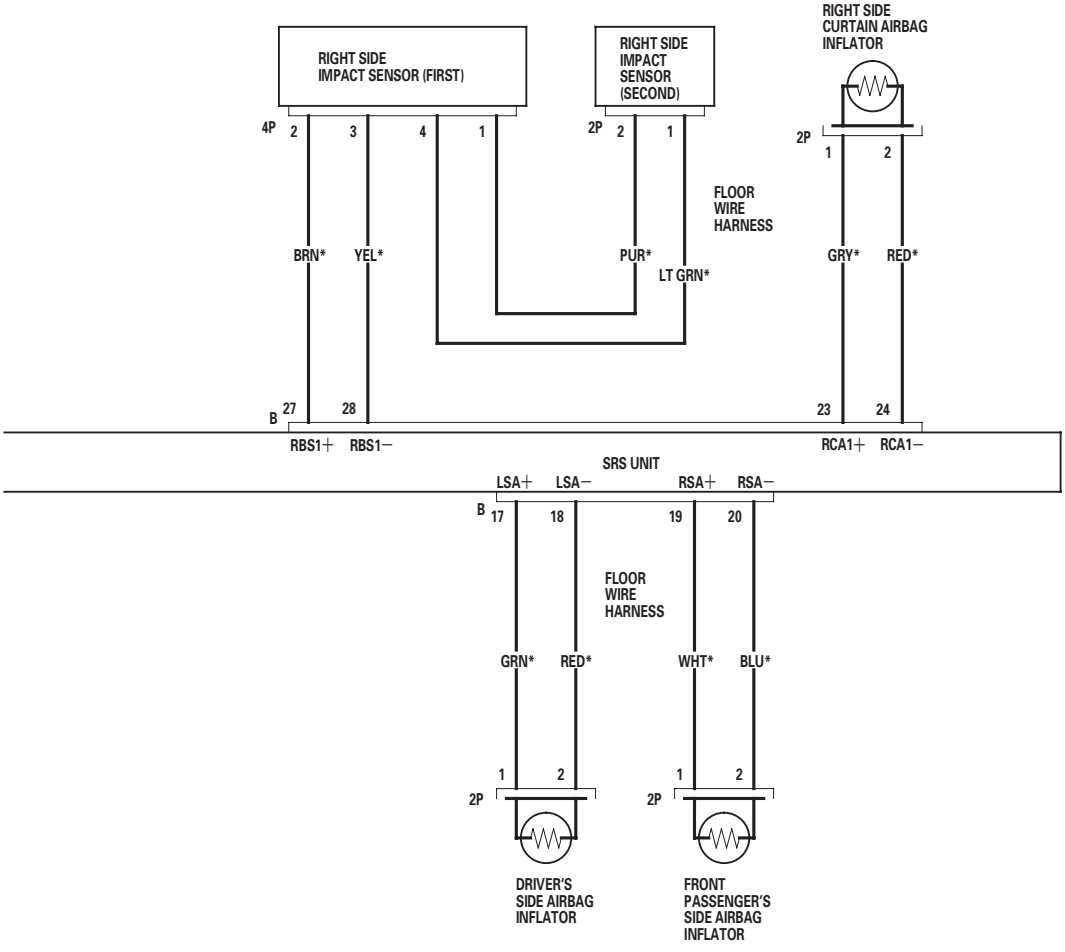

BLU or BRN wire color
can be used for the SRS circuits
that have a * mark
: Shielding
: CAN line
LEFT FRONT IMPACT SENSOR
RIGHT FRONT IMPACT SENSOR
From ODS UNIT
FRONT PASSENGER'S AIRBAG FIRST INFLATOR
FRONT PASSENGER'S AIRBAG SECOND INFLATOR
DRIVER'S AIRBAG FIRST INFLATOR
DRIVER'S AIRBAG SECOND INFLATOR
ENGINE COMPARTMENT WIRE HARNESS
FLOOR WIRE HARNESS
UNDER-DASH FUSE/RELAY BOX
JUNCTION CONNECTOR
CABLE REEL
DASHBOARD WIRE HARNESS
SRS UNIT
LFS− LFS+ RFS− RFS+ ODS RA1+ RA1− RA2+ RA2− LA1+ LA1− LA2+ LA2−
SS− SS+ LBSO LBSC RBSC RBSO
(With seat heater)
DRIVER'S SEAT WIRE HARNESS
DRIVER'S SEAT POSITION SENSOR HARNESS
DRIVER'S SEAT POSITION SENSOR
DRIVER'S SEAT BELT BUCKLE SWITCH
FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH
ON: BUCKLED
ON: UN-BUCKLED
G602

(cont'd)

Circuit Diagram (cont'd)



BLU or BRN wire color
can be used for the SRS circuits
that have a * mark



DTC Troubleshooting

DTC 11-1x (''x'' can be 0 thru 9 or A thru F):
Open in the Driver's Airbag First Inflator

DTC 11-4x (''x'' can be 0 thru 9 or A thru F):
Open in the Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

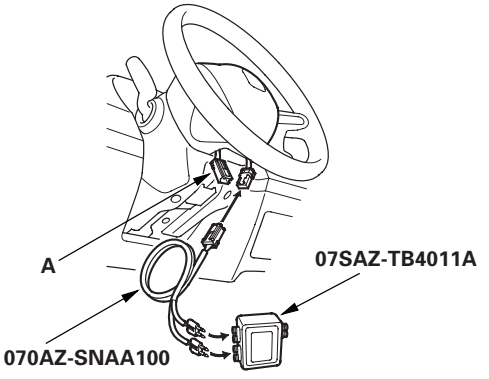
   Does the SRS indicator stay on, and is DTC 11-1x or 11-4x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to the cable reel.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

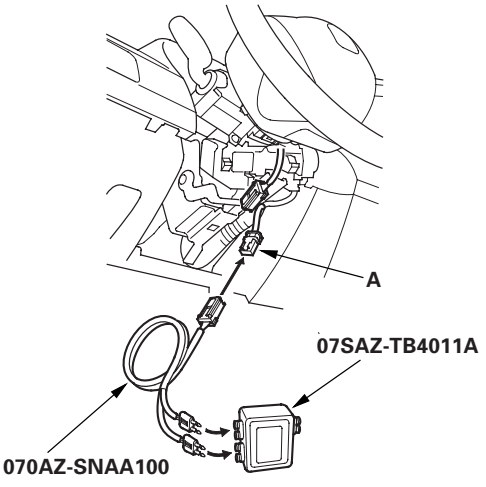
   Is DTC 11-1x or 11-4x indicated?

   YES—Go to step 9.

   NO—Open in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-188), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Remove the column cover (see page 17-9), then disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-1x or 11-4x indicated?

    YES—Go to step 15.

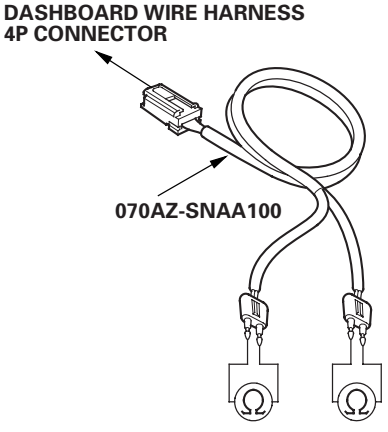
    NO—Open in the cable reel; replace the cable reel (see page 24-200), then clear the DTC. ■

15. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

18. Measure the resistance between the terminals of both SRS simulator leads. There should be less than 1.0 Ω.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Open in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 11-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Driver's Airbag First Inflator

DTC 11-6x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100
- SRS short canceller 070AZ-SAA0100

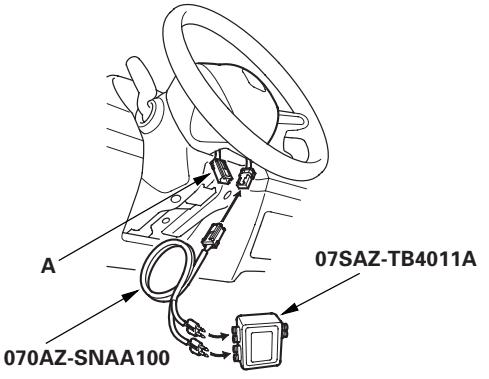
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 11-3x or 11-6x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to the cable reel.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

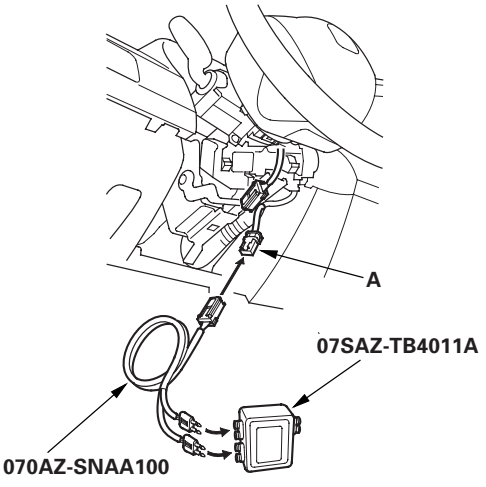
   Is DTC 11-3x or 11-6x indicated?

   YES—Go to step 9.

   NO—Short in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-188), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Remove the column cover (see page 17-9), then disconnect dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-3x or 11-6x indicated?

    YES—Go to step 15.

    NO—Short in the cable reel; replace the cable reel (see page 24-200), then clear the DTC. ■

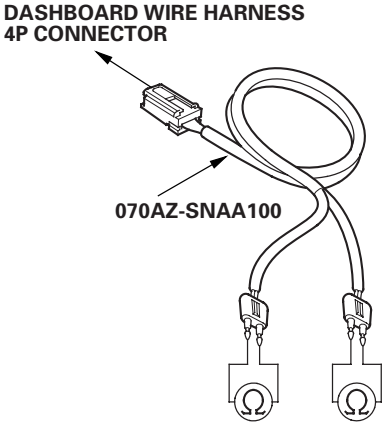
15. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

18. Connect the SRS short cancellers (070AZ-SAA0100) to SRS unit connector A (28P) terminals No. 7 and No. 8 and terminals No. 1 and No. 2 (see page 24-18).

19. Measure the resistance between the terminals of both SRS simulator leads. There should be an open circuit or at least 1 MΩ.



    Is the resistance as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203). ■

    NO—Short in the dashboard wire harness; replace dashboard wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 11-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Driver's Airbag First Inflator

DTC 11-Ax (''x'' can be 0 thru 9 or A thru F): Short to Power in the Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100

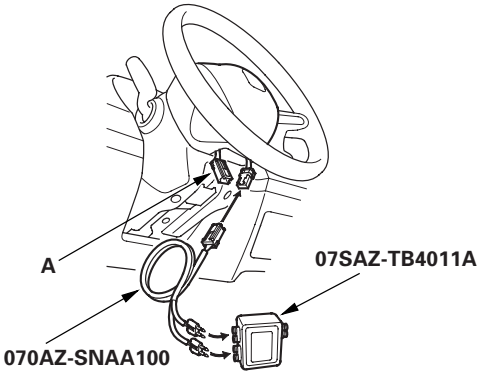
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 11-8x or 11-Ax indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to the cable reel.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

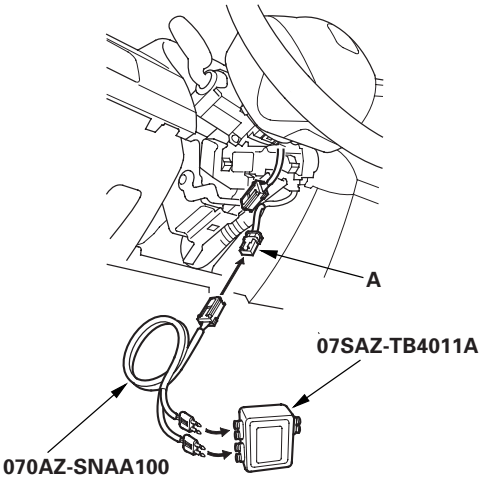
   Is DTC 11-8x or 11-Ax indicated?

   YES—Go to step 9.

   NO—Short to power in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-188), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Remove the column cover (see page 17-9), then disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-8x or 11-Ax indicated?

    YES—Go to step 15.

    NO—Short to power in the cable reel; replace the cable reel (see page 24-200), then clear the DTC. ■

15. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

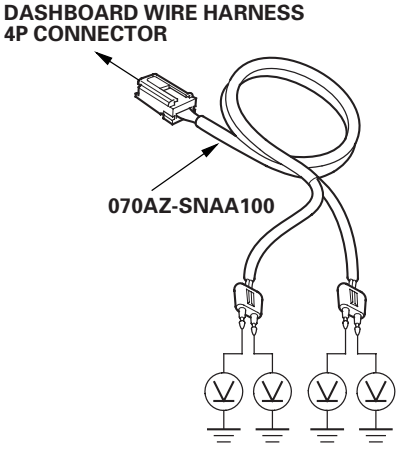
16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

18. Reconnect the negative cable to the battery.

19. Turn the ignition switch to ON (II).

20. Measure the voltage between each terminal of the SRS simulator lead and body ground. There should be less than 0.2 V.



    Is the voltage as specified?

    YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203). ■

    NO—Short to power in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 11-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Driver's Airbag First Inflator

DTC 11-Bx (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Driver's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100

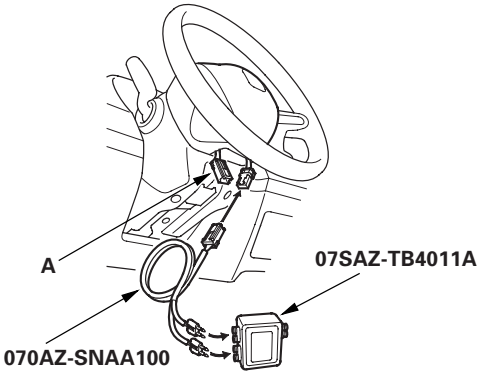
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 11-9x or 11-Bx indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to the cable reel.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

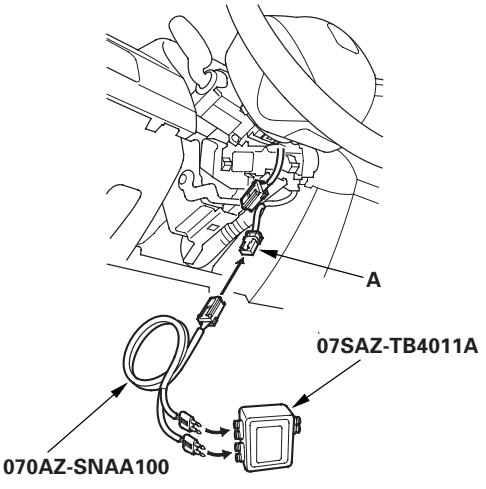
   Is DTC 11-9x or 11-Bx indicated?

   YES—Go to step 9.

   NO—Short to ground in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-188), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the battery negative cable, then wait at least 3 minutes.

10. Remove the column cover (see page 17-9), then disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.

12. Reconnect the negative cable to the battery.

13. Clear the DTC memory.

14. Read the DTC.

    Is DTC 11-9x or 11-Bx indicated?

    YES—Go to step 15.

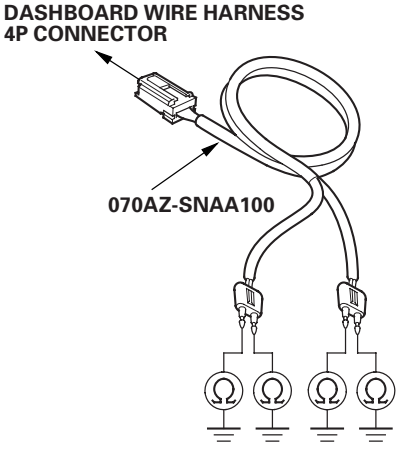
    NO—Short to ground in the cable reel; replace the cable reel (see page 24-200), then clear the DTC. ■

15. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

17. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

18. Measure the resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 12-1x (''x'' can be 0 thru 9 or A thru F): Open in the Front Passenger's Airbag First Inflator

DTC 12-4x (''x'' can be 0 thru 9 or A thru F): Open in the Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

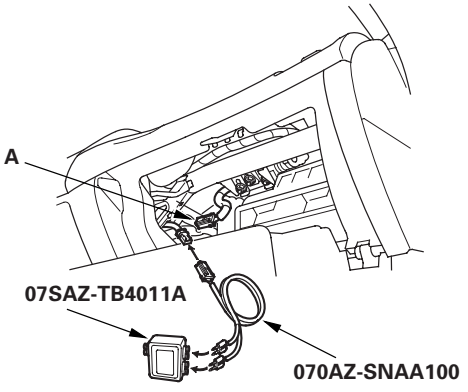
   Does the SRS indicator stay on, and is DTC 12-1x or 12-4x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the lower glove box (see page 20-104), then disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to the dashboard wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 12-1x or 12-4x indicated?

   YES—Go to step 9.

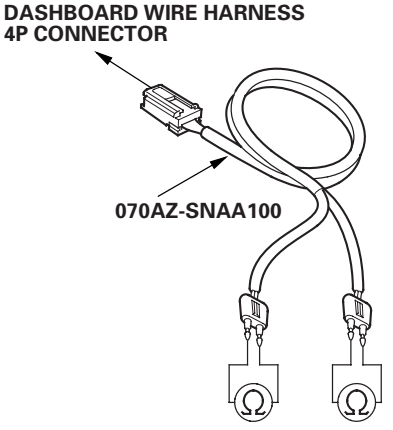
   NO—Open in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-189), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

12. Measure the resistance between the terminals of both SRS simulator leads. There should be less than 1.0 Ω.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P). Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 12-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Front Passenger's Airbag First Inflator

DTC 12-6x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100
- SRS short canceller 070AZ-SAA0100

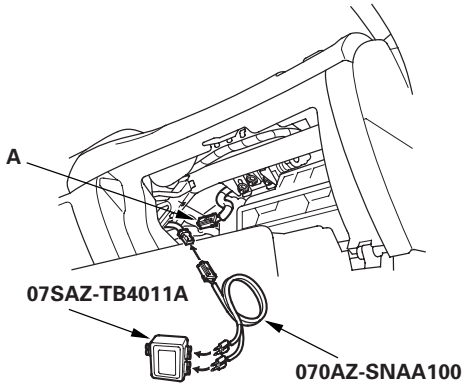
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 12-3x or 12-6x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Remove the lower glove box (see page 20-104), then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



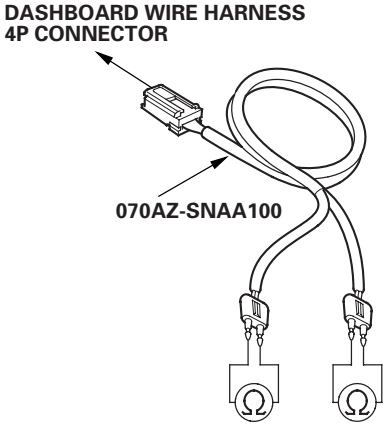
5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to dashboard wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-22).

   Is DTC 12-3x or 12-6x indicated?

   YES—Go to step 9.

   NO—Short in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-189), then clear the DTC. ■
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).
11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.
12. Connect the SRS short cancellers (070AZ-SAA0100) to the SRS unit connector A (28P) terminals No. 9 and No. 10 and No. 3 and terminals No. 3 and No. 4 (see page 24-18).

13. Measure the resistance between the terminals of both SRS simulator leads. There should be an open circuit or at least 1 MΩ.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203).■

NO—Short in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC.■

DTC 12-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Front Passenger's Airbag First Inflator

DTC 12-Ax (''x'' can be 0 thru 9 or A thru F): Short to Power in the Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 12-8x or 12-Ax indicated?

   YES—Go to step 3.

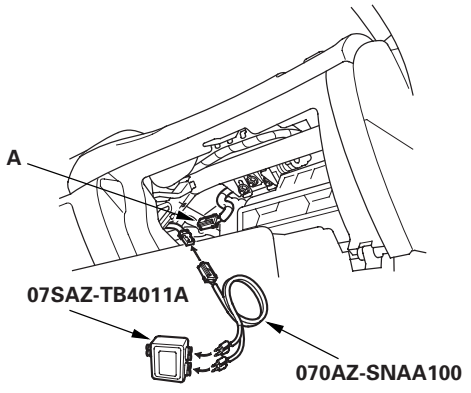
   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

(cont'd)

DTC Troubleshooting (cont'd)

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the lower glove box (see page 20-104), then disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to the dashboard wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 12-8x or 12-Ax indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-189), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

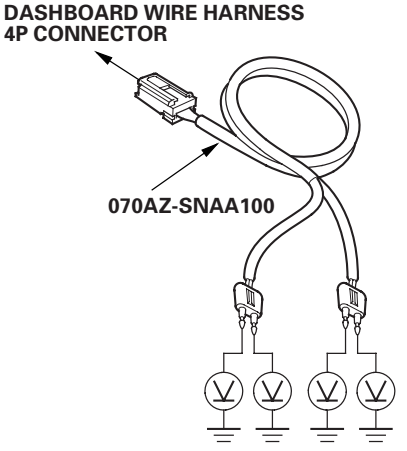
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

12. Reconnect the negative cable to the battery.

13. Turn the ignition switch to ON (II).

14. Measure the voltage between each terminal of the SRS simulator lead and body ground. There should be less than 0.2 V.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

DTC 12-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Front Passenger's Airbag First Inflator

DTC 12-Bx (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Front Passenger's Airbag Second Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead J 070AZ-SNAA100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

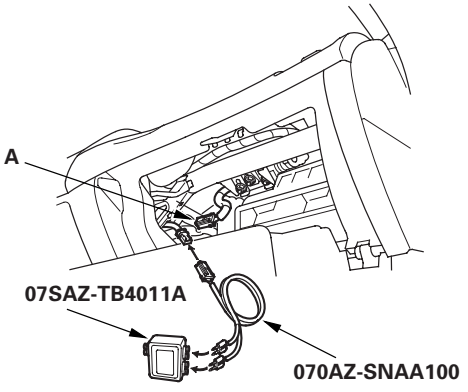
   Does the SRS indicator stay on, and is DTC 12-9x or 12-Bx indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the lower glove box (see page 20-104), then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead J to the dashboard wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 12-9x or 12-Bx indicated?

   YES—Go to step 9.

   NO—Short to ground in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-189), then clear the DTC.■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

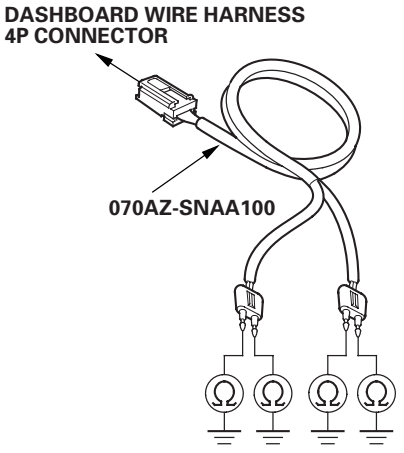
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

11. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the dashboard wire harness 4P connector.

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure the resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 MΩ.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203).■

NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC.■

DTC 21-1x ("x" can be 0 thru 9 or A thru F): Open in the Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

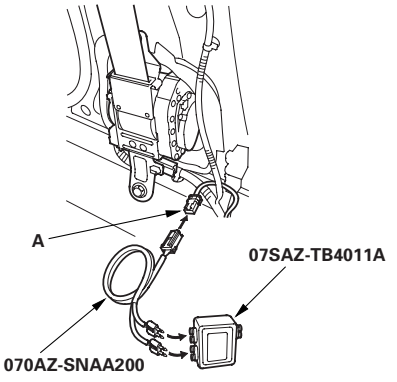
   Does the SRS indicator stay on, and is DTC 21-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the driver's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 21-1x indicated?

   YES—Go to step 9.

   NO—Open in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4), then clear the DTC. ■

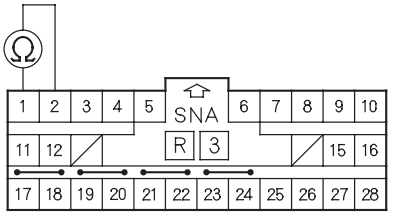
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and front passenger's seat belt tensioner connector (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Measure the resistance between SRS unit connector B (28P) terminals No. 1 and No. 2. There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 21-3x ("x" can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 21-3x indicated?

   YES—Go to step 3.

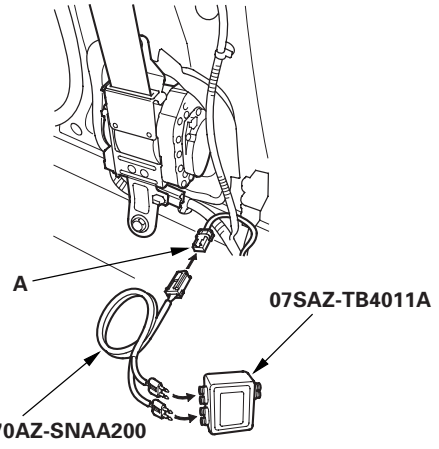
   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

(cont'd)

DTC Troubleshooting (cont'd)

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the driver's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 21-3x indicated?

   YES—Go to step 9.

   NO—Short in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4), then clear the DTC.■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

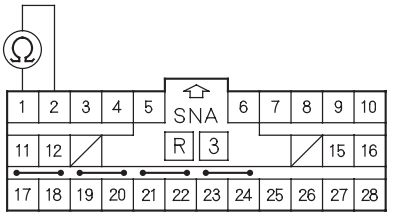
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and front passenger's seat belt tensioner connector (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between SRS unit connector B (28P) terminals No. 1 and No. 2. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203).■

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC.■

DTC 21-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

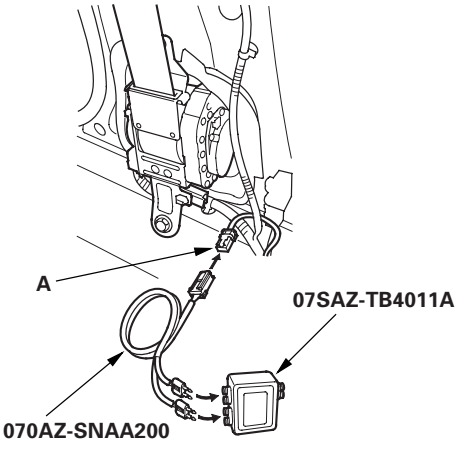
   Does the SRS indicator stay on, and is DTC 21-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the driver's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 21-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and front passenger's seat belt tensioner connector (see step 7 on page 24-21).

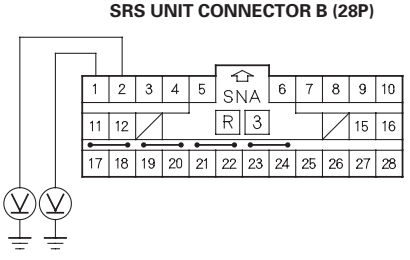
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between body ground and SRS unit connector B (28P) terminals No. 1 and No. 2, individually. There should be less than 0.2 V.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 21-9x ("x" can be 0 thru 9 or A thru F): Short to Ground in the Driver's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

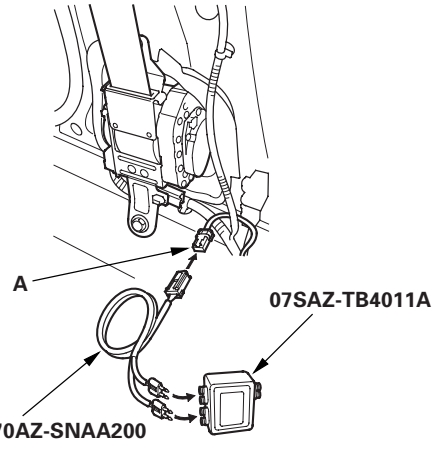
   Does the SRS indicator stay on, and is DTC 21-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshooting the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the driver's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

Is DTC 21-9x indicated?

YES—Go to step 9.

NO—Short to ground in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

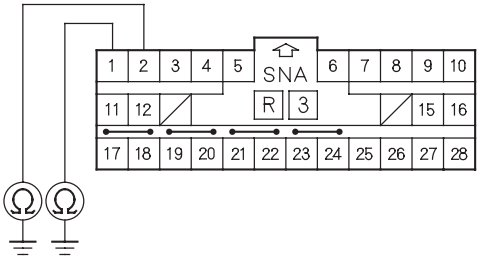
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and front passenger's seat belt tensioner connector (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between body ground and SRS unit connector B (28P) terminals No. 1 and No. 2, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 22-1x (''x'' can be 0 thru 9 or A thru F): Open in the Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

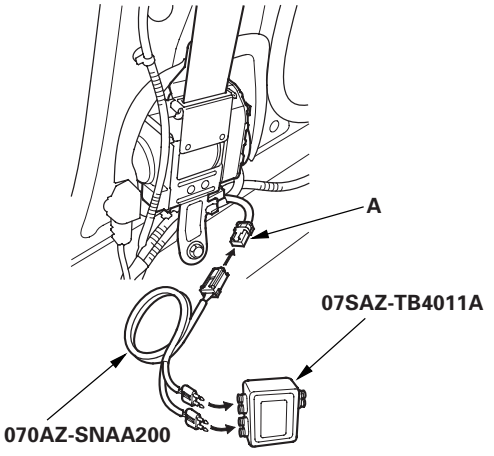
   Does the SRS indicator stay on, and is DTC 22-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 22-1x indicated?

   YES—Go to step 9.

   NO—Open in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4), then clear the DTC. ■

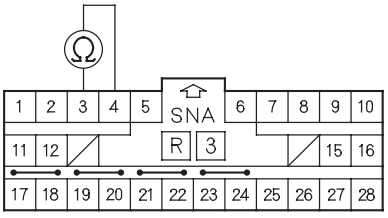
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and driver's seat belt tensioner connector (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Measure the resistance between SRS unit connector B (28P) terminals No. 3 and No. 4. There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 22-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

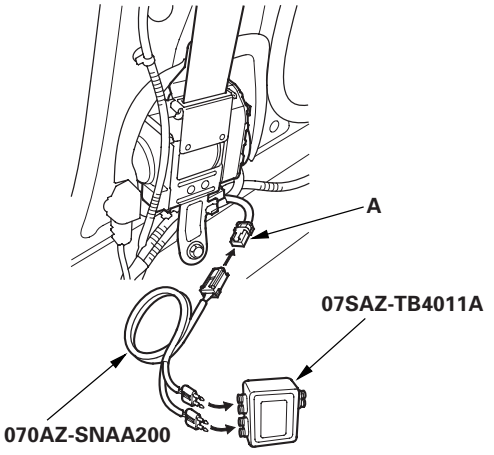
   Does the SRS indicator stay on, and is DTC 22-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 22-3x indicated?

   YES—Go to step 9.

   NO—Short in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

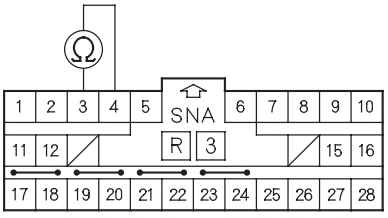
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and driver's seat belt tensioner connector (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between SRS unit connector B (28P) terminals No. 3 and No. 4. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 22-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

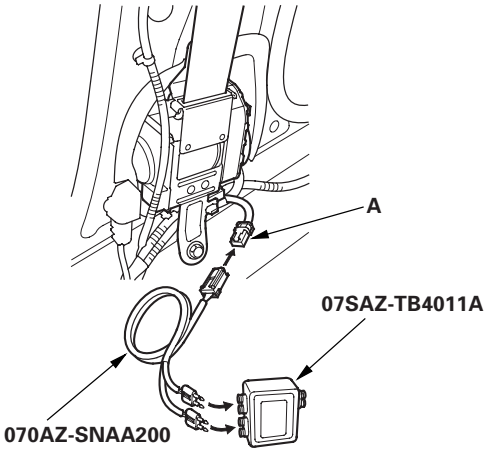
   Does the SRS indicator stay on, and is DTC 22-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 22-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and driver's seat belt tensioner connector (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

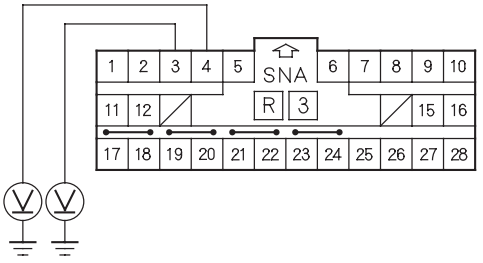
12. Disconnect the simulator lead from the floor wire harness.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between body ground and SRS unit connector B (28P) terminals No. 3 and No. 4, individually. There should be less than 0.2 V.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 22-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Front Passenger's Seat Belt Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

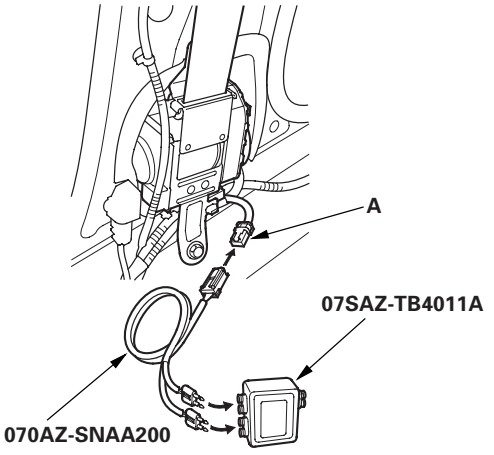
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 22-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Remove the B-pillar lower trim (see page 20-72), then disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt tensioner.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 22-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

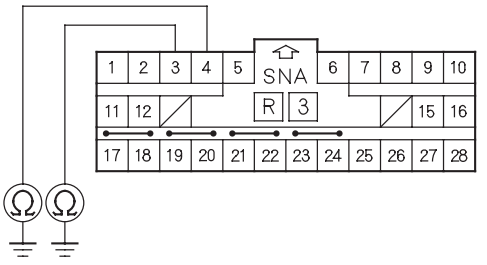
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and driver's seat belt tensioner connector (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between body ground and SRS unit connector B (28P) terminals No. 3 and No. 4, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 27-1x (''x'' can be 0 thru 9 or A thru F): Open in the Driver's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

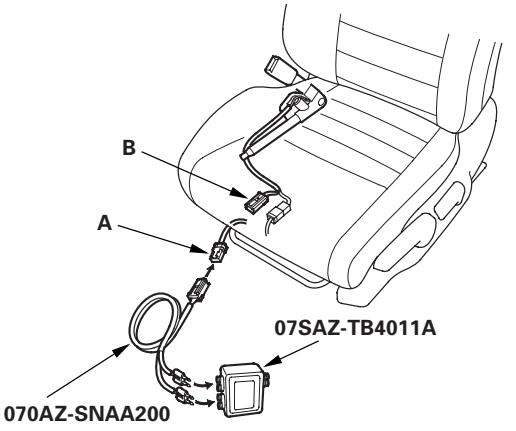
   Does the SRS indicator stay on, and is DTC 27-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the floor wire harness 4P connector (A) from the driver's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness connector.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 27-1x indicated?

   YES—Go to step 9.

   NO—Open in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle (see page 24-6), then clear the DTC. ■

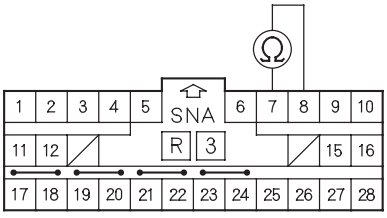
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the front passenger's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Measure the resistance between SRS unit connector B (28P) terminals No. 7 and No. 8. There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 27-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Driver's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

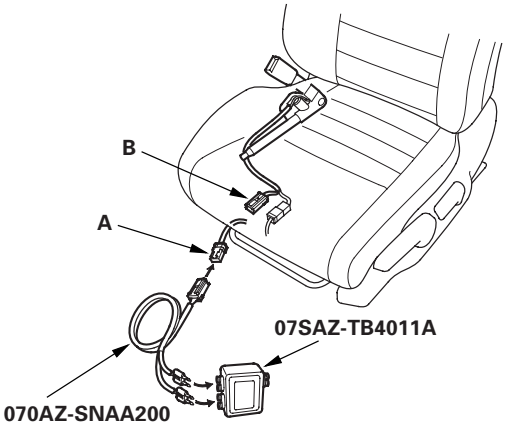
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 27-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the driver's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 27-3x indicated?

   YES—Go to step 9.

   NO—Short in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle (see page 24-6), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

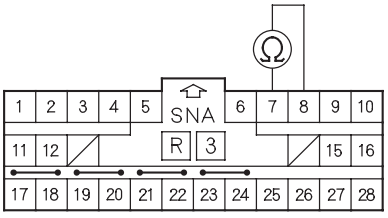
10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the front passenger's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between SRS unit connector B (28P) terminals No. 7 and No. 8. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 27-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Driver's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

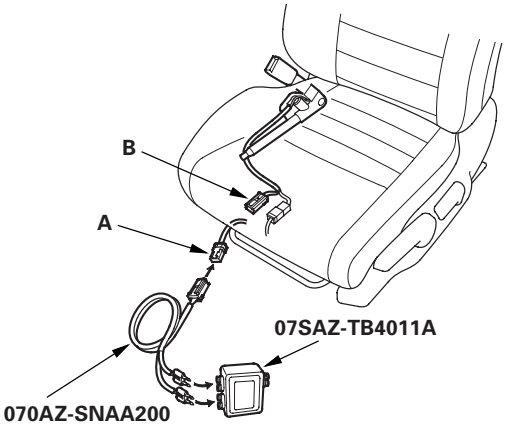
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 27-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the driver's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 27-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle (see page 24-6), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the front passenger's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

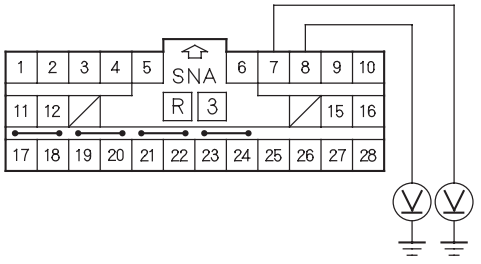
12. Disconnect the simulator lead from the floor wire harness.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between body ground and SRS unit connector B (28P) terminals No. 7 and No. 8, individually. There should be less than 0.2 V.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 27-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Driver's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

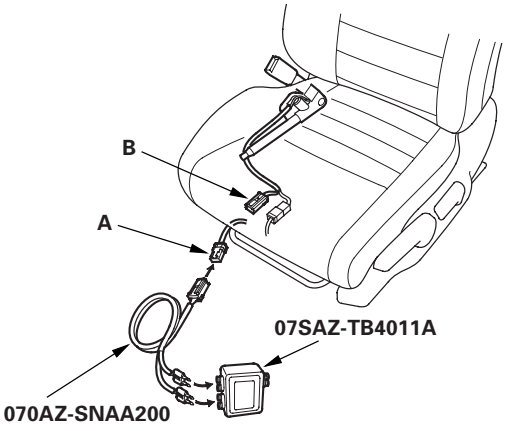
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 27-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the driver's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 27-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the driver's seat belt buckle tensioner; replace the driver's seat belt buckle (see page 24-6), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

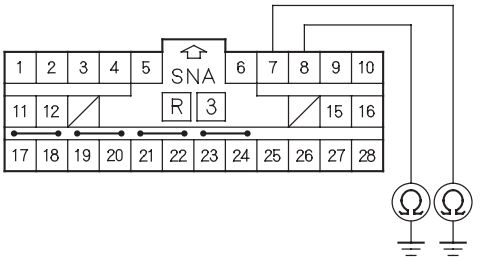
10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the front passenger's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between body ground and SRS unit connector B (28P) terminals No. 7 and No. 8, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 28-1x ("x" can be 0 thru 9 or A thru F): Open in the Front Passenger's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

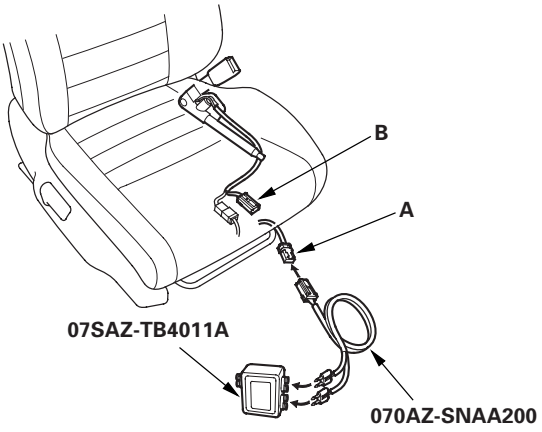
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 28-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to the floor wire harness connector.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 28-1x indicated?

   YES—Go to step 9.

   NO—Open in the front passenger's seat belt buckle tensioner; replace the front passenger's seat belt buckle (see page 24-6), then clear the DTC. ■

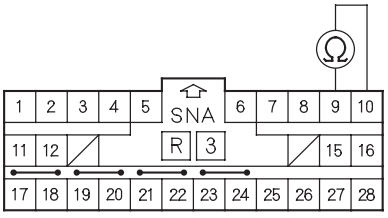
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the driver's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Measure the resistance between SRS unit connector B (28P) terminals No. 9 and No. 10. There should be 2.0—3.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 28-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Front Passenger's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

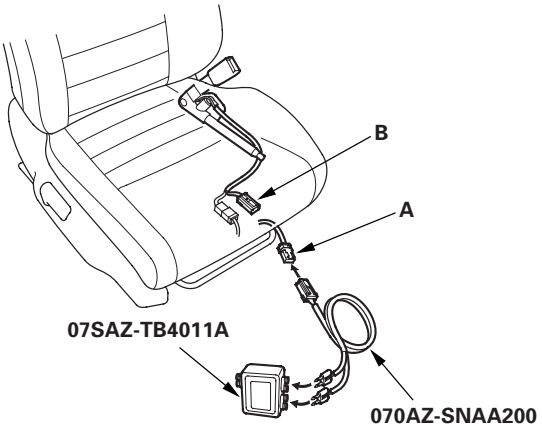
   Does the SRS indicator stay on, and is DTC 28-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to floor wire harness connector.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 28-3x indicated?

   YES—Go to step 9.

   NO—Short in the front passenger's seat belt buckle tensioner; replace the front passenger's seat belt buckle (see page 24-6), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

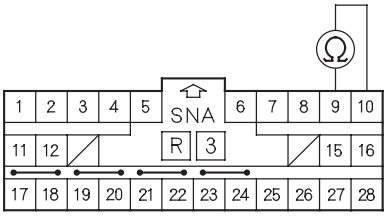
10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the driver's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between SRS unit connector B (28P) terminals No. 9 and No. 10. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 28-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Front Passenger's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

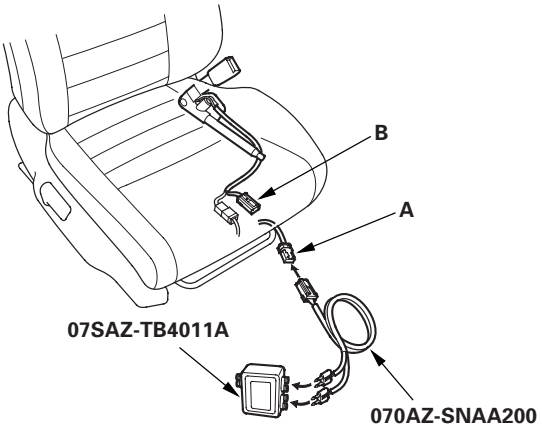
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 28-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to floor wire harness connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 28-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's seat belt buckle tensioner; replace the front passenger's seat belt buckle (see page 24-6), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the driver's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

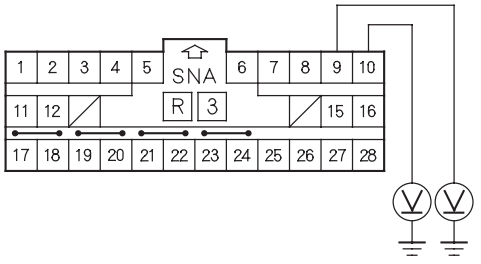
12. Disconnect the simulator lead from the floor wire harness.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between body ground and SRS unit connector B (28P) terminals No. 9 and No. 10, individually. There should be less than 0.2 V.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 28-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Front Passenger's Seat Belt Buckle Tensioner

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead K 070AZ-SNAA200

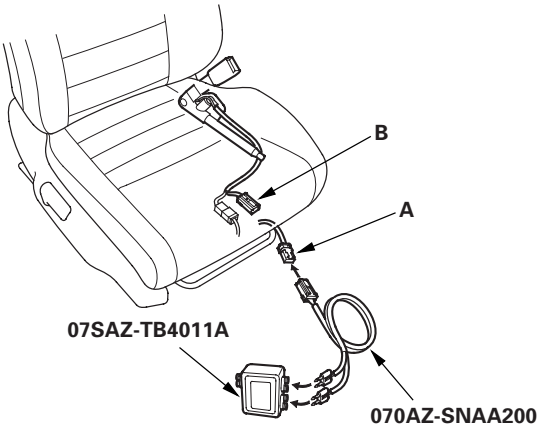
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 28-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 4P connector (A) from the front passenger's seat belt buckle tensioner connector (B).



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead K to floor wire harness connector.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 28-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the front passenger's seat belt buckle tensioner; replace the front passenger's seat belt buckle (see page 24-6), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

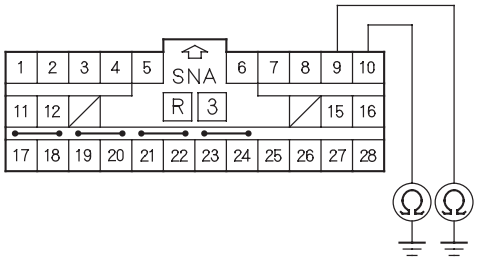
10. Disconnect both side airbag 2P connectors (see step 4 on page 24-20) and the driver's seat belt buckle tensioner 4P connector (see step 8 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the simulator lead from the floor wire harness.

13. Measure the resistance between body ground and SRS unit connector B (28P) terminals No. 9 and No. 10, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 31-1x (''x'' can be 0 thru 9 or A thru F): Open in the Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

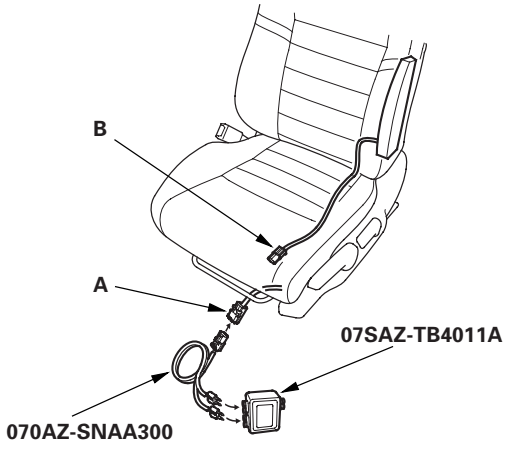
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 31-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 31-1x indicated?

   YES—Go to step 9.

   NO—Open in the driver's side airbag inflator; replace the driver's side airbag (see page 24-191), then clear the DTC. ■

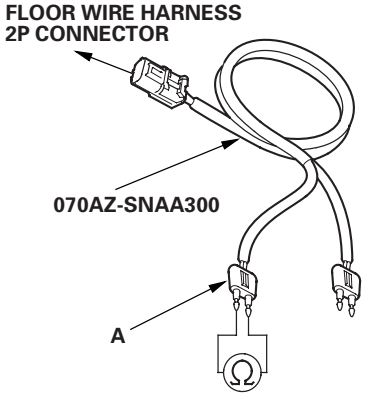
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be less than 1.0 Ω.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 31-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

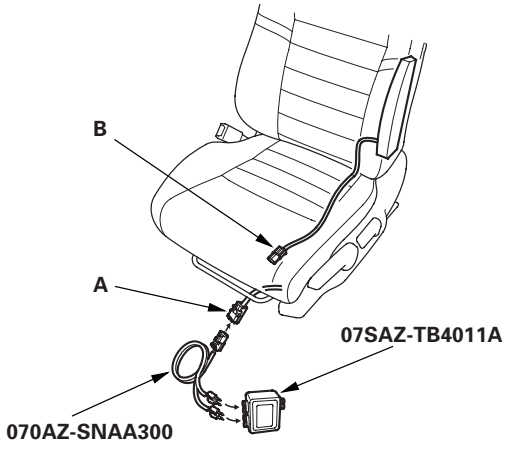
   Does the SRS indicator stay on, and is DTC 31-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshooting the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 31-3x indicated?

   YES—Go to step 9.

   NO—Short to another wire in the driver's side airbag inflator; replace the driver's side airbag (see page 24-191), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

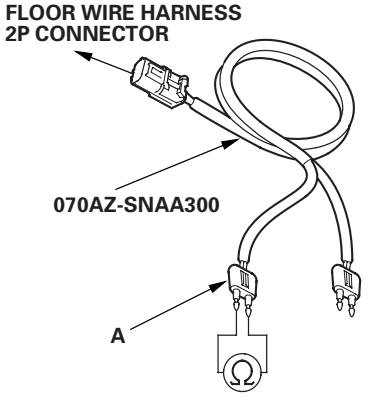
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Connect the SRS short cancellers (070AZ-SAA0100) to SRS unit connector B (28P) terminals No. 17 and No. 18 (see page 24-18).

14. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 31-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

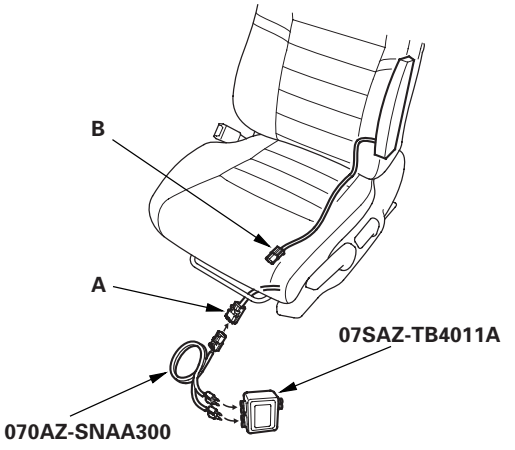
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 31-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-22).

   Is DTC 31-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the driver's side airbag inflator; replace the driver's side airbag (see page 24-191), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

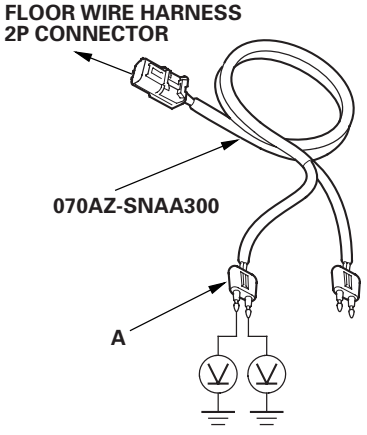
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between each terminal of the black SRS simulator lead (A) and body ground. There should be less than 0.2 V.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 31-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Driver's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 31-9x indicated?

   YES—Go to step 3.

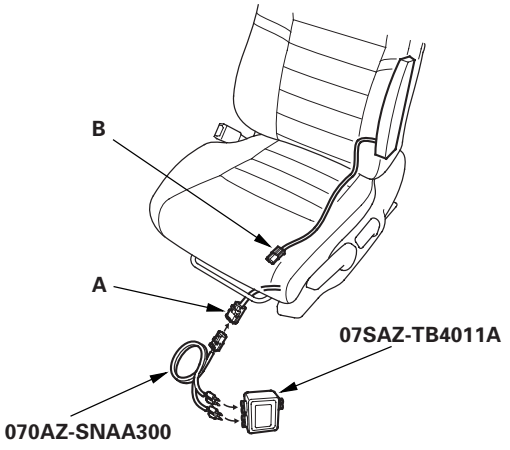
   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshooting the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

Is DTC 31-9x indicated?

YES—Go to step 9.

NO—Short to ground in the driver's side airbag inflator; replace the driver's side airbag (see page 24-191), then clear the DTC. ■

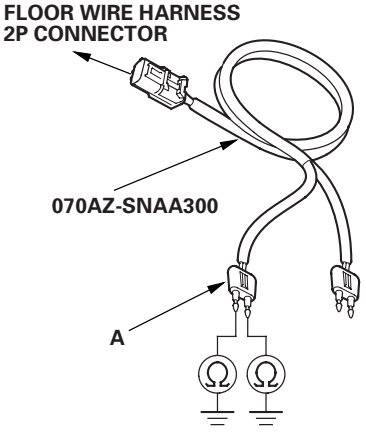
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between each terminal of the black SRS simulator lead (A) and body ground. There should be an open circuit or at least 1 MΩ.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 32-1x (''x'' can be 0 thru 9 or A thru F): Open in the Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

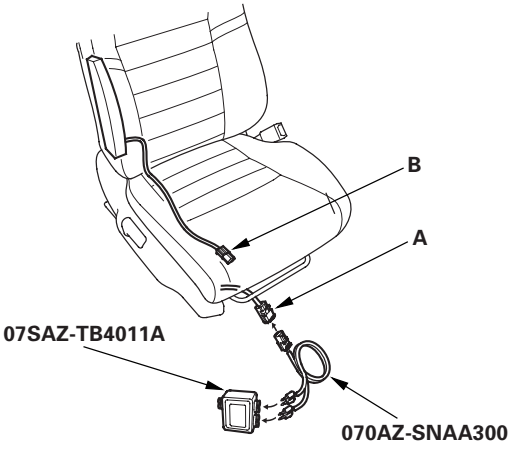
   Does the SRS indicator stay on, and is DTC 32-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 32-1x indicated?

   YES—Go to step 9.

   NO—Open in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-189), then clear the DTC. ■

(cont'd)

DTC Troubleshooting (cont'd)

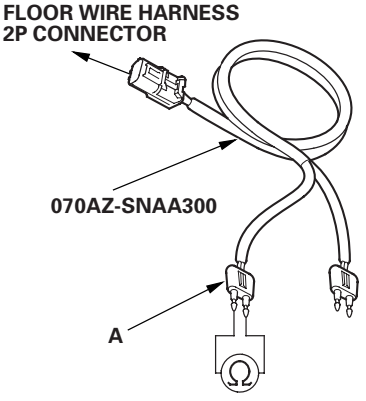
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be less than 1.0 Ω.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 32-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

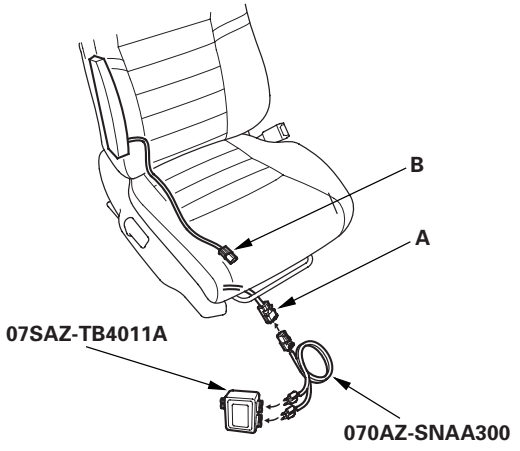
   Does the SRS indicator stay on, and is DTC 32-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 32-3x indicated?

   YES—Go to step 9.

   NO—Short to another wire in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-189), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

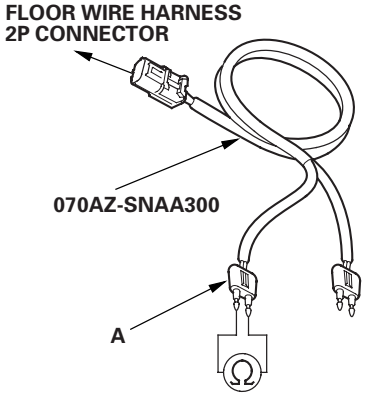
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Connect the SRS short cancellers (070AZ-SAA0100) to SRS unit connector B (28P) terminals No. 19 and No. 20 (see page 24-18).

14. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 32-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

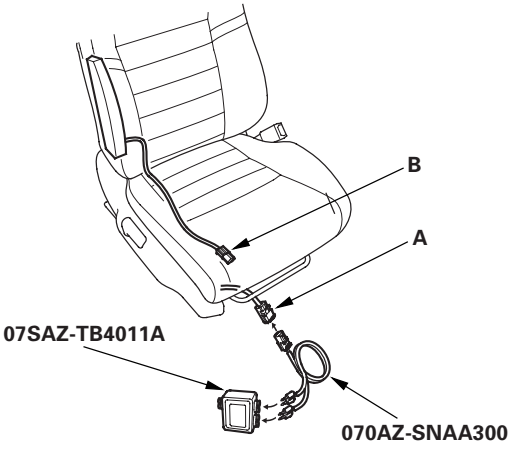
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 32-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 32-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-189), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

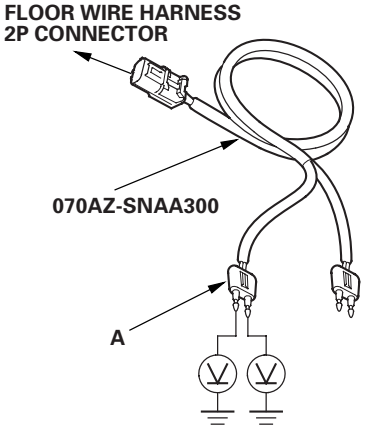
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between each terminal of the black SRS simulator lead (A) and body ground. There should be less than 0.2 V.



   Is the voltage as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 32-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Front Passenger's Side Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

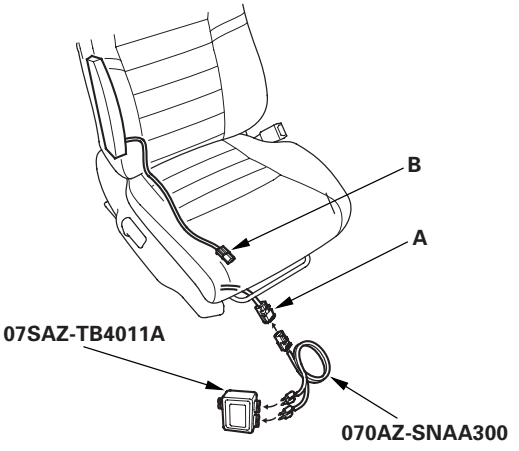
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 32-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Disconnect the floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 32-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-189), then clear the DTC. ■

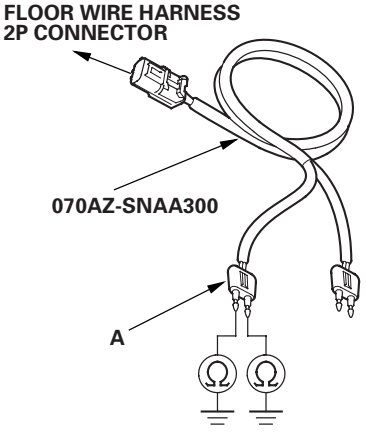
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between each terminal of the black SRS simulator lead (A) and body ground. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 33-1x (''x'' can be 0 thru 9 or A thru F): Open in the Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

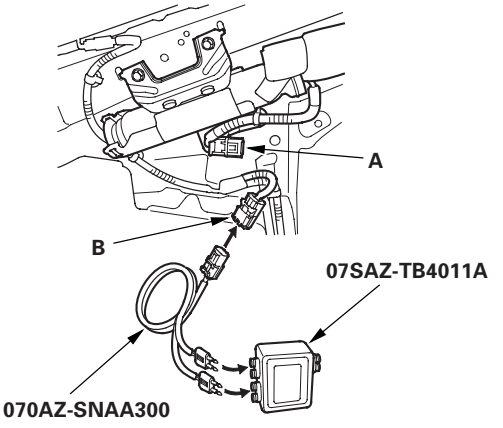
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 33-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
4. Remove the headliner (see page 20-84), then disconnect the left side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.
6. Reconnect the negative cable to the battery.
7. Clear the DTC memory.
8. Read the DTC (see page 24-22).

   Is DTC 33-1x indicated?

   YES—Go to step 9.

   NO—Open in the left side curtain airbag; replace the left side curtain airbag (see page 24-192), then clear the DTC. ■

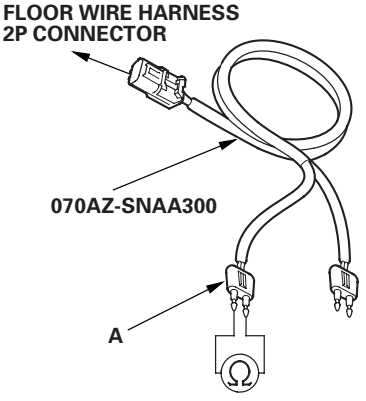
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be less than 1.0 Ω.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at the SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the harness; replace the floor wire harness, then clear the DTC. ■

DTC 33-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 33-3x indicated?

   YES—Go to step 3.

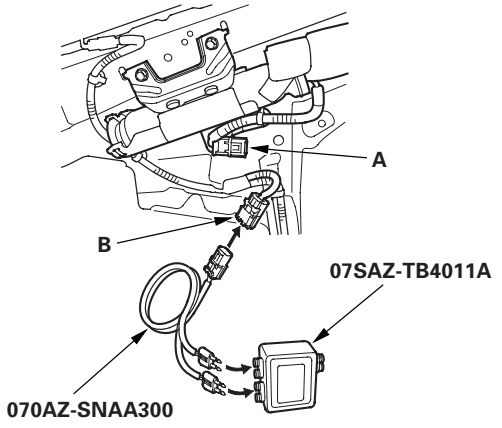
   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

(cont'd)

DTC Troubleshooting (cont'd)

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the headliner (see page 20-84), then disconnect the left side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 33-3x indicated?

   YES—Go to step 9.

   NO—Short to another wire in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-192), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

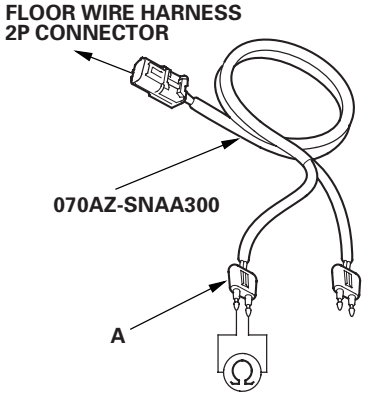
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Connect the SRS short cancellers (070AZ-SAA0100) to SRS unit connector B (28P) terminals No. 21 and No. 22 (see page 24-18).

14. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Short to another wire in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 33-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

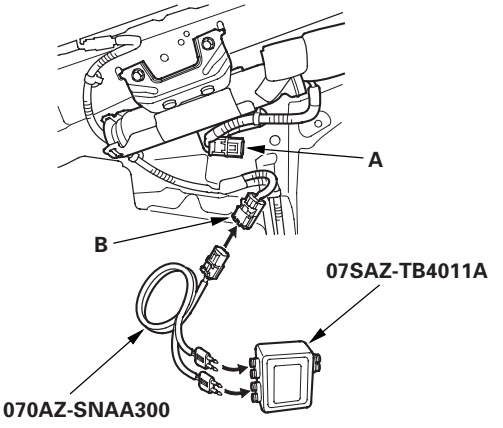
   Does the SRS indicator stay on, and is DTC 33-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the headliner (see page 20-84), then disconnect the left side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC (see page 24-22).

   Is DTC 33-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-192), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

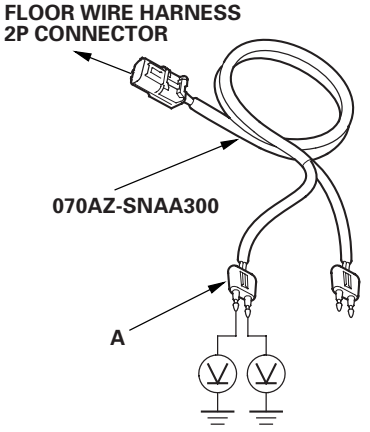
11. Disconnect the SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Reconnect the battery negative cable.

13. Turn the ignition switch to ON (II).

14. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

15. Measure the voltage between each terminal of the black SRS simulator lead (A) and body ground. There should be less than 0.2 V.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 33-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Left Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

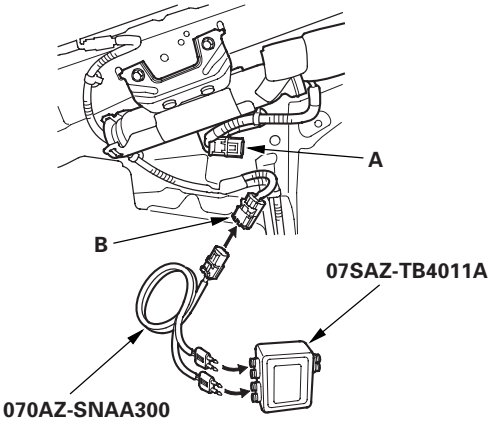
   Does the SRS indicator stay on, and is DTC 33-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the headliner (see page 20-84), then disconnect the left side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC (see page 24-22).

   Is DTC 33-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-192), then clear the DTC. ■

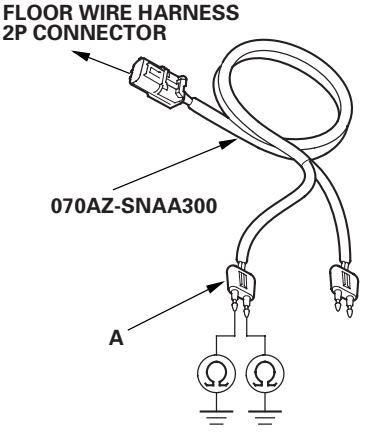
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between each terminal of the black SRS simulator lead (A) and body ground. There should be an open circuit or at least 1 MΩ.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 34-1x (''x'' can be 0 thru 9 or A thru F): Open in the Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

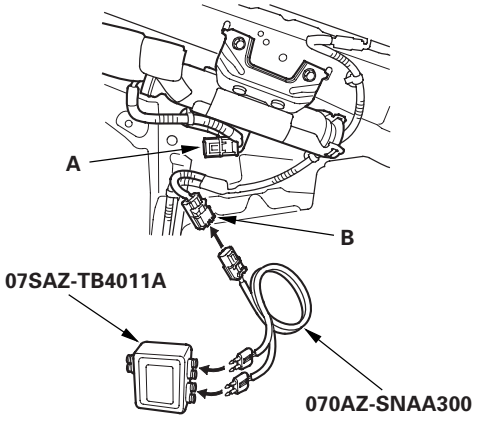
   Does the SRS indicator stay on, and is DTC 34-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the headliner (see page 20-84), then disconnect the right side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC (see page 24-22).

   Is DTC 34-1x indicated?

   YES—Go to step 9.

   NO—Open in the right side curtain airbag inflator, replace the right side curtain airbag (see page 24-192), then clear the DTC. ■

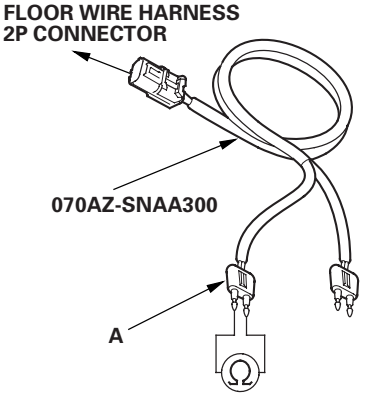
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be less than 1.0 Ω.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 34-3x (''x'' can be 0 thru 9 or A thru F): Short to Another Wire or Decreased Resistance in the Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300
- SRS short canceller 070AZ-SAA0100

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

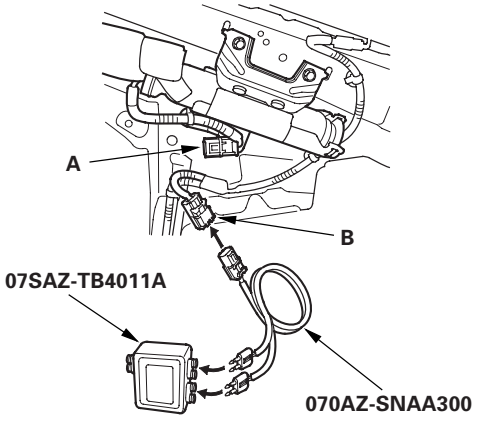
   Does the SRS indicator stay on, and is DTC 34-3x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the headliner (see page 20-84), then disconnect the right side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

8. Read the DTC (see page 24-22).

   Is DTC 34-3x indicated?

   YES—Go to step 9.

   NO—Short to another wire in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-192), then clear the DTC. ■

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

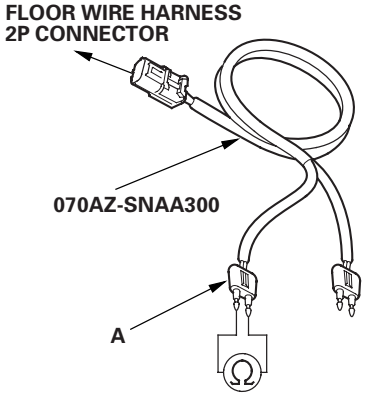
10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Connect the SRS short cancellers (070AZ-SAA0100) to SRS unit connector B (28P) terminals No. 23 and No. 24 (see page 24-18).

14. Measure the resistance between the terminals of the black SRS simulator lead (A). There should be an open circuit or at least 1 MΩ.



Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 34-8x (''x'' can be 0 thru 9 or A thru F): Short to Power in the Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

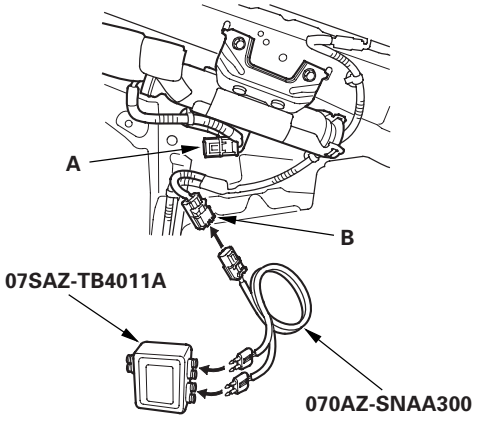
   Does the SRS indicator stay on, and is DTC 34-8x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the headliner (see page 20-84), then disconnect the right side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead L to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 34-8x indicated?

   YES—Go to step 9.

   NO—Short to power in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-192), then clear the DTC. ■

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

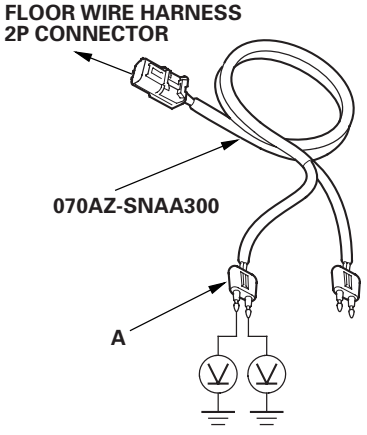
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between each terminal of the black SRS simulator lead (A) and body ground. There should be less than 0.2 V.



Is the voltage as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 34-9x (''x'' can be 0 thru 9 or A thru F): Short to Ground in the Right Side Curtain Airbag Inflator

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

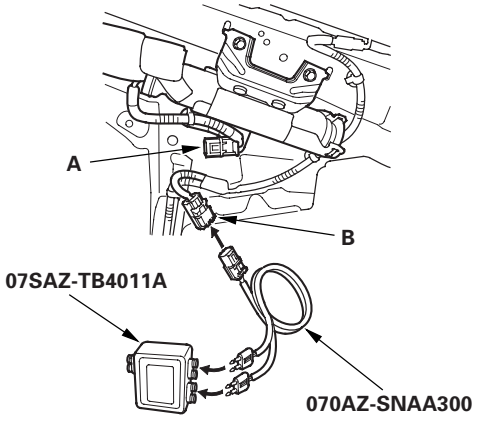
   Does the SRS indicator stay on, and is DTC 34-9x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Remove the headliner (see page 20-84), then disconnect the right side curtain airbag 2P connector (A) from the floor wire harness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead M to the floor wire harness.

6. Reconnect the negative cable to the battery.

7. Clear the DTC memory.

8. Read the DTC (see page 24-22).

   Is DTC 34-9x indicated?

   YES—Go to step 9.

   NO—Short to ground in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-192), then clear the DTC. ■

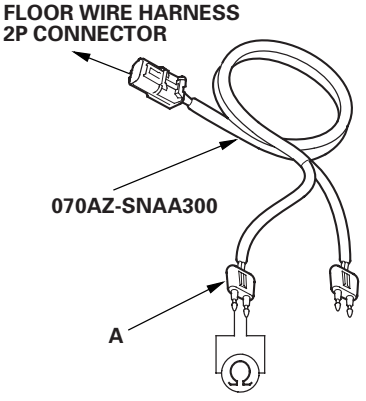
9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

10. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

12. Disconnect the SRS inflator simulator from the SRS simulator lead. Do not disconnect the simulator lead from the floor wire harness 2P connector.

13. Measure the resistance between each terminal of the black SRS simulator lead (A) and body ground. There should be an open circuit or at least 1 MΩ.



   Is the resistance as specified?

   YES—Faulty SRS unit or poor connection at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-203). ■

   NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 41-1x (''x'' can be 0 thru 9 or A thru F): No Signal From the Left Front Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 41-1x indicated?

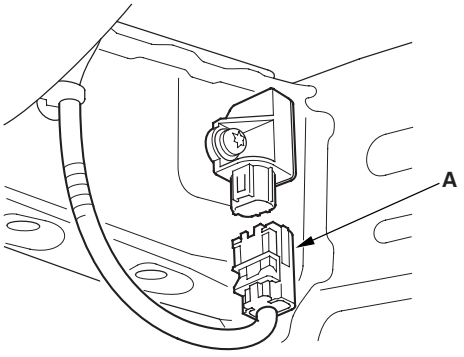
   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the negative cable from the battery, then wait at least 3 minutes.
5. Check the connections between SRS unit connector A (28P) and the SRS unit, between the engine compartment wire harness 2P connector and the left front impact sensor (see page 24-11), and at connector C203 (see page 22-22).

   Are the connections OK?

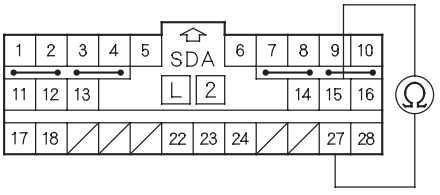
   YES—Go to step 6.

   NO—Repair the poor connections, clear the DTC, and retest. If DTC 41-1x is still present, go to step 6.
6. Disconnect the engine compartment wire harness 2P connector (A) from the left front impact sensor.



7. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).
8. Measure the resistance between SRS unit connector A (28P) terminals No. 15 and No. 27. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

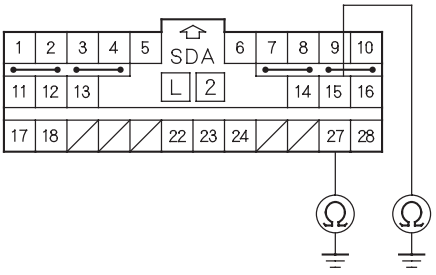
Is the resistance as specified?

YES—Go to step 9.

NO—Short in the engine compartment wire harness or dashboard wire harness; replace the faulty harness, then clear the DTC. ■

9. Measure the resistance between body ground and SRS unit connector A (28P) terminals No. 15 and No. 27, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 10.

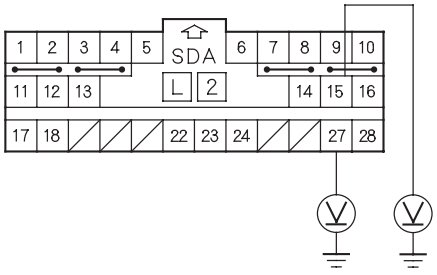
NO—Short to ground in the dashboard wire harness or the engine compartment wire harness; replace the faulty harness, then clear the DTC. ■

10. Reconnect the negative cable to the battery.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between body ground and SRS unit connector A (28P) terminals No. 15 and No. 27, individually. There should be less than 0.2 V.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

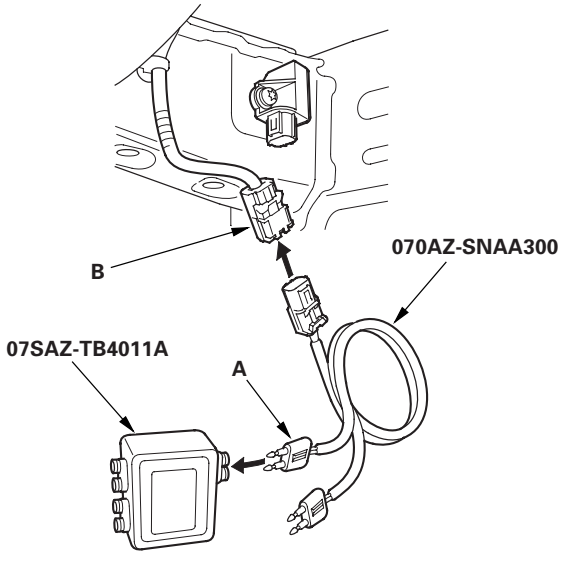
Is the voltage as specified?

YES—Go to step 13.

NO—Short to power in the engine compartment wire harness or the dashboard wire harness; replace the faulty harness, then clear the DTC. ■

13. Turn the ignition switch to LOCK (0).

14. Connect the SRS inflator simulator (jumper connector) and the black lead (A) of simulator lead L to the engine compartment wire harness 2P connector (B).

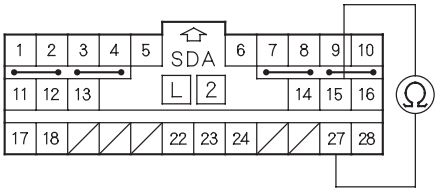


(cont'd)

DTC Troubleshooting (cont'd)

15. Measure the resistance between SRS unit connector A (28P) terminals No. 15 and No. 27. There should be less than 1.0 Ω.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left front impact sensor or SRS unit; replace the left front impact sensor (see page 24-210), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203). ■

NO—Poor connection at C203, open in engine compartment wire harness, or open in dashboard wire harness. Inspect C203 (see page 22-22). If it is OK, replace the faulty harness, then clear the DTC. ■

DTC 42-1x ("x" can be 0 thru 9 or A thru F): No Signal From the Right Front Impact Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 42-1x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0).

4. Disconnect the negative cable from the battery, then wait at least 3 minutes.

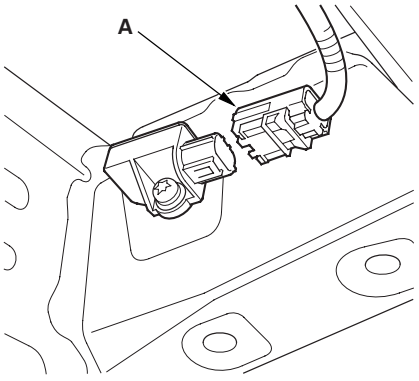
5. Check the connections between SRS unit connector A (28P) and the SRS unit, between the engine compartment wire harness 2P connector and the right front impact sensor (see page 24-11), and at connector C203 (see page 22-22).

   Are the connections OK?

   YES—Go to step 6.

   NO—Repair the poor connections, clear the DTC, and retest. If DTC 42-1x is still present, go to step 6.

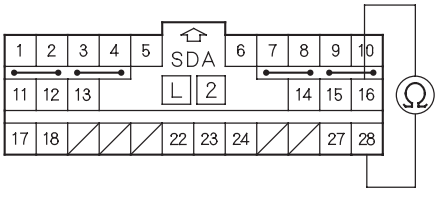
6. Disconnect the engine compartment wire harness 2P connector (A) from the right front impact sensor.



7. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

8. Measure the resistance between SRS unit connector A (28P) terminals No. 16 and No. 28. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

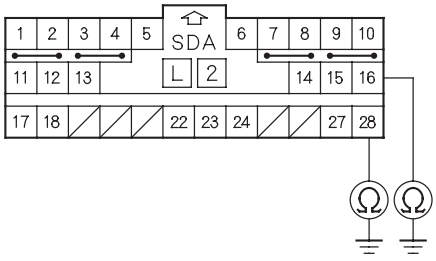
Is the resistance as specified?

YES—Go to step 9.

NO—Short in the engine compartment wire harness or dashboard wire harness; replace the faulty harness, then clear the DTC. ■

9. Measure the resistance between body ground and SRS unit connector A (28P) terminals No. 16 and No. 28, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 10.

NO—Short to ground in the dashboard wire harness or the engine compartment wire harness; replace the faulty harness, then clear the DTC. ■

10. Reconnect the negative cable to the battery.

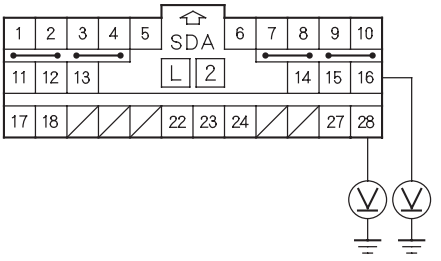
11. Turn the ignition switch to ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure the voltage between body ground and SRS unit connector A (28P) terminals No. 16 and No. 28, individually. There should be less than 0.2 V.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

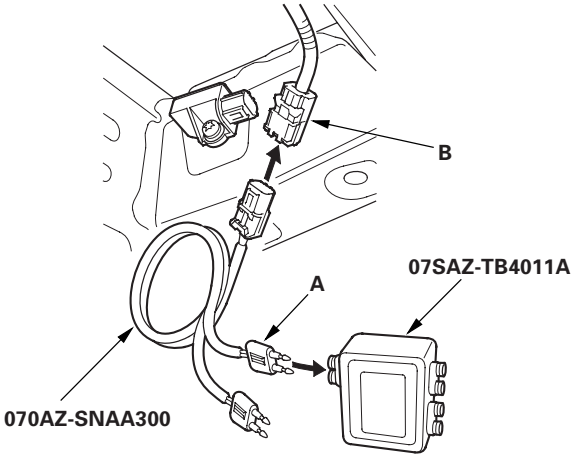
Is the voltage as specified?

YES—Go to step 13.

NO—Short to power in the engine compartment wire harness or dashboard wire harness; replace the faulty harness, then clear the DTC. ■

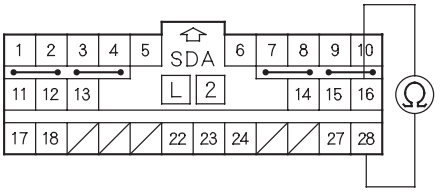
13. Turn the ignition switch to LOCK (0).

14. Connect the SRS inflator simulator (jumper connector) and the black lead (A) of simulator lead L to the engine compartment wire harness 2P connector (B).



15. Measure the resistance between SRS unit connector A (28P) terminals No. 16 and No. 28. There should be less than 1.0 Ω.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right front impact sensor or SRS unit; replace the right front impact sensor (see page 24-210), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203). ■

NO—Poor connection at C203, open in engine compartment wire harness, or open in dashboard wire harness. Inspect C203 (see page 22-22). If it is OK, replace the faulty harness, then clear the DTC. ■

DTC 41-2x, 41-3x, 41-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Left Front Impact Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 41-2x, 41-3x, or 41-Bx indicated?

   YES—Replace the left front impact sensor (see page 24-210), then clear the DTC. If the DTC returns, replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC 42-2x, 42-3x, 42-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Right Front Impact Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 42-2x, 42-3x, or 42-Bx indicated?

   YES—Replace the right front impact sensor (see page 24-210), then clear the DTC. If the DTC returns, replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC Troubleshooting (cont'd)

DTC 43-1x (''x'' can be 0 thru 9 or A thru F): No Signal From the Left Side Impact Sensor (first)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and wait for 10 seconds.
3. Read the DTC (see page 24-22).

   Is DTC 43-11 indicated?

   YES—Go to step 6.

   NO—Go to step 4.
4. Read the DTC.

   Is DTC 43-12 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If DTC 43-1x except (DTC 43-11 and 43-12) is indicated, faulty left side impact sensor (first); replace the left side impact sensor (first) (see page 24-204), then clear the DTC. ■
5. Read the DTC.

   Is DTC B2-11 also indicated?

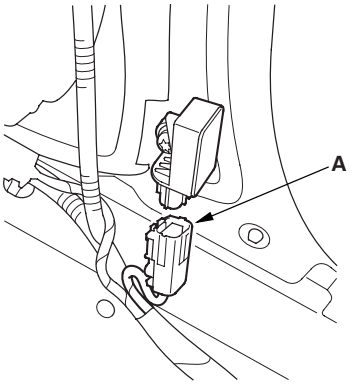
   YES—Troubleshoot DTC B2-1x (see page 24-174). ■

   NO—Faulty left side impact sensor (first); replace the left side impact sensor (first) (see page 24-204), then clear the DTC. ■
6. Read the DTC.

   Is DTC 45-11 also indicated?

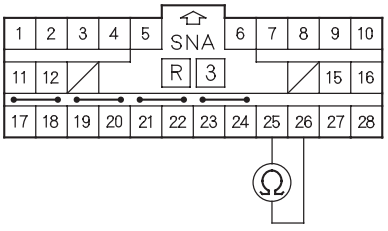
   YES—Faulty left side impact sensor (first); replace the left side impact sensor (first) (see page 24-204), then clear the DTC. ■

   NO—Go to step 7.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the negative cable from the battery, then wait at least 3 minutes.
9. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).
10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).
11. Disconnect the floor wire harness 4P connector (A) from the left side impact sensor (first).



12. Measure the resistance between SRS unit connector B (28P) terminals No. 25 and No. 26. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

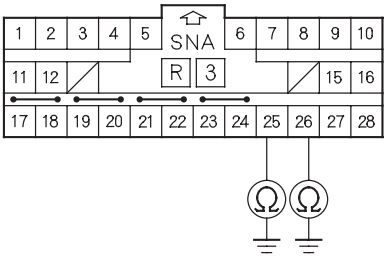
Is the resistance as specified?

YES—Go to step 13.

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC.■

13. Measure the resistance between body ground and SRS unit connector B (28P) terminals No. 25 and No. 26, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 14.

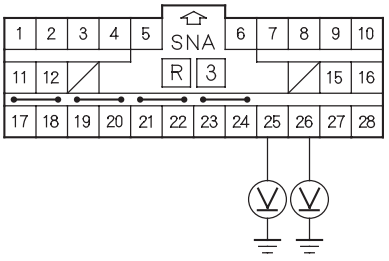
NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC.■

14. Reconnect the negative cable to the battery.

15. Turn the ignition switch to ON (II).

16. Measure the voltage between body ground and SRS unit connector B (28P) terminals No. 25 and No. 26, individually. There should be less than 0.2 V.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Go to step 17.

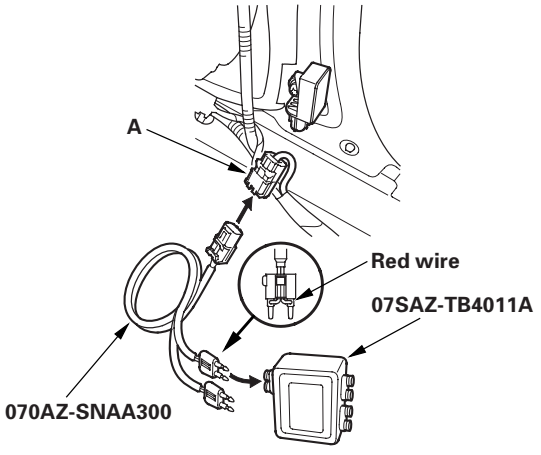
NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC.■

(cont'd)

DTC Troubleshooting (cont'd)

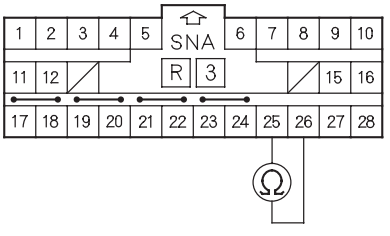
17. Turn the ignition switch to LOCK (0).

18. Connect the SRS inflator simulator (jumper connector) and the red lead of simulator lead L to the floor wire harness 4P connector (A).



19. Measure the resistance between SRS unit connector B (28P) terminals No. 25 and No. 26. There should be less than 1.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (first) or SRS unit; replace the left side impact sensor (first) (see page 24-204), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 44-1x ("x" can be 0 thru 9 or A thru F): No Signal From the Right Side Impact Sensor (first)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and wait for 10 seconds.

3. Read the DTC (see page 24-22).

   Is DTC 44-11 indicated?

   YES—Go to step 5.

   NO—Go to step 4.

4. Read the DTC.

   Is DTC 44-12 indicated?

   YES—Faulty right side impact sensor (first); replace the right side impact sensor (first) (see page 24-204), then clear the DTC. ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If DTC 44-1x except DTC 44-11 and 44-12 is indicated, faulty right side impact sensor (first). Replace the right side impact sensor (first) (see page 24-204), then clear the DTC. ■

5. Read the DTC.

   Is DTC 45-11 also indicated?

   YES—Faulty right side impact sensor (first); replace the right side impact sensor (first) (see page 24-204), then clear the DTC. ■

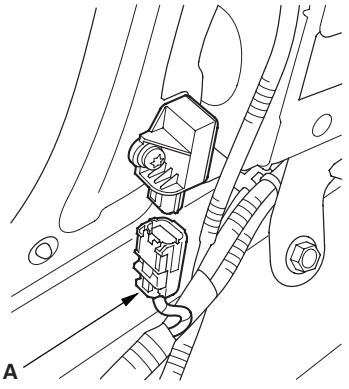
   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Disconnect the negative cable from the battery, then wait at least 3 minutes.

8. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

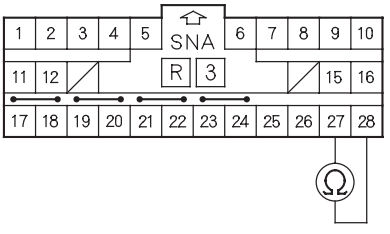
9. Disconnect the floor wire harness 4P connector (A) from the right side impact sensor (first).



10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

11. Measure the resistance between SRS unit connector B (28P) terminals No. 27 and No. 28. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

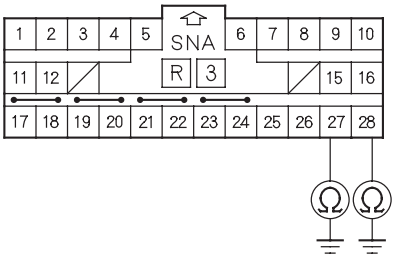
Is the resistance as specified?

YES—Go to step 12.

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC.■

12. Measure the resistance between body ground and SRS unit connector B (28P) terminals No. 27 and No. 28, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 13.

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC.■

(cont'd)

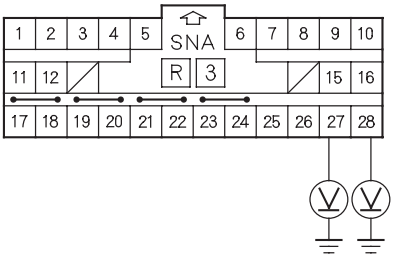
DTC Troubleshooting (cont'd)

13. Reconnect the negative cable to the battery.

14. Turn the ignition switch to ON (II).

15. Measure the voltage between body ground and SRS unit connector B (28P) terminals No. 27 and No. 28, individually. There should be less than 0.2 V.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

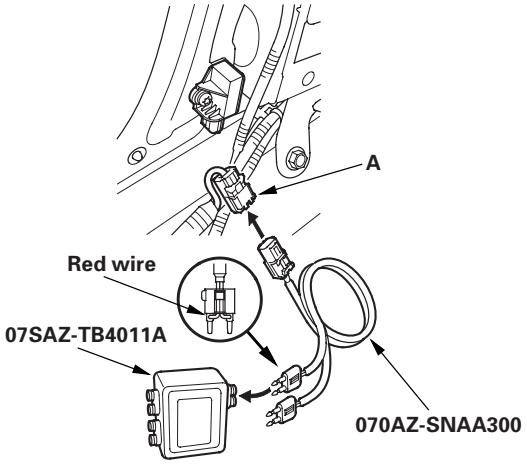
Is the voltage as specified?

YES—Go to step 16.

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

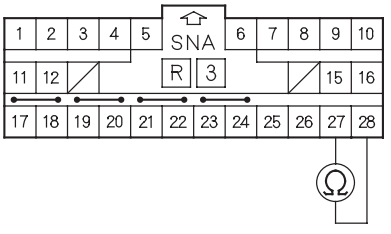
16. Turn the ignition switch to LOCK (0).

17. Connect the SRS inflator simulator (jumper connector) and the red lead of simulator lead L to the floor wire harness 4P connector (A).



18. Measure the resistance between SRS unit connector B (28P) terminals No. 27 and No. 28. There should be less than 1.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (first) or SRS unit; replace the right side impact sensor (first) (see page 24-204), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203). ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 43-2x, 43-3x, 43-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Left Side Impact Sensor (first)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 43-2x, 43-3x, or 43-Bx indicated?

   YES—Replace the left side impact sensor (first) (see page 24-204), then clear the DTC. If the DTC returns, replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC 44-2x, 44-3x, 44-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Right Side Impact Sensor (first)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 44-2x, 44-3x, or 44-Bx indicated?

   YES—Replace the right side impact sensor (first) (see page 24-204), then clear the DTC. If the DTC returns, replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC Troubleshooting (cont'd)

DTC 45-1x (''x'' can be 0 thru 9 or A thru F): No Signal From the Left Side Impact Sensor (second)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and wait for 10 seconds.
3. Read the DTC (see page 24-22).

   Is DTC 45-11 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
4. Read the DTC.

   Is DTC 43-11 also indicated?

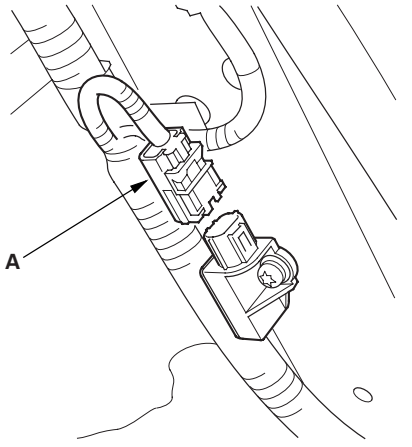
   YES—Faulty left side impact sensor (second); replace the left side impact sensor (second) (see page 24-205), then clear the DTC. ■

   NO—Go to step 5.
5. Read the DTC.

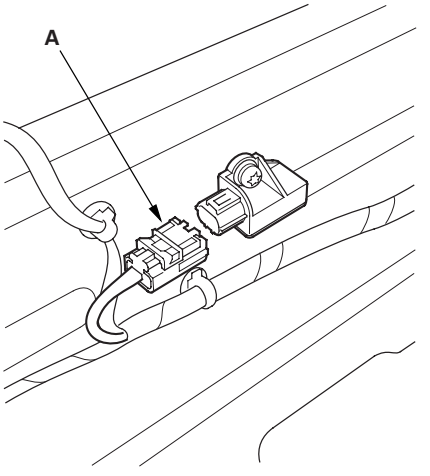
   Is DTC B2-11 also indicated?

   YES—Faulty rear safing sensor; Replace the rear safing sensor (see page 24-206), then clear the DTC. ■

   NO—Go to step 6.
6. Turn the ignition switch to LOCK (0).
7. Disconnect the negative cable from the battery, then wait at least 3 minutes.
8. Disconnect floor wire harness 2P connector (A) from the left side impact sensor (second).

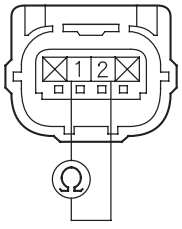


9. Disconnect the floor wire harness 4P connector (A) from the rear safing sensor.



10. Measure the resistance between left side impact sensor (second) 2P connector terminals No. 1 and No. 2. There should be an open circuit or at least 1 MΩ.

LEFT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

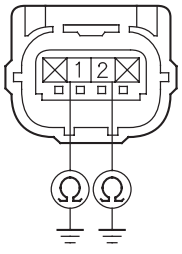
Is the resistance as specified?

YES—Go to step 11.

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

11. Measure the resistance between body ground and left side impact sensor (second) 2P connector terminals No. 1 and No. 2, individually. There should be an open circuit or at least 1 MΩ.

LEFT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

Is the resistance as specified?

YES—Go to step 12.

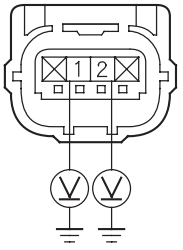
NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

12. Reconnect the negative cable to the battery.

13. Turn the ignition switch to ON (II).

14. Measure the voltage between body ground and left side impact sensor (second) 2P connector terminals No. 1 and No. 2, individually. There should be less than 0.2 V.

LEFT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

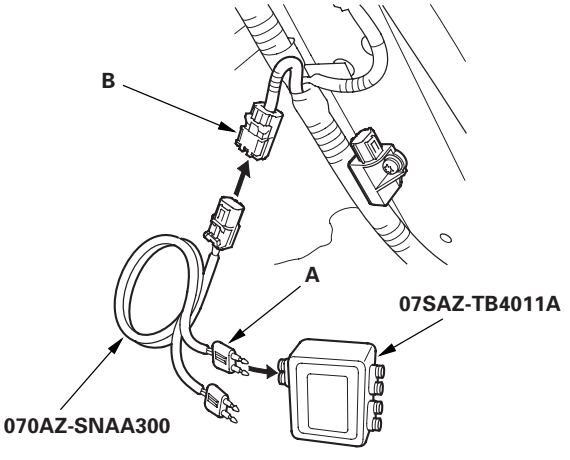
Is the voltage as specified?

YES—Go to step 15.

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

15. Turn the ignition switch to LOCK (0).

16. Connect the SRS inflator simulator (jumper connector) and the red lead (A) of simulator lead L to the floor wire harness 4P connector (B).

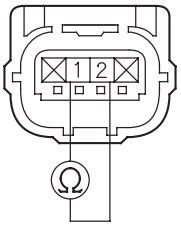


(cont'd)

DTC Troubleshooting (cont'd)

17. Measure the resistance between left side impact sensor (second) 2P connector terminals No. 1 and No. 2. There should be less than 1.0 Ω.

LEFT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (second) or poor connection at left side impact sensor (second) 2P connector. Check the connection; If the connection is OK, replace the left side impact sensor (second) (see page 24-205), then clear the DTC. ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 46-1x ("x" can be 0 thru 9 or A thru F): No Signal From the Right Side Impact Sensor (second)

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNAA300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and wait for 10 seconds.
3. Read the DTC (see page 24-22).

   Is DTC 46-11 indicated?

   YES—Go to step 5.

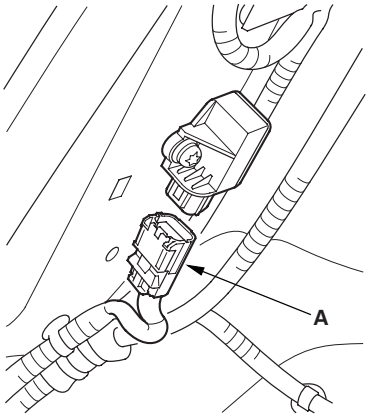
   NO—Go to step 4.
4. Read the DTC.

   Is DTC 46-12 also indicated?

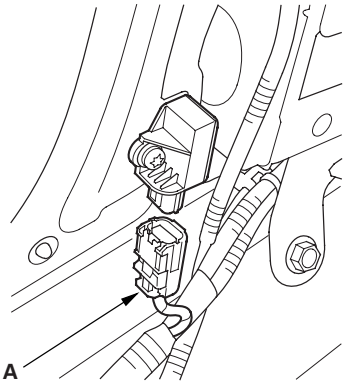
   YES—Faulty right side impact sensor (second); replace the right side impact sensor (second) (see page 24-205), then clear the DTC. ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the negative cable from the battery, then wait at least 3 minutes.

7. Disconnect the floor wire harness 2P connector (A) from the right side impact sensor (second).

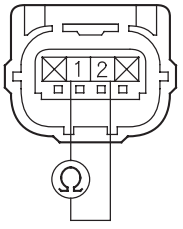


8. Disconnect the floor wire harness 4P connector (A) from the right side impact sensor (first).



9. Measure the resistance between right side impact sensor (second) 2P connector terminals No. 1 and No. 2. There should be an open circuit or at least 1 MΩ.

RIGHT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

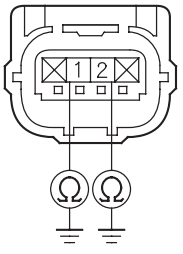
Is the resistance as specified?

YES—Go to step 10.

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC.■

10. Measure the resistance between body ground and right side impact sensor (second) 2P connector terminals No. 1 and No. 2, individually. There should be an open circuit or at least 1 MΩ.

RIGHT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

Is the resistance as specified?

YES—Go to step 11.

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC.■

(cont'd)

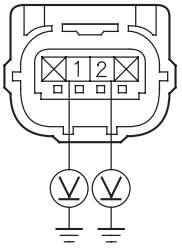
DTC Troubleshooting (cont'd)

11. Reconnect the negative cable to the battery.

12. Turn the ignition switch to ON (II).

13. Measure the voltage between body ground and right side impact sensor (second) 2P connector terminals No. 1 and No. 2, individually. There should be less than 0.2 V.

RIGHT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

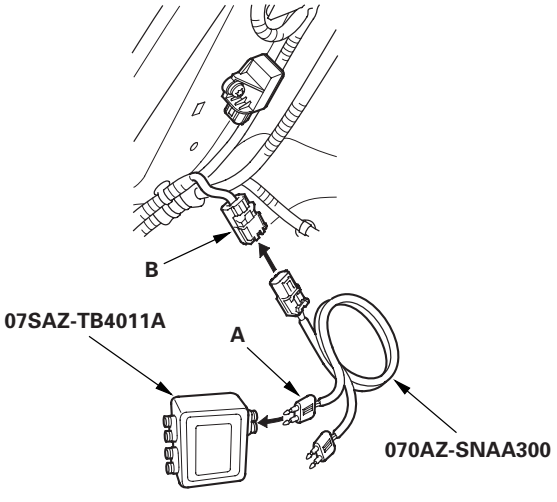
Is the voltage as specified?

YES—Go to step 14.

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

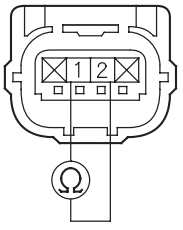
14. Turn the ignition switch to LOCK (0).

15. Connect the SRS inflator simulator (jumper connector) and the red lead (A) of simulator lead L to the floor wire harness 4P connector (B).



16. Measure the resistance between right side impact sensor (second) 2P connector terminals No. 1 and No. 2. There should be less than 1 Ω.

RIGHT SIDE IMPACT SENSOR (SECOND) 2P CONNECTOR



Terminal side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (second) or poor connection at right side impact sensor (second) 2P connector. Check the connection; if the connection is OK, replace the right side impact sensor (second) (see page 24-205), then clear the DTC. ■

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 45-2x, 45-3x, 45-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Left Side Impact Sensor (second)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 45-2x, 45-3x, or 45-Bx indicated?

   YES—Replace the left side impact sensor (second) (see page 24-205), then clear the DTC. If the DTC returns, replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC 46-2x, 46-3x, 46-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Right Side Impact Sensor (second)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 46-2x, 46-3x, or 46-Bx indicated?

   YES—Replace the right side impact sensor (second) (see page 24-205), then clear the DTC. If the DTC returns, replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC Troubleshooting (cont'd)

DTC 51-xx, 52-xx, 53-xx, 54-xx, 55-xx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the SRS Unit

NOTE:
- Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).
- Before troubleshooting any of these DTCs, check the battery/system voltage and battery cable connections. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the client if the battery ever went dead or if the engine was started and run with the battery in a low state of changed. A dead battery may trigger one or more of these DTCs.

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 51-xx, 52-xx, 53-xx, 54-xx, or 55-xx indicated?

   YES—Replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC Ex-11 (''x'' can be 0 thru 9 or A thru F): Control Operation Recorded

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), then wait for 10 seconds.

3. Read the DTC (see page 24-22).

   Is DTC Ex-11 indicated?

   YES—Faulty SRS unit; replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC Fx-11 (''x'' can be 0 thru 9 or A thru F): Airbags and/or Tensioners Deployment Recorded

NOTE:
- Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).
- Refer to the DTCs shown:
  - DTC F1-11: Driver's airbag and/or driver's seat belt tensioner deployed.
  - DTC F2-11: Front passenger's airbag and/or front passenger's seat belt tensioner deployed.
  - DTC F3-11: Driver's side airbag, left side curtain airbag, and/or driver's seat belt tensioner deployed.
  - DTC F4-11: Front passenger's side airbag, right side curtain airbag, and/or front seat belt tensioner deployed.

When any airbags or tensioners have deployed, go to Component Replacement/Inspection After Deployment (see page 24-185). ■

DTC 61-1x (''x'' can be 0 thru 9 or A thru F): Open in the Driver's Seat Belt Buckle Switch

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), then buckle and unbuckle the driver's seat belt several times.

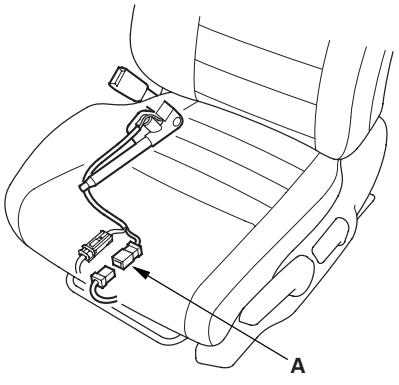
3. Read the DTC (see page 24-22).

   Is DTC 61-1x indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

4. Disconnect the floor wire harness 3P connector from the driver's seat belt buckle switch 3P connector (A).



(cont'd)

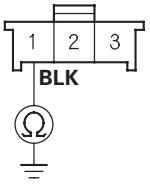
DTC Troubleshooting (cont'd)

5. From the system selection menu on the HDS, select SRS then select SRS again, then select PARAMETER INFORMATION, then Buckle Switch. Seat Position Sensor, and check the status on the HDS screen for FRONT LEFT SEAT BELT BUCKLE SWITCH when the seat belt is buckled, and unbuckled.

   - If UNBUCKLE, BUCKLE, or SHORT is indicated replace the floor wire harness.
   - If OPEN is indicated, go to step 6.

6. Measure the resistance between floor wire harness 3P connector terminal No. 1 and body ground. There should be less than 1.0 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 7.

NO—Open in the floor wire harness or poor ground connection at G602 (see page 22-38). If G602 is OK, replace the floor wire harness, then clear the DTC. ■

7. Alternately connect the No. 2 and No. 3 terminals of the floor wire harness 3P connector to body ground with a jumper wire, and check the status on the HDS screen.

   Does the status alternate from UNBUCKLE to BUCKLE?

   YES—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

   NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC 61-2x (''x'' can be 0 thru 9 or A thru F): Short in the Driver's Seat Belt Buckle Switch

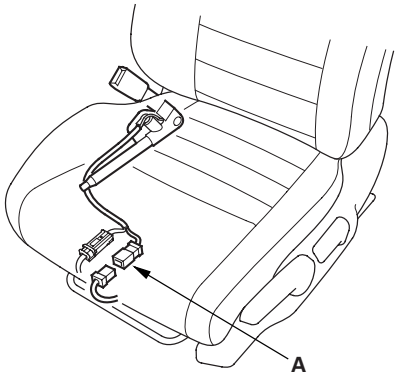
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC (see page 24-22).

   Is DTC 61-2x indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
4. Turn the ignition switch to LOCK (0).
5. Disconnect the floor wire harness 3P connector from the driver's seat belt buckle switch 3P connector (A).



6. Turn the ignition switch to ON (II).
7. From the system selection menu on the HDS, select SRS, then select SRS again, then select PARAMETER INFORMATION, then Buckle Switch, Seat Position Sensor, and check the status on the HDS screen for FRONT LEFT SEAT BELT BUCKLE SWITCH.

   Is OPEN indicated on the HDS?

   YES—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

   NO—Short go ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC Troubleshooting (cont'd)

DTC 62-1x (''x'' can be 0 thru 9 or A thru F): Open in the Front Passenger's Seat Belt Buckle Switch

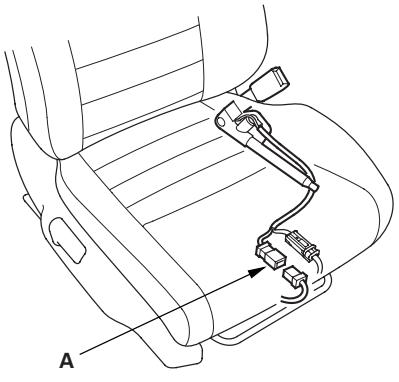
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC (see page 24-22).

   Is DTC 62-1x indicated?

   YES—Go to step 4.

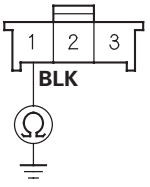
   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
4. Disconnect the floor wire harness 3P connector from the front passenger's seat belt buckle switch 3P connector (A).



5. From the system selection menu on the HDS, select SRS, then select SRS again, then select PARAMETER INFORMATION, then Buckle Switch. Seat Position Sensor, and check the status on the HDS screen for FRONT RIGHT SEAT BELT BUCKLE SWITCH when the seat belt is buckled, and unbuckled.

   • If UNBUCKLE, BUCKLE, or SHORT is indicated open in the front passenger's seat subharness, or floor wire harness; replace the faulty harness.
   • If OPEN is indicated, go to step 6
6. Measure the resistance between floor wire harness 3P connector terminal No. 1 and body ground. There should be less than 1.0 Ω.

FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—go to step 7.

NO—Open in the floor wire harness or poor ground connection at G602 (see page 22-38). If G602 is OK, replace the floor wire harness, then clear the DTC.■

7. Alternately connect the No. 2 and No. 3 terminals of the floor wire harness 3P connector to body ground with a jumper wire, and check the status on the HDS screen.

   Does the status alternate from UNBUCKLE to BUCKLE?

   YES—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC.■

   NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC.■

DTC 62-2x (''x'' can be 0 thru 9 or A thru F): Short in the Front Passenger's Seat Belt Buckle Switch

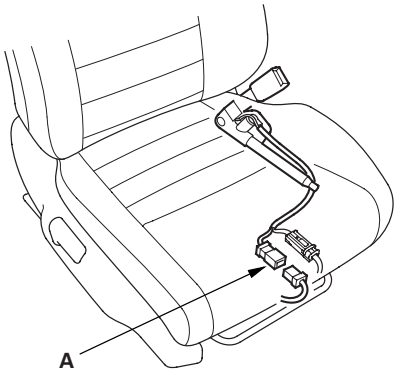
NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Read the DTC (see page 24-22).

   Is DTC 62-2x indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
4. Turn the ignition switch to LOCK (0).
5. Disconnect the floor wire harness 3P connector from the front passenger's seat belt buckle switch 3P connector (A).



6. Turn the ignition switch to ON (II).
7. From the system selection menu on the HDS, select SRS, then select SRS again, then select PARAMETER INFORMATION, then Buckle Switch. Seat Position Sensor, and check the status on the HDS screen for FRONT RIGHT SEAT BELT BUCKLE SWITCH.

   Is OPEN indicated on the HDS?

   YES—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC.■

   NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC.■

DTC Troubleshooting (cont'd)

DTC 71-1x (''x'' can be 0 thru 9 or A thru F): Open in the Driver's Seat Position Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 71-1x indicated?

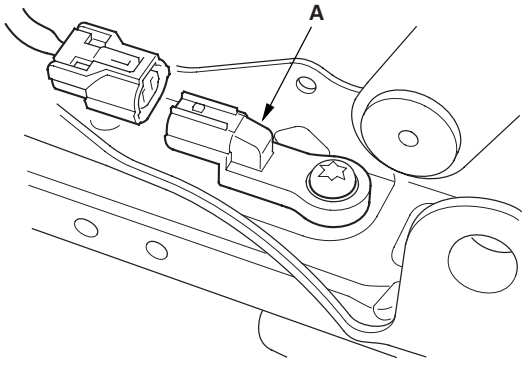
   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
3. Check the connection between the seat position sensor harness 2P connector and the driver's seat position sensor (see page 24-11).
4. Clear the DTC memory.
5. Read the DTC (see page 24-22).

   Is DTC 71-1x indicated?

   YES—Go to step 6.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■
6. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.
7. Disconnect the driver's seat position sensor harness 2P connector from the driver's seat position sensor (A).

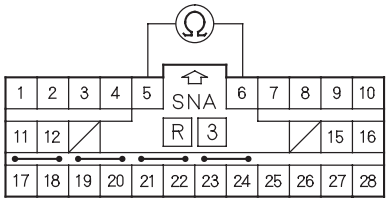


8. Connect the No. 1 and No. 2 terminals of the driver's seat position sensor harness 2P connector with a jumper wire.
9. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

11. Measure the resistance between SRS unit connector B (28P) terminals No. 5 and No. 6. There should be less than 1.0 Ω.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty driver's seat position sensor or SRS unit; replace the driver's seat position sensor (see page 24-211), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203).■

NO—Open in the floor wire harness, driver's seat wire harness (with seat heater) or the seat position sensor harness; replace the faulty harness, then clear the DTC.■

DTC 71-2x ("x" can be 0 thru 9 or A thru F): Short in the Driver's Seat Position Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 71-2x indicated?

   YES—Go to step 3.

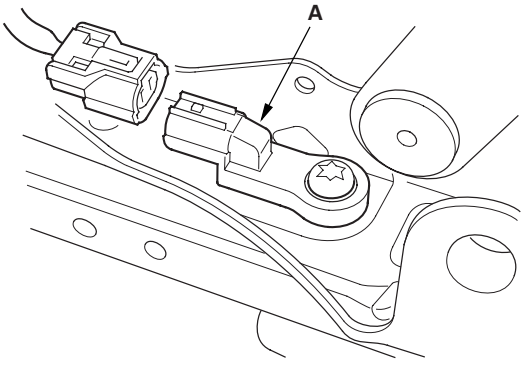
   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the driver's seat position sensor harness 2P connector from the driver's seat position sensor (A) (see page 24-11).



5. Reconnect the negative cable to the battery.

6. Clear the DTC memory.

7. Read the DTC (see page 24-22).

   Is DTC 71-2x indicated?

   YES—Go to step 8.

   NO—Faulty driver's seat position sensor; replace the driver's seat position sensor (see page 24-211), then clear the DTC. ■

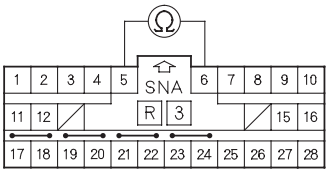
8. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

9. Disconnect both seat belt buckle tensioner connectors (see step 8 on page 24-21) and both seat belt tensioner connectors (see step 7 on page 24-21).

10. Disconnect SRS unit connector B (28P) from the SRS unit (see step 9 on page 24-21).

11. Measure the resistance between SRS unit connector B (28P) terminals No. 5 and No. 6. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

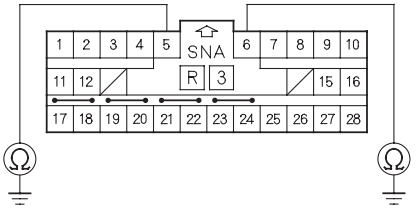
Is the resistance as specified?

YES—Go to step 12.

NO—Short in the floor wire harness, driver's seat wire harness (with seat heater), or the seat position sensor harness; replace the faulty harness, then clear the DTC. ■

12. Measure the resistance between body ground and SRS unit connector B (28P) terminals No. 5 and No. 6, individually. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty driver's seat position sensor, or the SRS unit; replace the driver's seat position sensor (see page 24-211), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203). ■

NO—Short in the floor wire harness, driver's seat wire harness (with seat heater) or the seat position sensor harness; replace the faulty harness, then clear the DTC. ■

DTC 81-61, 85-61: No Signal From the ODS Unit

DTC 81-62, 85-62: Non-stipulated Data From the ODS Unit

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Make sure nothing is on the front passenger's seat.
2. Clear the DTC memory (see page 24-23).
3. Read the DTC (see page 24-22).

   Is DTC 81-61, 85-61, 81-62, or 85-62 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
4. Check the connection between the ODS unit harness 18P connector and the ODS unit.

   Is the connection OK?

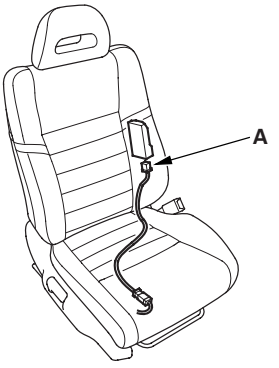
   YES—Go to step 6.

   NO—Repair the poor connection, clear the DTC, and retest. If DTC 85-61 or 85-62 is still present, go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Check the No. 9 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

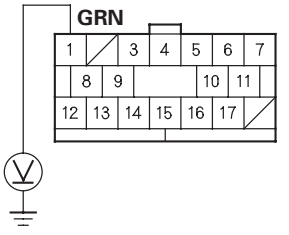
   YES—Go to step 7.

   NO—Replace the fuse, then turn the ignition switch to ON (II). If the fuse blows again, check for a short in the No. 9 (7.5 A) fuse circuit (floor wire harness, front passenger's seat wire harness (with seat heater), or ODS unit harness). ■
7. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



8. Turn the ignition switch to ON (II).
9. Measure the voltage between ODS unit harness 18P connector terminal No. 1 and body ground. There should be battery voltage.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 10.

NO—Open in the floor wire harness, front passenger's seat wire harness (with seat heater) or ODS unit harness; replace the faulty harness, then clear the DTC. ■

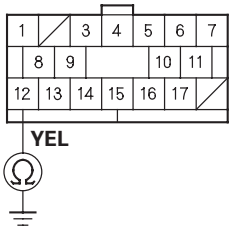
(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).

11. Measure the resistance between ODS unit harness 18P connector terminal No. 12 and body ground. There should be less than 1.0 Ω.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 12.

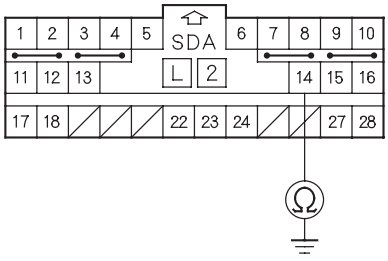
NO—Open in the ODS unit harness, front passenger's seat wire harness (with seat heater), or floor wire harness; replace the faulty harness, then clear the DTC. ■

12. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

13. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

14. Measure the resistance between SRS unit connector A (28P) terminal No. 14 and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 15.

NO—Short to ground in the dashboard wire harness, front passenger's seat wire harness (with seat heater), or floor wire harness; replace the faulty harness, then clear the DTC. ■

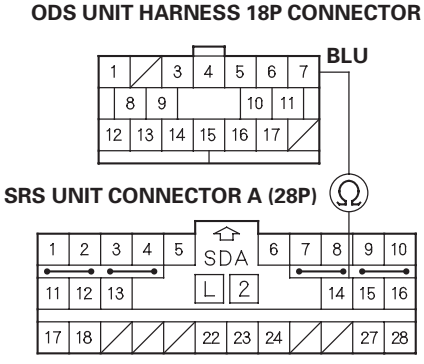
15. Turn the ignition switch to ON (II), and measure the voltage between SRS unit connector A (28P) terminal No. 14 and body ground. There should be 0.2 V or less.

    Is the voltage as specified?

    YES—Go to step 16.

    NO—Short to power in the dashboard wire harness, floor wire harness, front passenger's seat wire harness (with seat heater), or ODS unit harness; replace the faulty harness, then clear the DTC. ■

16. Measure the resistance between SRS unit connector A (28P) terminal No. 14 and ODS unit harness 18P connector terminal No. 7. There should be less than 1.0 Ω.



Wire side of female terminals

    Is the resistance as specified?

    YES—Faulty ODS unit or SRS unit; replace the ODS unit (see page 24-209), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203). ■

    NO—Open in the dashboard wire harness, floor wire harness, front passenger's seat wire harness (with seat heater), or ODS unit harness; replace the faulty harness, then clear the DTC. ■

DTC 81-4x, 81-5x ("x" can be 0 thru 9 or A thru F), 81-63, 81-64: Internal Failure of the ODS Unit

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

    Does the SRS indicator stay on, and is DTC 81-4x, 81-5x, 81-63, or 81-64, indicated?

    YES—Go to step 3.

    NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Initialize the ODS unit (see page 24-26).

4. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

    Does the SRS indicator go off?

    YES—The system is OK at this time. ■

    NO—Go to step 5.

5. Replace the ODS unit (see page 24-209), then clear the DTC. ■

6. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

    Does the SRS indicator go off?

    YES—The system is OK at this time. ■

    NO—Replace the SRS unit (see page 24-203). ■

DTC Troubleshooting (cont'd)

DTC 81-71, 81-78: ODS Unit Does Not Calibrate

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 81-71 or 81-78 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
3. Calibrate the ODS unit (see page 24-27).
4. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Go to step 5.
5. Replace the ODS unit (see page 24-209), then clear the DTC. ■
6. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the SRS unit (see page 24-203). ■

DTC 81-79: Front Passenger's Weight Sensors Initial Check Failure

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 81-79 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
3. Turn the ignition switch to LOCK (0).
4. Make sure nothing is on the front passenger's seat.
5. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—Remove the front passenger's seat assembly (see page 20-118), then reinstall it, calibrate the ODS unit (see page 24-27). Retry the troubleshooting. If the problem is still present, replace the ODS unit (see page 24-209), then clear the DTC. ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC 82-14: No Signal from the Front Passenger's Weight Sensor (front inner side)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Read the DTC (see page 24-22).

   Is DTC 82-14 indicated?

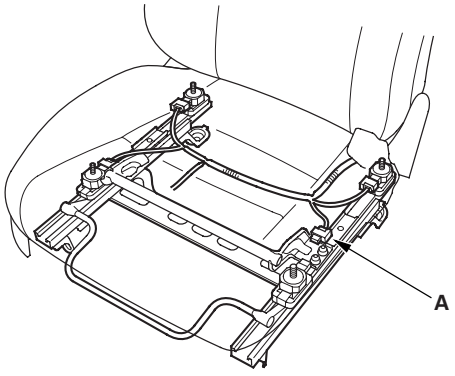
   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■
3. From the SRS INSPECTION menu on the HDS, select SWS DTC CHECK.

   Is another DTC also indicated?

   YES—
   - DTC 14-11: Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■
   - DTC 14-12: Go to step 4.
   - DTC 14-13: Go to step 11.
   - DTC 14-14: Go to step 19.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■
4. Turn the ignition switch to LOCK (0).
5. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (front inner side).

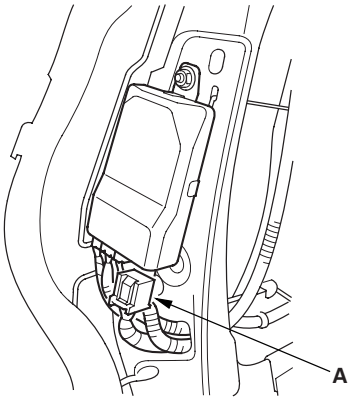


6. Read the DTC.

   Is DTC 14-12 indicated?

   YES—Go to step 7.

   NO—Faulty front passenger's weight sensor (front inner side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■
7. Turn the ignition switch to LOCK (0).
8. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



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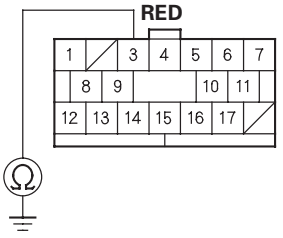
DTC Troubleshooting (cont'd)

9. Measure the resistance between ODS unit harness 18P connector terminal No. 3 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

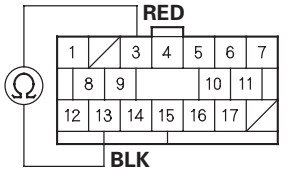
Is the resistance as specified?

YES—Go to step 10.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

10. Measure the resistance between ODS unit harness 18P connector terminals No. 3 and No. 13. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

11. Turn the ignition switch to LOCK (0).

12. Swap the connections between the front passenger's weight sensor (front inner side) and the front passenger's weight sensor (rear inner side).

13. Read the DTC.

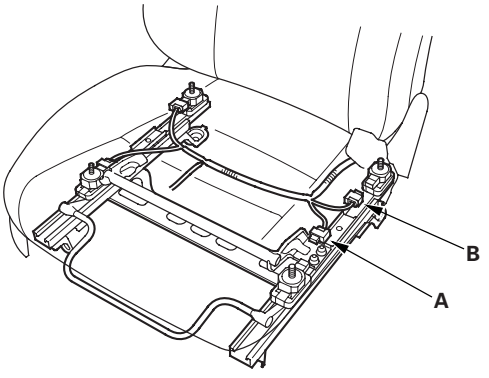
    Is DTC 14-13 indicated?

    YES—Go to step 14.

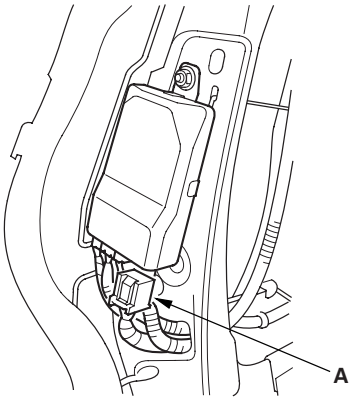
    NO—Faulty front passenger's weight sensor (front inner side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

14. Turn the ignition switch to LOCK (0).

15. Disconnect the front passenger's weight sensor (front inner side) connector (A) and front passenger's weight sensor (rear inner side) connector (B).



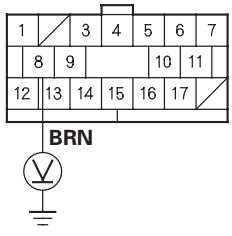
16. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



17. Turn the ignition switch to ON (II).

18. Measure the voltage between ODS unit harness 18P connector terminal No. 8 and body ground. There should be less than 0.2 V.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES—Replace the ODS unit harness. If the problem is still present, replace the ODS unit (see page 24-209), then clear the DTC. ■

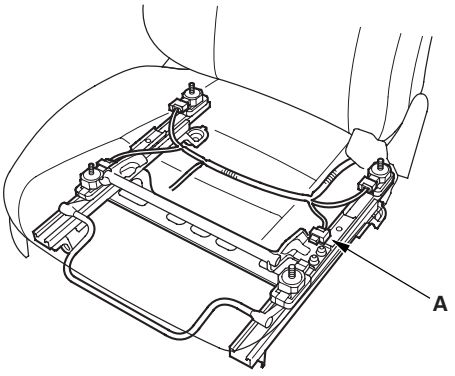
NO—Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0).

20. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (front inner side).



21. Read the DTC.

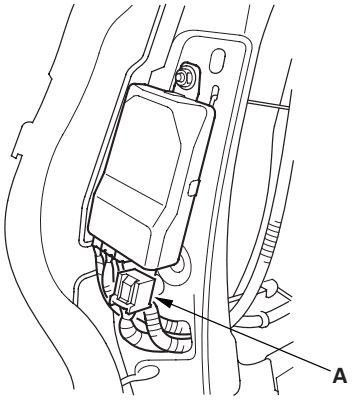
    Is DTC 14-14 indicated?

    YES—Go to step 22.

    NO—Faulty front passenger's weight sensor (front inner side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

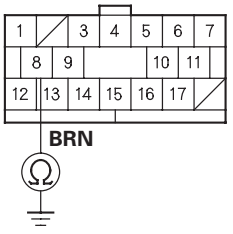
22. Turn the ignition switch to LOCK (0).

23. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



24. Measure the resistance between ODS unit harness 18P connector terminal No. 8 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

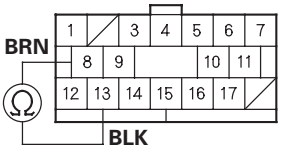
Is the resistance as specified?

YES—Go to step 25.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

25. Measure the resistance between ODS unit harness 18P connector terminals No. 8 and No. 13. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

DTC 82-15: Internal Failure of the Front Passenger's Weight Sensor (front inner side)

DTC 82-17: Internal Failure of the Front Passenger's Weight Sensor (rear inner side)

DTC 83-25: Internal Failure of the Front Passenger's Weight Sensor (front outer side)

DTC 83-27: Internal Failure of the Front Passenger's Weight Sensor (rear outer side

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Read the DTC (see page 24-22).

   Is DTC 82-15, 82-17, 83-25, or 83-27 indicated?

   YES—Faulty front passenger's weight sensor; replace the front passenger's seat frame including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■

DTC Troubleshooting (cont'd)

DTC 82-16: No Signal from the Front Passenger's Weight Sensor (rear inner side)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Read the DTC (see page 24-22).

   Is DTC 82-16 indicated?

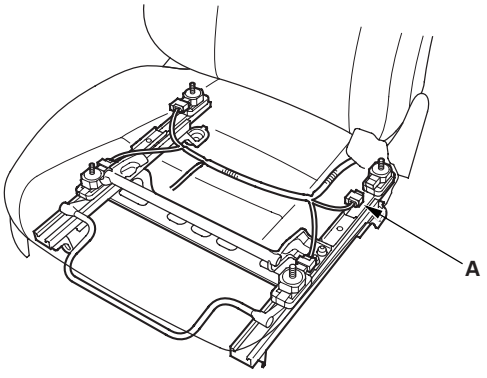
   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24).■
3. From INSPECTION the SRS menu on the HDS, select SWS DTC CHECK.

   Is another DTC also indicated?

   YES—
   - DTC 16-11: Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC.■
   - DTC 16-12: Go to step 4.
   - DTC 16-13: Go to step 11.
   - DTC 16-14: Go to step 19.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24).■
4. Turn the ignition switch to LOCK (0).
5. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (rear inner side).

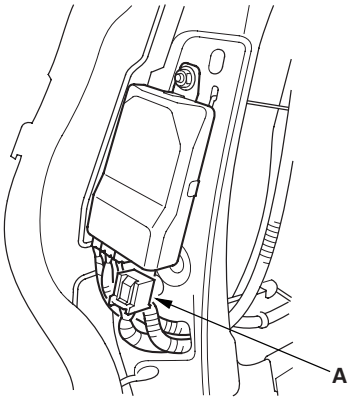


6. Read the DTC.

   Is DTC 16-12 indicated?

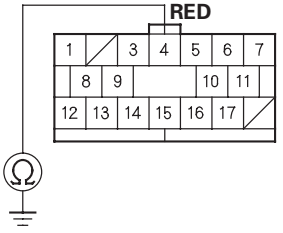
   YES—Go to step 7.

   NO—Faulty front passenger's weight sensor (rear inner side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC.■
7. Turn the ignition switch to LOCK (0).
8. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



9. Measure the resistance between ODS unit harness 18P connector terminal No. 4 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

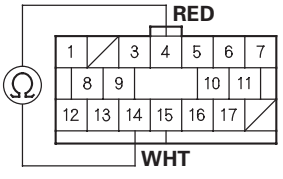
Is the resistance as specified?

YES—Go to step 10.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

10. Measure the resistance between ODS unit harness 18P connector terminals No. 4 and No. 14. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

11. Turn the ignition switch to LOCK (0).

12. Swap the connections between the front passenger's weight sensor (rear inner side) and the front passenger's weight sensor (front inner side).

13. Read the DTC.

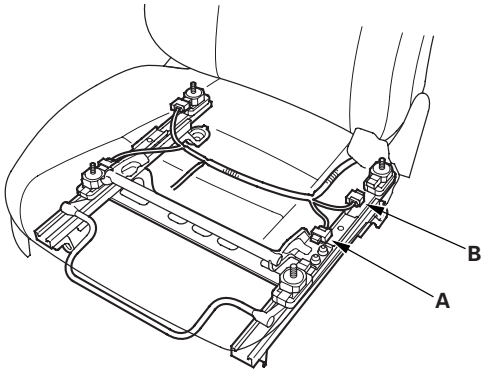
Is DTC 16-13 indicated?

YES—Go to step 14.

NO—Faulty front passenger's weight sensor (rear inner side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

14. Turn the ignition switch to LOCK (0).

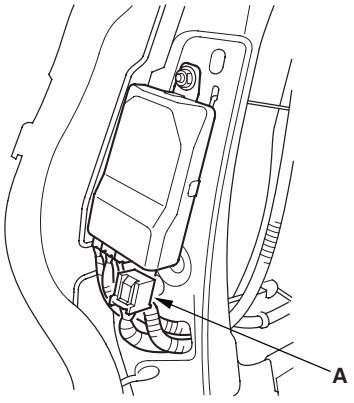
15. Disconnect the front passenger's weight sensor (front inner side) connector (A) and front passenger's weight sensor (rear inner side) connector (B).



(cont'd)

DTC Troubleshooting (cont'd)

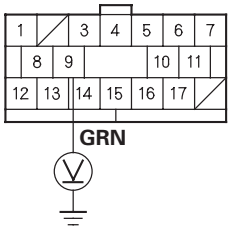
16. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



17. Turn the ignition switch to ON (II).

18. Measure the voltage between ODS unit harness 18P connector terminal No. 9 and body ground. There should be less than 0.2 V.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

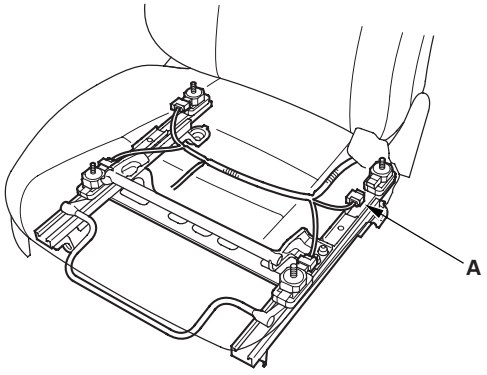
Is the voltage as specified?

YES—Replace the ODS unit harness. If the problem is still present, replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

19. Turn the ignition switch to LOCK (0).

20. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (rear inner side).



21. Read the DTC.

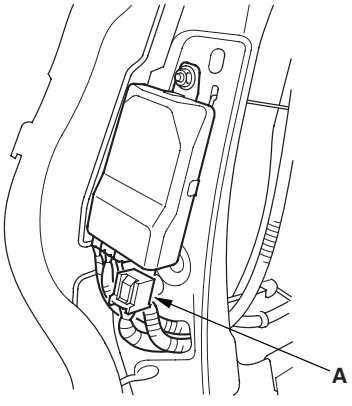
Is DTC 16-14 indicated?

YES—Go to step 22.

NO—Faulty front passenger's weight sensor (rear inner side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

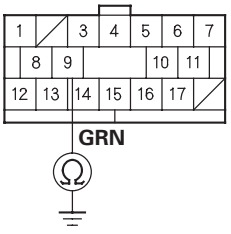
22. Turn the ignition switch to LOCK (0).

23. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



24. Measure the resistance between ODS unit harness 18P connector terminal No. 9 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

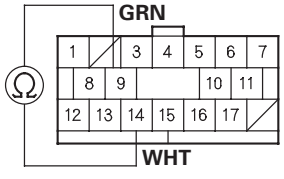
Is the resistance as specified?

YES—Go to step 25.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

25. Measure the resistance between ODS unit harness 18P connector terminals No. 9 and No. 14. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

DTC 83-24: No Signal from the Front Passenger's Weight Sensor (front outer side)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Read the DTC (see page 24-22).

   Is DTC 83-24 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■

3. From INSPECTION menu on the HDS, select SWS DTC CHECK.

   Is another DTC also indicated?

   YES—
   - DTC 24-11: Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■
   - DTC 24-12: Go to step 4.
   - DTC 24-13: Go to step 11.
   - DTC 24-14: Go to step 19.

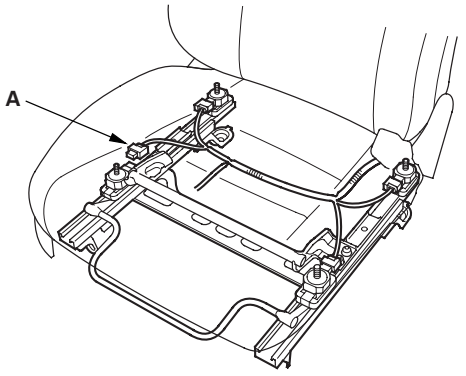
   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■

(cont'd)

DTC Troubleshooting (cont'd)

4. Turn the ignition switch to LOCK (0).

5. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (front outer side).



6. Read the DTC.

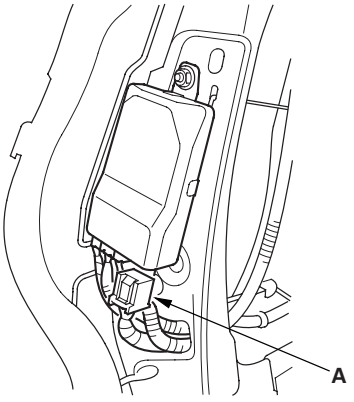
   Is DTC 24-12 indicated?

   YES—Go to step 7.

   NO—Faulty front passenger's weight sensor (front outer side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

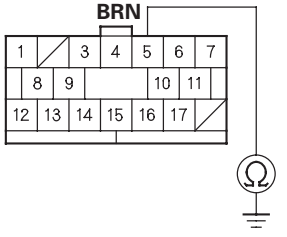
7. Turn the ignition switch to LOCK (0).

8. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



9. Measure the resistance between ODS unit harness 18P connector terminal No. 5 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

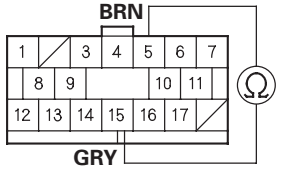
Is the resistance as specified?

YES—Go to step 10.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

10. Measure the resistance between ODS unit harness 18P connector terminals No. 5 and No. 15. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

11. Turn the ignition switch to LOCK (0).

12. Swap the connections between the front passenger's weight sensor (front outer side) and the front passenger's weight sensor (rear outer side).

13. Read the DTC.

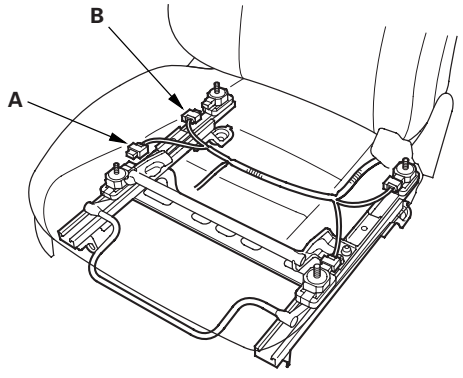
    Is DTC 24-13 indicated?

    YES—Go to step 14.

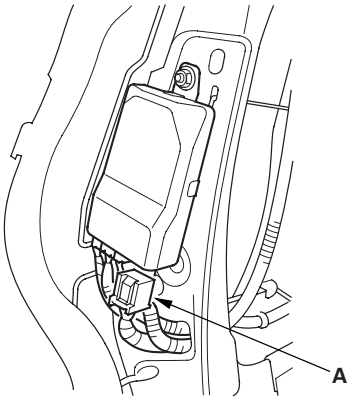
    NO—Faulty front passenger's weight sensor (front outer side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

14. Turn the ignition switch to LOCK (0).

15. Disconnect the front passenger's weight sensor (front outer side) connector (A) and front passenger's weight sensor (rear outer side) connector (B).



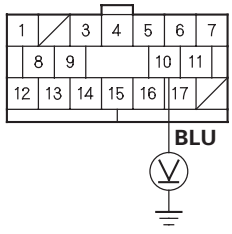
16. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



17. Turn the ignition switch to ON (II).

18. Measure the voltage between ODS unit harness 18P connector terminal No. 10 and body ground. There should be less than 0.2 V.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the voltage as specified?

YES—Replace the ODS unit harness. If the problem is still present, replace the ODS unit (see page 24-209), then clear the DTC. ■

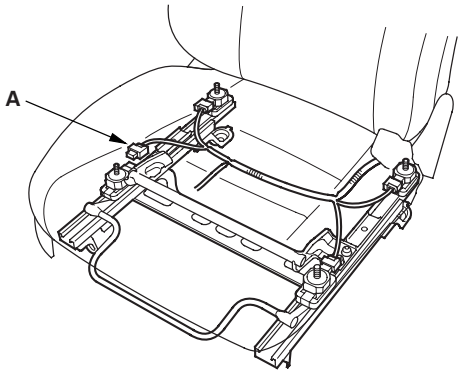
NO—Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0).

20. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (front outer side).



21. Read the DTC.

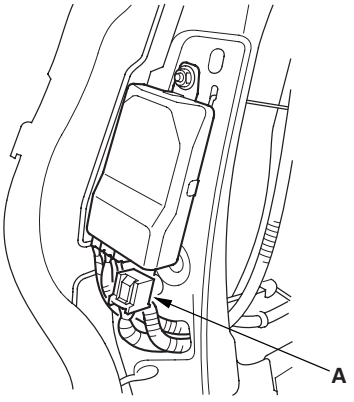
    Is DTC 24-14 indicated?

    YES—Go to step 22.

    NO—Faulty front passenger's weight sensor (front outer side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

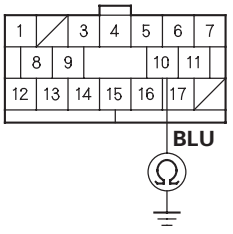
22. Turn the ignition switch to LOCK (0).

23. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



24. Measure the resistance between ODS unit harness 18P connector terminal No. 10 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

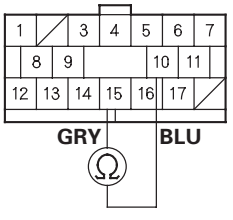
Is the resistance as specified?

YES—Go to step 25.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

25. Measure the resistance between ODS unit harness 18P connector terminals No. 10 and No. 15. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

DTC 83-26: No Signal from the Front Passenger's Weight Sensor (rear outer side)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Read the DTC (see page 24-22).

   Is DTC 83-26 indicated?

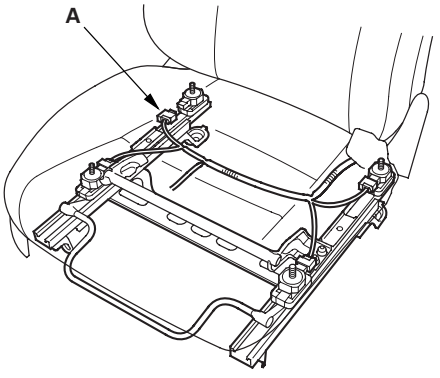
   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24).■
3. From INSPECTION menu on the HDS, select SWS DTC CHECK.

   Is another DTC also indicated?

   YES—
   - DTC 26-11: Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC.■
   - DTC 26-12: Go to step 4.
   - DTC 26-13: Go to step 11.
   - DTC 26-14: Go to step 19.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24).■
4. Turn the ignition switch to LOCK (0).
5. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (rear outer side).

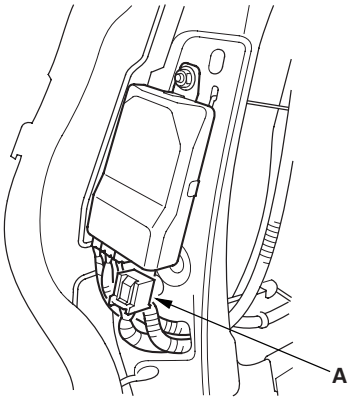


6. Read the DTC.

   Is DTC 26-12 indicated?

   YES—Go to step 7.

   NO—Faulty front passenger's weight sensor (rear outer side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC.■
7. Turn the ignition switch to LOCK (0).
8. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.

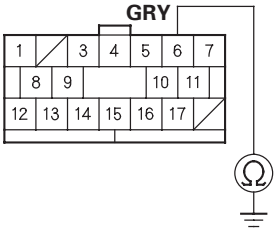


(cont'd)

DTC Troubleshooting (cont'd)

9. Measure the resistance between ODS unit harness 18P connector terminal No. 6 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

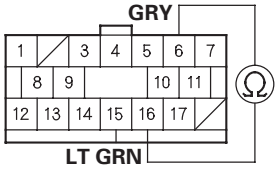
Is the resistance as specified?

YES—Go to step 10.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

10. Measure the resistance between ODS unit harness 18P connector terminals No. 6 and No. 16. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

11. Turn the ignition switch to LOCK (0).

12. Swap the connections between the front passenger's weight sensor (rear outer side) and the front passenger's weight sensor (front outer side).

13. Read the DTC.

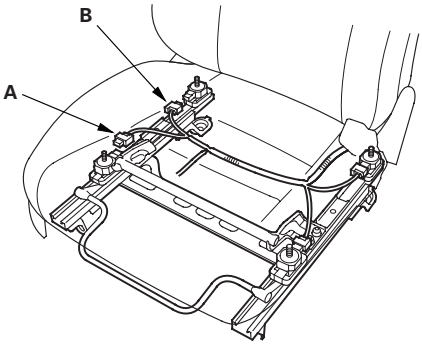
Is DTC 26-13 indicated?

YES—Go to step 14.

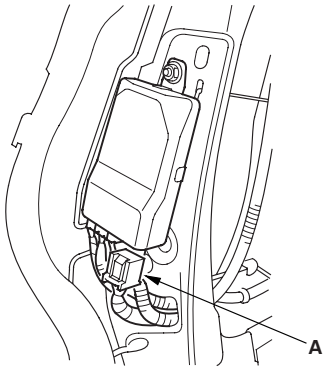
NO—Faulty front passenger's weight sensor (rear outer side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

14. Turn the ignition switch to LOCK (0).

15. Disconnect the front passenger's weight sensor (front outer side) connector (A) and front passenger's weight sensor (rear outer side) connector (B).



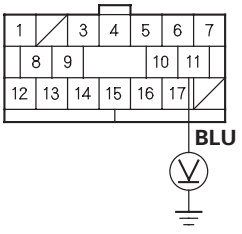
16. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.



17. Turn the ignition switch to ON (II).

18. Measure the voltage between ODS unit harness 18P connector terminal No. 11 and body ground. There should be less than 0.2 V.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

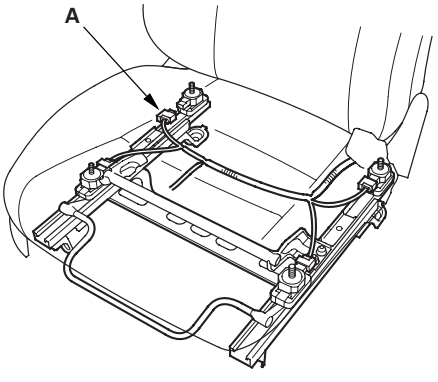
Is the voltage as specified?

YES—Replace the ODS unit harness. If the problem is still present, replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short to power in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

19. Turn the ignition switch to LOCK (0).

20. Disconnect the ODS unit harness 3P connector (A) from the front passenger's weight sensor (rear outer side).



21. Read the DTC.

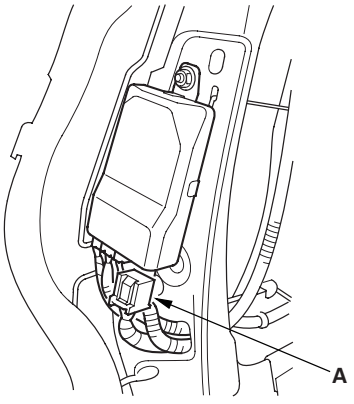
Is DTC 26-14 indicated?

YES—Go to step 22.

NO—Faulty front passenger's weight sensor (rear outer side); replace the front passenger's seat slide assembly including all four front passenger's weight sensors (see page 24-207), then clear the DTC. ■

22. Turn the ignition switch to LOCK (0).

23. Disconnect the ODS unit harness 18P connector (A) from the ODS unit.

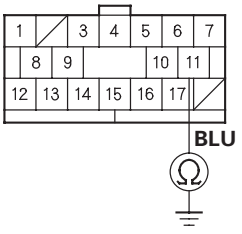


(cont'd)

DTC Troubleshooting (cont'd)

24. Measure the resistance between ODS unit harness 18P connector terminal No. 11 and body ground. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

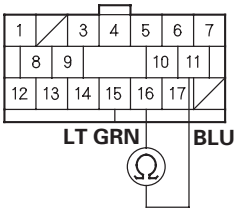
Is the resistance as specified?

YES—Go to step 25.

NO—Short to ground in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

25. Measure the resistance between ODS unit harness 18P connector terminals No. 11 and No. 16. There should be an open circuit or at least 1 MΩ.

ODS UNIT HARNESS 18P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Faulty ODS unit; replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—Short in the ODS unit harness; replace the ODS unit harness, then clear the DTC. ■

DTC 85-4x, 85-5x ("x" can be 0 thru 9 or A thru F), 85-63, 85-64: Internal Failure of the ODS Unit

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 85-4x, 85-5x, 85-63, or 85-64 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Initialize the ODS unit (see page 24-26).

4. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Go to step 5.

5. Replace the ODS unit (see page 24-209), then clear the DTC. ■

6. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the SRS unit (see page 24-203). ■

DTC 85-71, 85-78: ODS Unit Not Initialize

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is DTC 85-71 or 85-78 indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■
3. Initialize the ODS unit (see page 24-26).
4. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Go to step 5.
5. Replace the ODS unit (see page 24-209), then clear the DTC. ■
6. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—The system is OK. ■

   NO—Replace the SRS unit (see page 24-203). ■

DTC 85-79: OPDS Sensor Initial Check Failure

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).
2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■
3. Turn the ignition switch to LOCK (0).
4. Make sure nothing is on the front passenger's seat.
5. Clear the DTC memory (see page 24-23).
6. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■

(cont'd)

DTC Troubleshooting (cont'd)

7. Initialize the ODS unit (see page 24-26).

8. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator go off?

   YES—Replace the ODS unit (see page 24-209), then clear the DTC. If the problem is still present, replace the OPDS sensor/seat-back (see page 20-123). ■

   NO—Intermittent failure, the system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). ■

DTC 86-1x ("x" can be 0 thru 9 or A thru F):
Faulty OPDS Seat-Back Sensor

DTC 86-2x ("x" can be 0 thru 9 or A thru F):
Faulty OPDS Seat Support Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

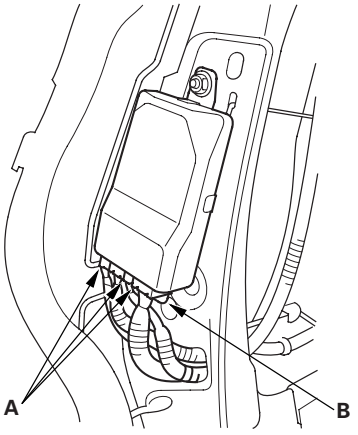
   Does the SRS indicator stay on, and is DTC 86-1x or 86-2x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

   NOTE: Aftermarket devices (fluorescent lights, laptop computers, etc.) used near the front passenger's seat-back can interfere with the seat-back sensors and cause a false DTC 86-1x or 86-2x. If one of these devices was used, clear the DTC, operate the device near the seat-back, and recheck for DTCs. If DTC 86-1x or 86-2x is set, clear it, and do not use the device near the seat-back.

3. Check the connection at the OPDS sensor harness connectors (A) and the ODS unit harness 18P connector (B).



Is the connection OK?

YES—Go to step 4.

NO—Repair the poor connection, then clear the DTC. ■

4. Replace the OPDS sensor/seat-back foam (see page 20-123), and initialize the ODS unit (see page 24-26), then clear the DTC.

5. Clear the DTC memory, then check for DTC 86-1x or 86-2x.

Is DTC 86-1x or 86-2x indicated?

YES—Replace the ODS unit (see page 24-209), then clear the DTC. ■

NO—The system is OK. ■

DTC 92-1x (''x'' can be 0 thru 9 or A thru F): Open in the Passenger's Airbag Cutoff Indicator

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 92-1x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the passenger's airbag cutoff indicator 4P connector (see page 24-212).

(cont'd)

DTC Troubleshooting (cont'd)

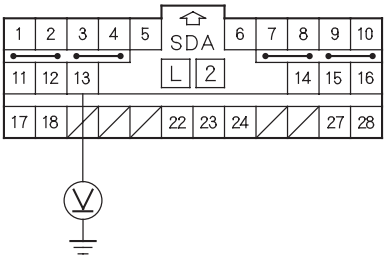
5. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

6. Reconnect the negative cable to the battery.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between SRS unit connector A (28P) terminal No. 13 and body ground. There should be less than 0.2 V.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or passenger's airbag cutoff indicator; replace the passenger's airbag cutoff indicator (see page 24-212), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203).■

NO—Short to power in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC.■

DTC 92-2x ("x" can be 0 thru 9 or A thru F): Open or Short to Ground in the Passenger's Airbag Cutoff Indicator

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and DTC 92-2x indicated?

   YES—Go to step 3.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC.■

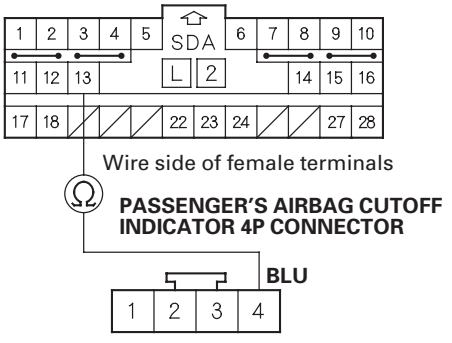
3. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

4. Disconnect the passenger's airbag cutoff indicator 4P connector (see page 24-212).

5. Disconnect SRS unit connector A (28P) from the SRS unit (see page 24-21).

6. Measure the resistance between SRS unit connector A (28P) terminal No. 13 and passenger's airbag cutoff indicator 4P connector terminal No. 4. There should be less than 1.0 Ω.

SRS UNIT CONNECTOR A (28P)



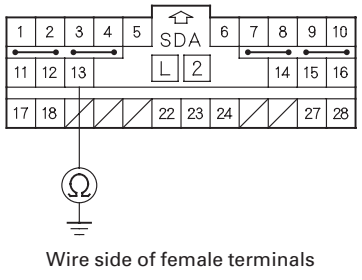
Is the resistance as specified?

YES—Go to step 7.

NO—Open in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

7. Measure the resistance between SRS unit connector A (28P) terminal No. 13 body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Is the resistance as specified?

YES—Check for a faulty SRS unit or passenger's airbag cutoff indicator; replace the passenger's airbag cutoff indicator (see page 24-212), then clear the DTC. If the problem is still present, replace the SRS unit (see page 24-203). ■

NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

DTC A1-1x ("x" can be 0 thru 9 or A thru F): Faulty Power supply (VA Line)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and wait for 10 seconds.

3. Read the DTC (see page 24-22).

   Is DTC A1-1x indicated?

   YES—Go to step 4.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

4. Turn the ignition switch to LOCK (0).

5. Check the No. 9 (7.5 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 6.

   NO—Replace the fuse, then turn the ignition switch to ON (II). If the fuse blows again, check for a short in the No. 9 (7.5 A) fuse circuit (dashboard wire harness, floor wire harness, front passenger's seat wire harness (with seat heater), or ODS unit harness), then clear the DTC. ■

6. Disconnect the negative cable from the battery, then wait at least 3 minutes.

7. Disconnect the SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

8. Reconnect the negative cable to the battery.

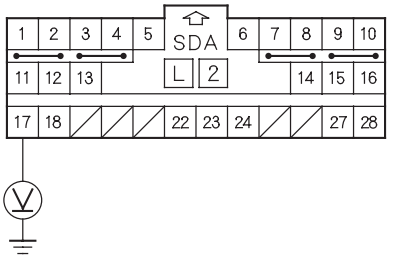
9. Turn the ignition switch to ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

10. Connect a voltmeter between SRS unit connector A (28P) terminal No. 17 and body ground. Turn the ignition switch to ON (II), and measure the voltage. There should be battery voltage when the ignition switch is ON (II).

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

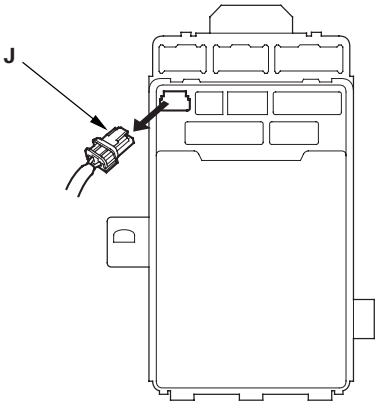
Is there battery voltage?

YES—Faulty SRS unit or poor connection at SRS unit connector (A) 28P and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203).■

NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).

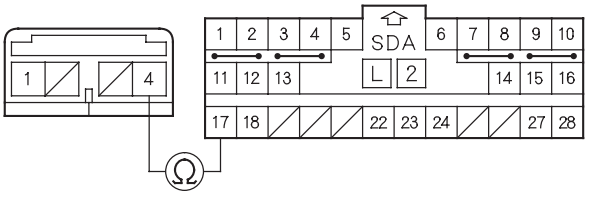
12. Disconnect under-dash fuse/relay box connector J (4P).



13. Measure the resistance between SRS unit connector A (28P) terminal No. 17 and under-dash fuse/relay box connector J (4P) terminal No. 4. There should be less than 1.0 Ω.

UNDER-DASH FUSE/RELAY BOX CONNECTOR J (4P)

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Open in the under-dash fuse/relay box or poor contact between connector J (4P) and the under-dash fuse/relay box; check the connection. If the connection is OK, replace the under-dash fuse/relay box (see page 22-66), then clear the DTC.■

NO—Open in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC.■

DTC A2-1x (“x” can be 0 thru 9 or A thru F): Faulty Power Supply (VB Line)

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Check the No. 11 (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 2.

   NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short to ground in the under-dash fuse/relay box No. 11 (10 A) fuse line, in the dashboard wire harness; replace the under-dash fuse/relay box (see page 22-66), then clear the DTC. ■

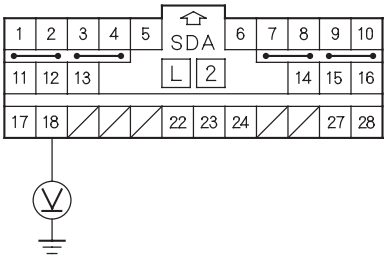
2. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, then wait at least 3 minutes.

3. Disconnect SRS unit connector A (28P) from the SRS unit (see step 9 on page 24-21).

4. Reconnect the negative cable to the battery.

5. Connect a voltmeter between SRS unit connector A (28P) terminal No. 18 and body ground. Turn the ignition switch to ON (II), and measure the voltage. There should be battery voltage when the ignition switch is on.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 24-203). ■

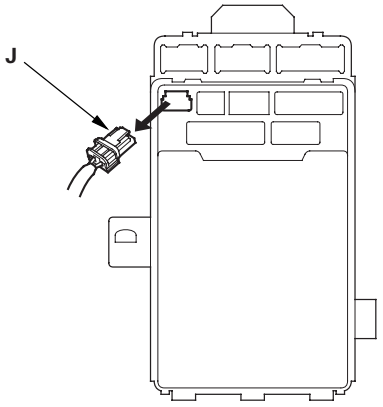
NO—Go to step 6.

(cont’d)

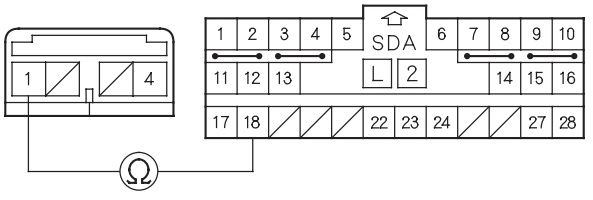
DTC Troubleshooting (cont'd)

6. Turn the ignition switch to LOCK (0).

7. Disconnect under-dash fuse/relay box connector J (4P).



8. Measure the resistance between SRS unit connector A (28P) terminal No. 18 and under-dash fuse/relay box connector J (4P) terminal No. 1. There should be less than 1.0 Ω.



Wire side of female terminals

Is the resistance as specified?

YES—Open in the under-dash fuse/relay box or poor contact between connector J (4P) and the under-dash fuse/relay box; check the connection. If the connection is OK, replace the under-dash fuse/relay box (see page 22-66), then clear the DTC. ■

NO—Open in the dashboard wire harness; replace the dashboard wire harness, then clear the DTC. ■

DTC B2-1x: No Signal from the Rear Safing Sensor

Special Tools Required
- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead L 070AZ-SNA0300

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

3. Read the DTC (see page 24-22).

   Does the SRS indicator stays on, and is DTC B2-1x indicated?

   YES—Go to step 4.

   NO—Go to step 5.

4. Read the DTC (see page 24-22).

   Is DTC 45-11 also indicated?

   YES—Faulty rear safing sensor; replace the rear safing sensor (see page 24-206), then clear the DTC. ■

   NO—Go to step 7.

5. Read the DTC (see page 24-22).

   Is DTC B2-1x (except B2-11) also indicated?

   YES—Go to step 6.

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

6. Read the DTC (see page 24-22).

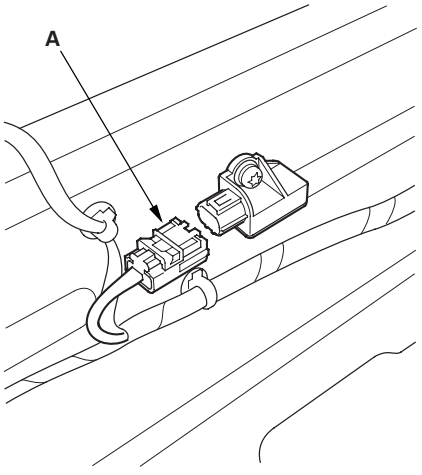
   Is DTC 45-11 indicated?

   YES—Troubleshoot DTC 45-1x (see page 24-132). ■

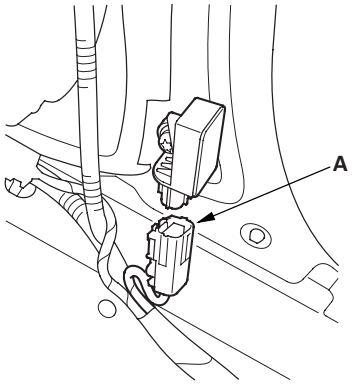
   NO—Faulty rear safing sensor; replace the rear safing sensor (see page 24-206), then clear the DTC. ■

7. Turn the ignition switch to LOCK (0).

8. Disconnect the floor wire harness 4P connector (A) from the rear safing sensor.

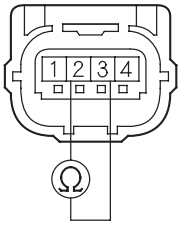


9. Disconnect the floor wire harness 4P connector (A) from the left side impact sensor (first).



10. Measure the resistance between rear safing sensor 4P connector terminals No. 2 and No. 3. There should be an open circuit or at least 1 MΩ.

REAR SAFING SENSOR 4P CONNECTOR



Terminal side of female terminals

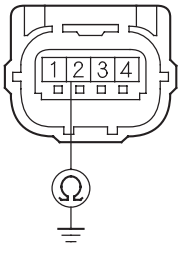
Is the resistance as specified?

YES—Go to step 11.

NO—Short in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

11. Measure the resistance between rear safing sensor 4P connector terminal No. 2 and body ground. There should be an open circuit or at least 1 MΩ.

REAR SAFING SENSOR 4P CONNECTOR



Terminal side of female terminals

Is the resistance as specified?

YES—Go to step 12.

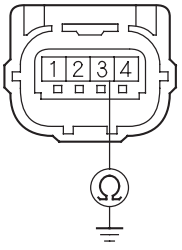
NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure the resistance between rear safing sensor 4P connector terminal No. 3 and body ground. There should be an open circuit or at least 1 MΩ.

REAR SAFING SENSOR 4P CONNECTOR



Terminal side of female terminals

Is the resistance as specified?

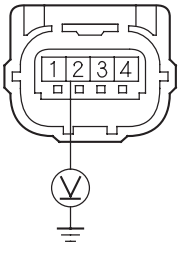
YES—Go to step 13.

NO—Short to ground in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

13. Turn the ignition switch to ON (II).

14. Measure the voltage between rear safing sensor 4P connector terminal No. 2 and body ground. There should be less than 0.2 V.

REAR SAFING SENSOR 4P CONNECTOR



Terminal side of female terminals

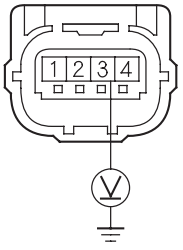
Is the voltage as specified?

YES—Go to step 15.

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

15. Measure the voltage between rear safing sensor 4P connector terminal No. 3 and body ground. There should be less than 0.2 V.

REAR SAFING SENSOR 4P CONNECTOR



Terminal side of female terminals

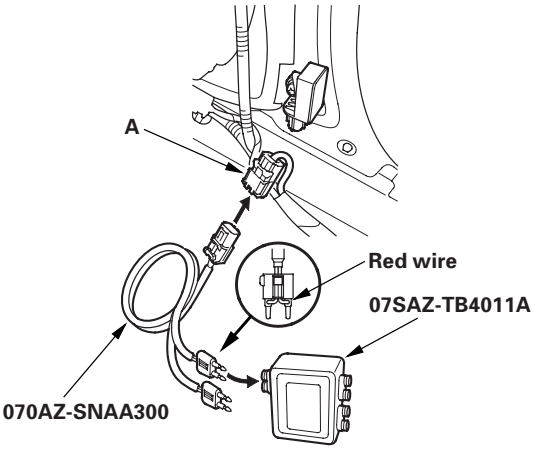
Is the resistance as specified?

YES—Go to step 16.

NO—Short to power in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

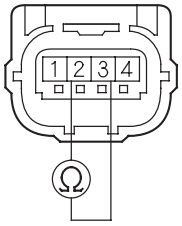
16. Turn the ignition switch to LOCK (0).

17. Connect the SRS inflator simulator (jumper connector) and the red lead of simulator lead L to the floor wire harness 4P connector (A) at the left side impact sensor (first).



18. Measure the resistance between rear safing sensor 4P connector terminal No. 2 and No. 3. There should be less than 1.0 Ω.

REAR SAFING SENSOR 4P CONNECTOR



Terminal side of female terminals

Is the resistance as specified?

YES—Faulty rear safing sensor or poor connection at the floor wire harness 4P connector and the rear safing sensor. Check the connection between the connector and the rear safing sensor. If the connection is OK, replace the rear safing sensor (see page 24-206), then clear the DTC. ■

NO—Open in the floor wire harness; replace the floor wire harness, then clear the DTC. ■

DTC B2-17, B2-8x, B2-9x, B2-Ax, B2-Bx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the Rear Safing Sensor

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13) and General Troubleshooting Information (see page 24-22).

1. Clear the DTC memory (see page 24-23).

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicator stay on, and is B2-17, B2-8x, B2-9x, B2-Ax, or B2-Bx indicated?

   YES—Replace the rear safing sensor (see page 24-206), then clear the DTC. If the DTC returns, replace the SRS unit (see page 24-203). ■

   NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-24). If another DTC is indicated, troubleshoot the DTC. ■

DTC Troubleshooting (cont'd)

DTC 41-xx, 42-xx, 43-xx (''x'' can be 0 thru 9 or A thru F): Internal Failure of the ODS Unit

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 81-4x (see page 24-149).

DTC 71-xx (''x'' can be 0 thru 9 or A thru F): ODS Unit Does Not Calibrate

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 81-71 (see page 24-150).

DTC 14-11: Short to Power in the Front Passenger's Weight Sensor (front inner side) Power Circuit

DTC 14-12: Short to Ground in the Front Passenger's Weight Sensor (front inner side) Power Circuit

DTC 14-13: Short to Power in the Front Passenger's Weight Sensor (front inner side) Output Circuit

DTC 14-14: Short to Ground in the Front Passenger's Weight Sensor (front inner side) Output Circuit

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 82-14 (see page 24-151).

DTC 16-11: Short to Power in the Front Passenger's Weight Sensor (rear inner side) Power Circuit

DTC 16-12: Short to Ground in the Front Passenger's Weight Sensor (rear inner side) Power Circuit

DTC 16-13: Short to Power in the Front Passenger's Weight Sensor (rear inner side) Output Circuit

DTC 16-14: Short to Ground in the Front Passenger's Weight Sensor (rear inner side) Output Circuit

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 82-16 (see page 24-156).

DTC Troubleshooting (cont'd)

DTC 24-11: Short to Power in the Front Passenger's Weight Sensor (front outer side) Power Circuit

DTC 24-12: Short to Ground in the Front Passenger's Weight Sensor (front outer side) Power Circuit

DTC 24-13: Open in the Front Passenger's Weight Sensor (front outer side) Output Circuit

DTC 24-14: Short to Ground in the Front Passenger's Weight Sensor (front outer side) Output Circuit

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 82-24 (see page 24-159).

DTC 26-11: Short to Power in the Front Passenger's Weight Sensor (rear outer side) Power Circuit

DTC 26-12: Short to Ground in the Front Passenger's Weight Sensor (rear outer side) Power Circuit

DTC 26-13: Open in the Front Passenger's Weight Sensor (rear outer side) Output Circuit

DTC 26-14: Short to Ground in the Front Passenger's Weight Sensor (rear outer side) Output Circuit

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 83-26 (see page 24-163).

DTC 15-3x: No Signal From the Front Inner Side Front Passenger's Weight Sensor

DTC 17-3x: No Signal From the Rear Inner Side Front Passenger's Weight Sensor

DTC 25-3x: No Signal From the Front Outer Side Front Passenger's Weight Sensor

DTC 27-3x: No Signal From the Rear Outer Side Front Passenger's Weight Sensor

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 82-15, 82-17, 83-25, and 83-27 (see page 24-155).

SRS indicator does not come on

1. Turn the ignition switch to LOCK (0), then wait for 10 seconds.

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicators come on?

   YES—Intermittent failure, system is OK at this time. ■

   NO—Go to step 3.

3. Connect the HDS to the data link connector (DLC) (see page 24-22).

4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

5. Do the gauge control module self-diagnostic function (see page 22-241).

   Does the SRS indicator come on?

   YES—Faulty SRS unit; replace the SRS unit (see page 24-203). ■

   NO—Faulty gauge control module (tach); replace the gauge control module (tach) (see page 22-277). ■

DTC 15-3x: No Signal From the Front Inner Side Front Passenger's Weight Sensor

DTC 17-3x: No Signal From the Rear Inner Side Front Passenger's Weight Sensor

DTC 25-3x: No Signal From the Front Outer Side Front Passenger's Weight Sensor

DTC 27-3x: No Signal From the Rear Outer Side Front Passenger's Weight Sensor

NOTE: Only read DTCs from the SRS menu, not from the SWS menus unless instructed to check SWS DTCs. SWS (ODS unit) DTCs are subcodes of SRS unit DTCs. Only troubleshoot the corresponding SRS DTCs.

Do the troubleshooting for SRS unit DTC 82-15, 82-17, 83-25, and 83-27 (see page 24-155).

SRS indicator does not come on

1. Turn the ignition switch to LOCK (0), then wait for 10 seconds.

2. Turn the ignition switch to ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

   Does the SRS indicators come on?

   YES—Intermittent failure, system is OK at this time. ■

   NO—Go to step 3.

3. Connect the HDS to the data link connector (DLC) (see page 24-22).

4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

5. Do the gauge control module self-diagnostic function (see page 22-241).

   Does the SRS indicator come on?

   YES—Faulty SRS unit; replace the SRS unit (see page 24-203). ■

   NO—Faulty gauge control module (tach); replace the gauge control module (tach) (see page 22-277). ■

Symptom Troubleshooting (cont'd)

SRS indicator stays on, but no DTCs are stored

NOTE: Before doing this troubleshooting procedure, review SRS Precautions and Procedures (see page 24-13), General Troubleshooting Information (see page 24-22), and Battery Terminal Disconnection and Reconnection (see page 22-68).

1. Connect the HDS to the data link connector (DLC) (see page 24-22).
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).
4. Select Body Electrical status with the HDS.
5. Check for DTCs in the Gauge Menu with the HDS.

   Is DTC B1187 indicated?

   YES—Go to the troubleshooting for DTC B1187 (see page 22-265). ■

   NO—Go to step 6.

6. Check that the HDS communicates with the SRS unit.

   Does the HDS communicate with the SRS unit?

   YES—Go to step 7.

   NO—If the HDS does not communicate with the SRS unit, check for power and ground at the SRS unit connector A (28P). If power and grounds are ok, replace the SRS unit (see page 24-203).

7. From the HDS System Menu, select SRS, then SRS in Mode Menu, PARAMETER INFORMATION, then SCS, MES, Indicator. Read the current status of the SRS indicator.

   Is the status ON?

   YES—Faulty SRS unit; replace the SRS unit (see page 24-203). ■

   NO—Go to step 8.

8. Do the gauge self-diagnostic test (see page 22-241).

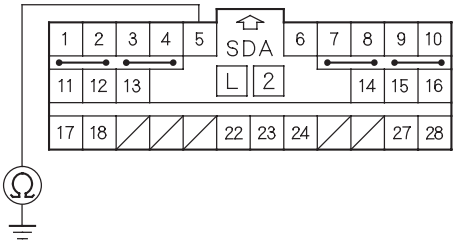
   Does the SRS indicator flash?

   YES—Go to step 9.

   NO—Faulty gauge control module (tach); replace the gauge control module (tach) (see page 22-277).

9. Turn the ignition switch to LOCK (0). Disconnect the negative cable from the battery, and wait at least 3 minutes.
10. Disconnect the SRS unit connector A (28P) from the SRS unit (see step 8 on page 24-21).
11. Measure the resistance between SRS unit connector A (28P) terminal No. 5 and body ground. There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor connection at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-203). ■

NO—Short in the dashboard wire harness; replace the dashboard wire harness. ■

Side airbag cutoff indicator stays on

1. Make sure nothing is on the front passenger's seat.
2. Make sure the seat back is dry.
3. Turn the ignition switch to ON (II), and see if the indicator come on.

   Does the SRS indicator come on and stay on?

   YES—Go to the Symptom Troubleshooting ''SRS indicator stays on, but no DTCs are stored.''

   NO—Go to step 2.
4. Connect the HDS to the data link connector (DLC) (see page 24-22).
5. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not troubleshoot the DLC circuit (see page 11-204).
6. Select Body Electrical Status with the HDS.
7. Check for DTCs in the Gauge Menu with the HDS.

   Is DTC B1187 indicated?

   YES—Go to the DTC B1187 troubleshooting (see page 22-265). ■

   NO—Go to step 8.
8. Do the gauge control module self-diagnostic function (see page 22-241).

   Does the side airbag cutoff indicator flash?

   YES—Initialize the ODS unit (see page 24-26). If the problem is still present, replace the OPDS sensor/seat-back (see page 20-123). ■

   NO—Faulty gauge control module (tach); replace the gauge control module (tach) (see page 22-277). ■

Side airbag cutoff indicator does not come on

NOTE: If the SRS indicator also stays on, go to SRS indicator stays on, but no DTCs are stored (see page 24-182).

1. Turn the ignition switch to LOCK (0), then wait for 10 seconds.
2. Turn the ignition switch to ON (II), and check that the side airbag cutoff indicator comes on for about 6 seconds.

   Does the side airbag cutoff indicator come on?

   YES—Go to the Symptom Troubleshooting ''SRS indicator stays on.'' ■

   NO—Go to step 3.
3. Connect the HDS to the data link connector (DLC) (see page 24-22).
4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not troubleshoot the DLC circuit (see page 11-204).
5. Do the gauge control module self-diagnostic function (see page 22-241).

   Does the side airbag cutoff indicator come on?

   YES—Faulty SRS unit; replace the SRS unit (see page 24-203). ■

   NO—Faulty gauge control module (tach); replace the gauge control module (tach) (see page 22-277). ■

Symptom Troubleshooting (cont'd)

Passenger's airbag cutoff indicator stays on or comes on suddenly

NOTE: Under the following conditions, the passenger's airbag cutoff indicator stays on or comes on suddenly.

- No one is sitting the front passenger's seat, but there is an object on the seat more than 5 kg (11 lbs).
- The seat belt is buckled, but no one is sitting on the front passenger's seat.
- Someone who is less than 30 kg (66 lbs) is sitting on the front passenger's seat.
- Someone who is more than 30 kg (66 lbs) but is supporting some of their body weight on their legs, feet, arms, or hands.

1. Check for these items, then recheck the passenger's airbag cutoff indicator.

   - The front passenger's seat is/was installed correctly.
   - Nothing is/was on the front passenger's seat.
   - Nothing is/was under the front passenger's seat.
   - Nothing is/was in the front passenger's seat-back pocket.
   - Whoever was sitting on the passenger's seat was sitting in the proper sitting position.

   Does the passenger's airbag cutoff indicator stay on?

   YES—Go to step 2.

   NO—Troubleshooting is complete. ■

2. Connect the HDS to the data link connector (DLC) (see page 24-22).

3. Turn the ignition switch to ON (II).

4. Make sure the HDS communicates with the vehicle and the SRS unit. If it does not communicate, troubleshoot the DLC circuit (see page 11-204).

5. Select the INSPECTION menu on the HDS, then select AFTER REPLACING FRONT PASSENGER'S SEAT COMPONENT(S), and follow the prompts.

   Does the passenger's airbag cutoff indicator stay on?

   YES—Go to step 6.

   NO—Troubleshooting is complete. ■

6. Select the INSPECTION menu on the HDS, then select AFTER A VEHICLE COLLISION, and follow the prompts.

   Does the passenger's airbag cutoff indicator stay on?

   YES—Replace the SRS unit (see page 24-203). If the problem is still present, replace the ODS unit (see page 24-209), and then if the problem is still present, replace the passenger's weight sensors (see page 24-207). ■

   NO—Troubleshooting is complete. ■

Component Replacement/Inspection After Deployment

NOTE:
- Before doing any SRS repairs, check the SRS DTCs (see page 24-22) for the less obvious deployed components (seat belt tensioners, front impact sensors, side airbag sensors, etc.).
- After a vehicle collision, do the ODS unit operation check (see page 24-28).
- Do not replace the ODS unit unless it is physically damaged or a specific fault was found during DTC troubleshooting.
- After a vehicle collision, inspect the front seat active head restraints (see page 20-117).

After a collision where the seat belt tensioners deployed, replace these items:
- SRS unit
- Seat belt tensioners
- Seat belt buckle tensioners
- Front impact sensors

After a collision where the front airbag(s) deployed, replace these items:
- SRS unit
- Deployed airbag(s)
- Seat belt tensioners
- Seat belt buckle tensioners
- Front impact sensors

After a collision where the side airbag(s) deployed, replace these items:
- SRS unit
- Side impact sensor(s) (first)
- Side impact sensor(s) (second)
- B-pillar lower trim
- Front seat assembly (Impact side)

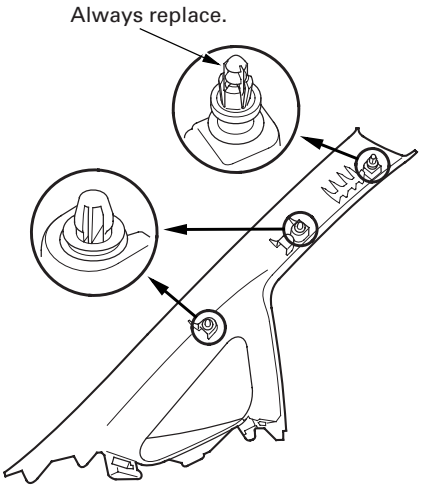
After a collision where a side curtain airbag deployed, replace the items for the side(s) that deployed:
- SRS unit
- Deployed side curtain airbag(s)
- Seat belt tensioner(s)
- Side impact sensor(s) (first)
- Side impact sensor(s) (second)
- Rear safing sensor
- Roof trim
- A-pillar trim
- B-pillar lower trim
- C-pillar trim
- Front grab handle
- Rear grab handle
- All related trim clips
- Sunvisor

After a moderate to severe side or rear collision, inspect for any damage on the side curtain airbag or other related components. Replace the components as needed.

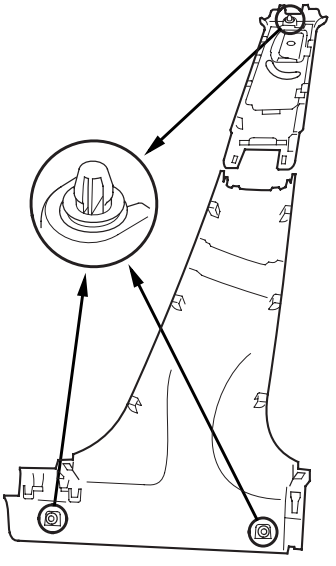
(cont'd)

Component Replacement/Inspection After Deployment (cont'd)

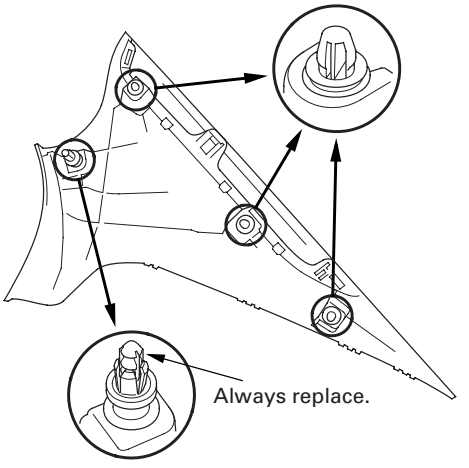
A-Pillar Trim



B-Pillar Trim



C-Pillar Trim



During the repair process, inspect these areas:

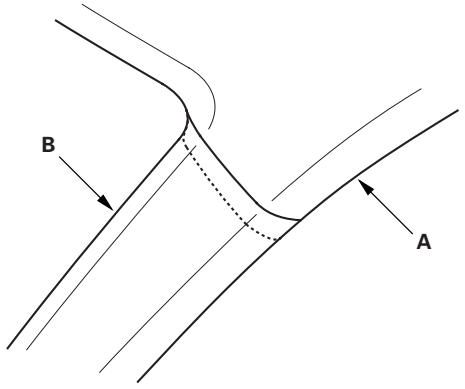
- Inspect all the SRS wire harnesses. Replace, do not repair, any damaged harnesses.
- Inspect the cable reel for heat damage. If there is any damage, replace the cable reel.

After the vehicle is completely repaired, turn the ignition switch to ON (II). If the SRS indicator comes on for about 6 seconds and then goes off, the SRS is OK. If the indicator does not function properly, use the HDS to read the DTC (see page 24-22). If you cannot retrieve a code, Do the SRS Symptom Troubleshooting.

Checking and Adjusting the Headliner/Pillar Trim Overlap

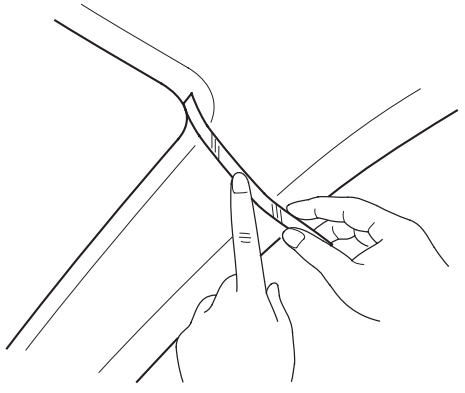
To prevent the side curtain airbag from deploying and damaging the pillar trim, the overlap between the headliner and pillar trim must be less then 15 mm (0.6 in.). To check the overlap, do this:

1. Install the headliner (A) and the pillar trims (B).



This illustration shows the A-pillar.

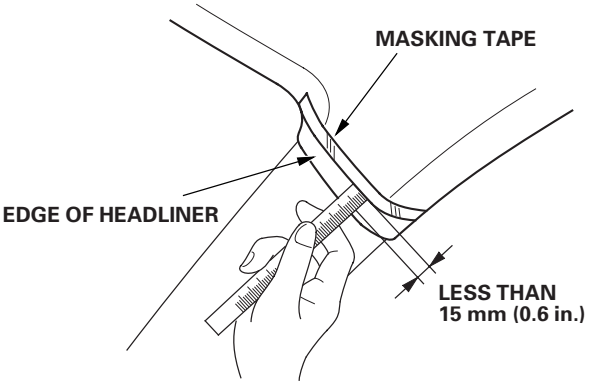
2. Apply masking tape to the headliner to mark the upper edge of each pillar trim.



This illustration shows the A-pillar.

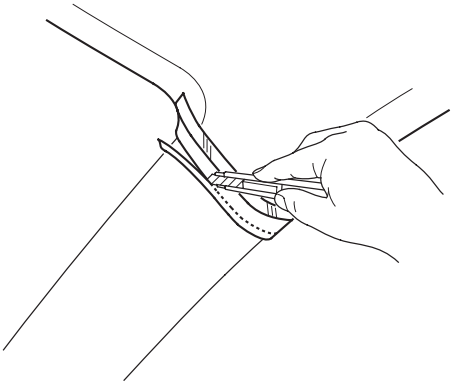
3. Remove the pillar trim, and measure the headliner overlap.

   - If the overlap is less than 15 mm (0.6 in.), remove the tape, and install the pillar trim.
   - If the overlap is more than 15 mm (0.6 in.), go to step 4.



This illustration shows the A-pillar.

4. Carefully trim the headliner with a utility knife, reducing the overlap to less than 15 mm (0.6 in.).



This illustration shows the A-pillar.

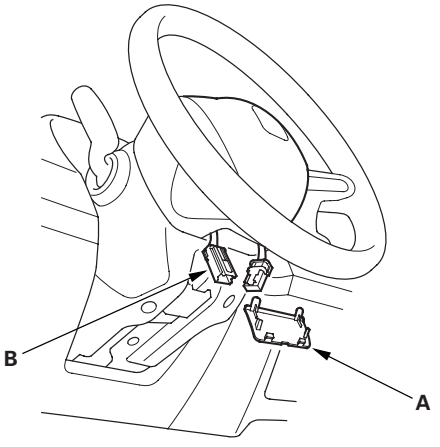
5. Remove the tape, and install the pillar trim.

Driver's Airbag Replacement

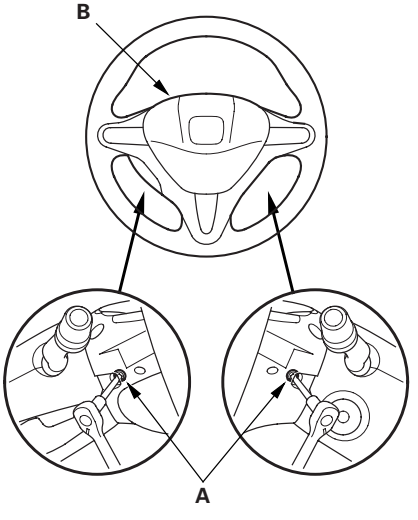
NOTE: If replacing the driver's airbag after deployment, refer to Component Replacement/Inspection After Deployment (see page 24-185) for a complete list of other parts that must also be replaced.

Removal

1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



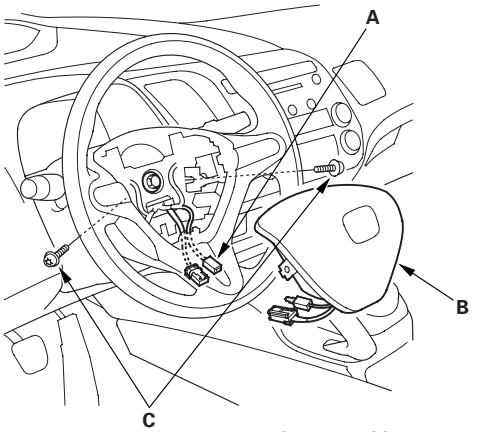
3. Using a TORX T30 bit, remove the two TORX bolts (A) and discard them.



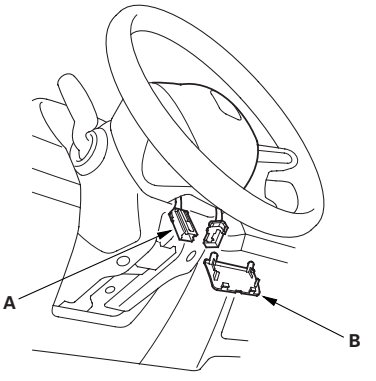
4. Disconnect the horn switch connector (1P), then remove the driver's airbag (B).

Installation

1. Connect the horn switch connector (1P) (A) to the driver's airbag.



2. Place the driver's airbag (B) in the steering wheel, and secure it with new TORX bolts (C).
3. Connect the driver's airbag 4P connector (A) to the cable reel 4P connector, then install the access panel (B) on the steering wheel.



4. Do the battery terminal reconnection procedure (see page 22-68).
5. Clear any DTCs (see page 24-23).
6. After installing the airbag, confirm proper system operation:

   - Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.
   - Make sure the horn works.

Front Passenger's Airbag Replacement

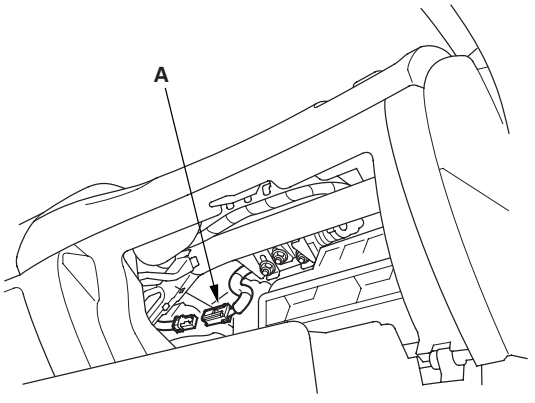
NOTE: If replacing the front passenger's airbag after deployment, refer to Component Replacement/ Inspection After Deployment (see page 24-185) for a complete list of other parts that must also be replaced.

Removal

1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.

2. Remove the glove box (see page 20-104).

3. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.

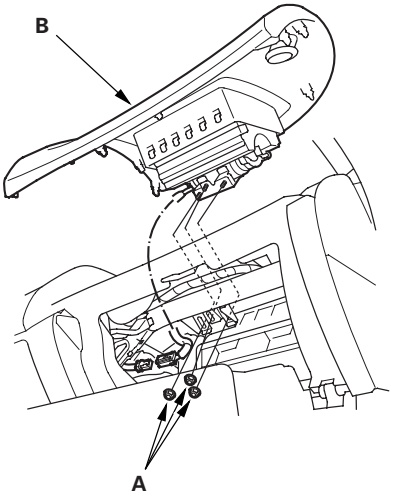


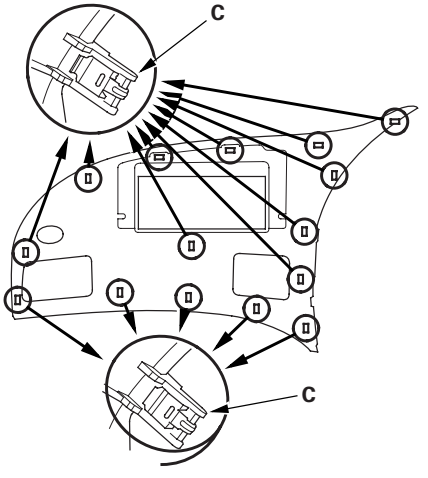
4. Remove the center panel:

   - Navigation unit, with navigation system.
     – '06-08 models (see page 23-256)
     – '09 model (see page 23-355)
   - Audio unit, without navigation system.
     – '06-08 models (see page 23-80)
     – '09 model (see page 23-155)

5. Remove the three mounting nuts (A) from the bracket. Cover the front passenger's lid and dashboard with a cloth, and pry carefully with a screwdriver to lift the front passenger's airbag assembly (B) out of the dashboard. If you replacing only the front passenger's lid, go to step 6.

   NOTE: The front passenger's lid has pawls (C) on each side which attach it to the dashboard.



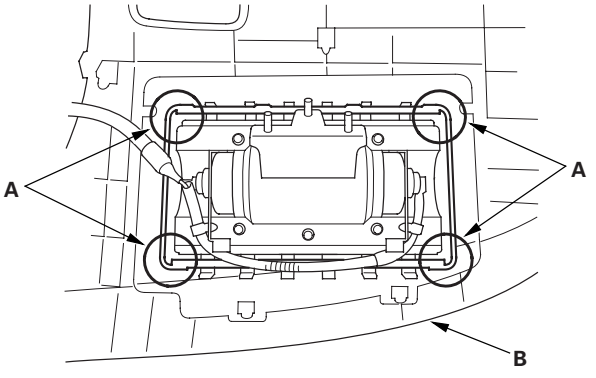


(cont'd)

Front Passenger's Airbag Replacement (cont'd)

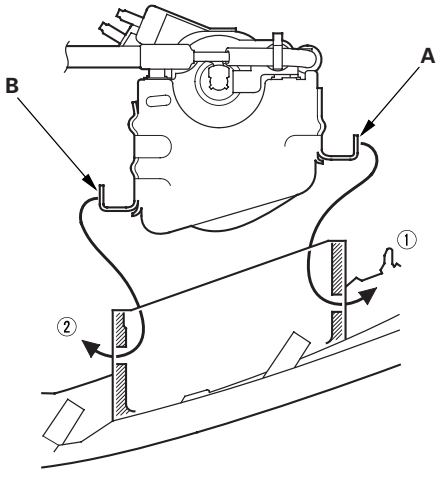
6. Cut the four parts (A) of the front passenger's lid (B) as shown, and remove the front passenger's airbag.

   NOTE:
   - Always replace the front passenger's lid whenever you remove the front passenger's airbag from the lid.
   - Replace the front passenger's airbag if the airbag mounting hooks or its housing is damaged.



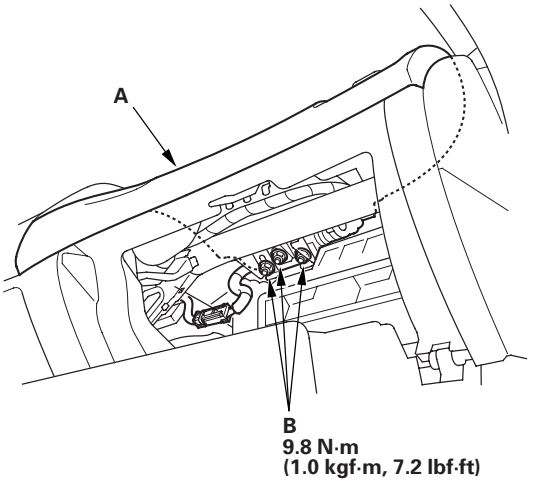
7. Insert the hooks (A) of the front passenger's airbag housing into the new front passenger's lid, then insert the other hooks (B) into the lid.

   NOTE:
   - Make sure there are no objects between the airbag and the front passenger's lid.
   - Make sure the airbag is fully seated, and make sure the front passenger's lid is not deformed or damaged after the airbag is in place.
   - Do not use tools when detaching the front passenger's airbag in order to protect it.

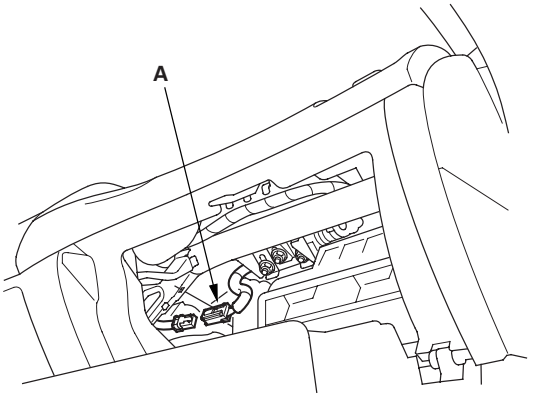


Installation

1. Place the front passenger's airbag assembly (A) into the dashboard. Tighten the front passenger's airbag mounting nuts (B).



2. Connect the front passenger's airbag 4P connector (A) to dashboard wire harness, then reinstall the glove box and center panel.



3. Do the battery terminal reconnection procedure (see page 22-68).

4. Clear any DTC (see page 24-23).

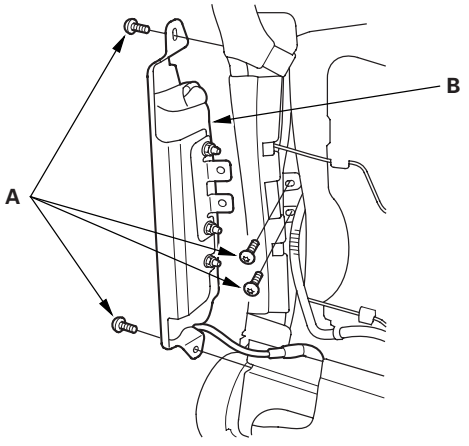
5. After installing the airbag, confirm proper system operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Airbag Replacement

NOTE: If replacing the side airbag after deployment, refer to Component Replacement/Inspection After Deployment (see page 24-185) for a complete list of other parts that must also be replaced.

Removal

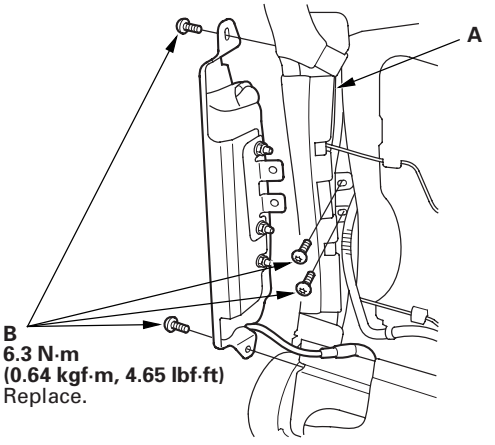
1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the seat assembly (see page 20-118) and seat-back cover (see page 20-123).
3. Remove the mounting screws (A) and the side airbag (B).



Installation

NOTE:
- If the side airbag lid is secured by tape, remove the tape.
- Do not open the lid of the side airbag cover.
- Use new mounting screws tightened to the specified torque. When you replace a side airbag, make sure that the seat-back cover is installed properly. Improper installation may prevent proper deployment.
- Be sure to install the harness wires so that they are not pinched or interfering with other parts.

1. Place the side airbag on the seat-back frame (A). Install new side airbag mounting screws (B).



2. Install the seat-back cover in the reverse order of removal (see page 20-123).
3. Install the seat assembly (see page 20-118).
4. Move the front seat and the seat-back through their full ranges of movement, making sure the harness wires are not pinched or interfering with other parts.
5. Do the battery terminal reconnection procedure (see page 22-68).
6. Clear any DTCs (see page 24-23).
7. After installing the side airbag, confirm proper system operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Curtain Airbag Replacement

NOTE: If replacing the side curtain airbag after deployment, refer to Component Replacement/Inspection After Deployment (see page 24-185) for a complete list of other parts that must also be replaced.

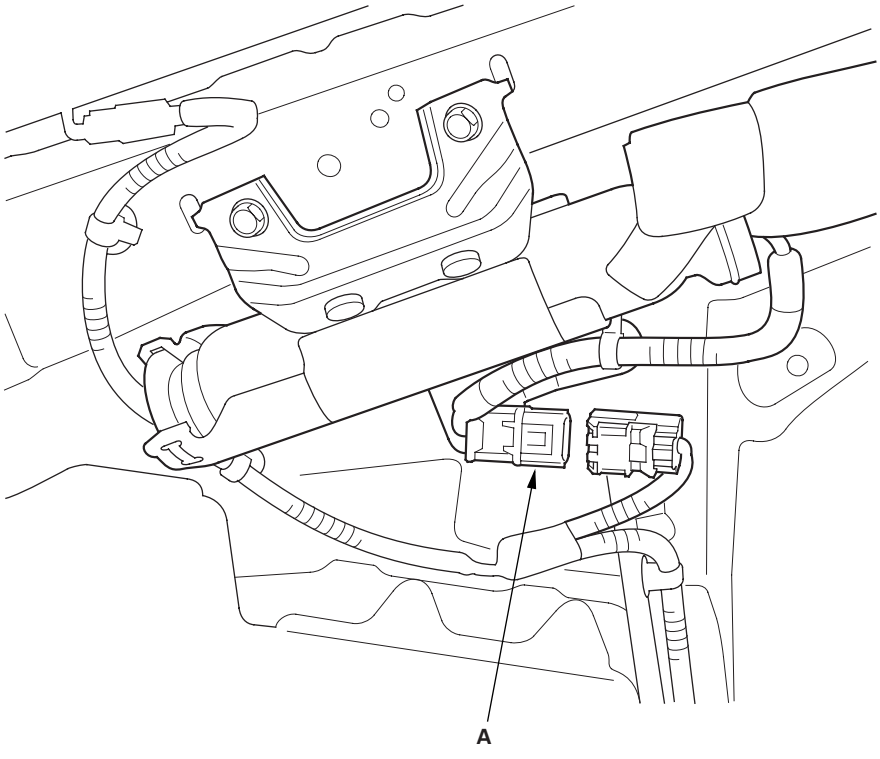
Removal

NOTE:
- Review the interior trim replacement procedure before doing repair or service (see page 20-69).
- Removal of the side curtain airbag must be done according to the Precautions and Procedures (see page 24-13).
- The side curtain airbag system consists of the side curtain airbag module, including the roof trim, front grab handle, all grab handle brackets and shielding protector. After the side curtain airbag has been deployed, replace these parts (see page 24-185).

1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.

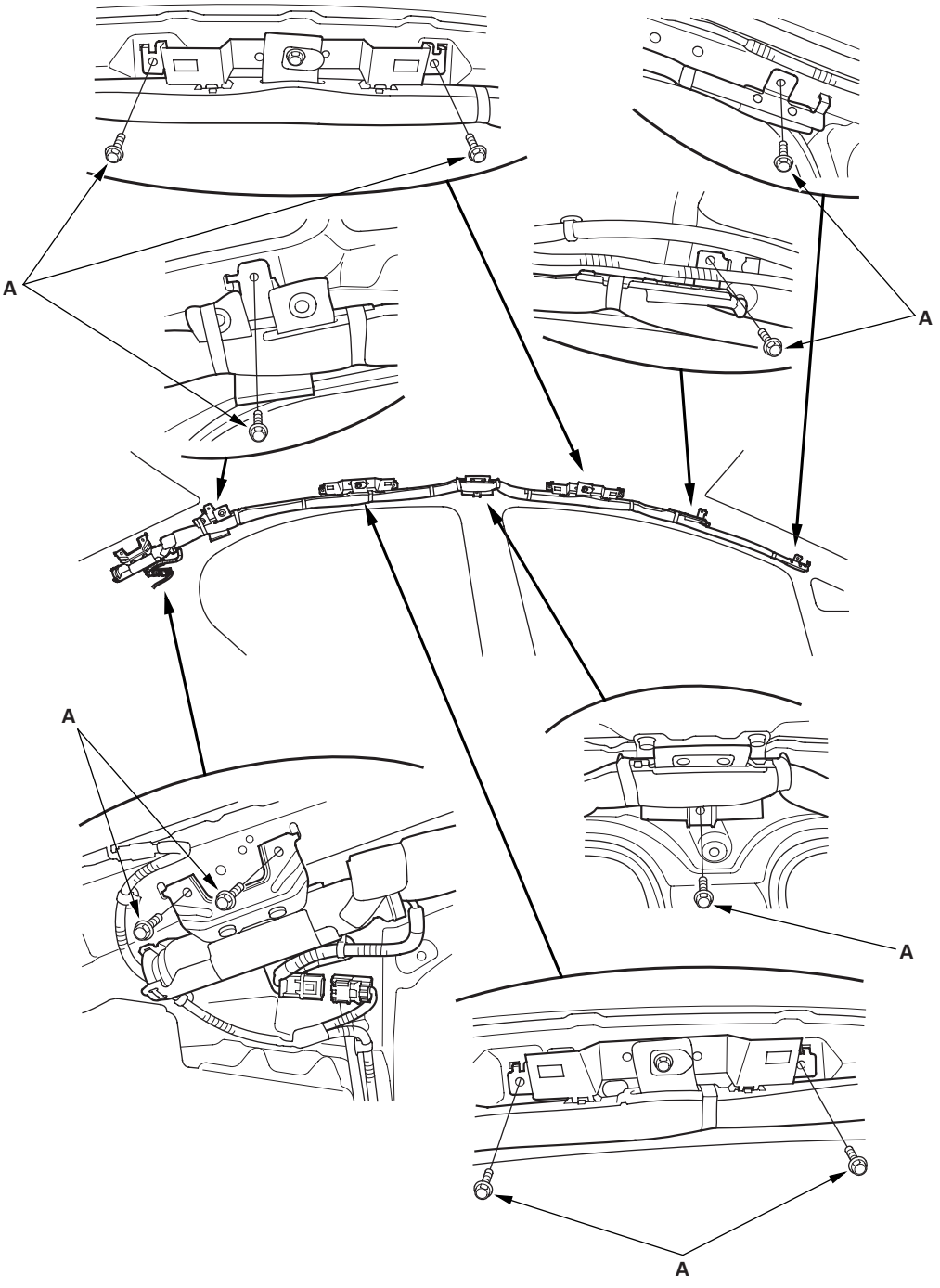
2. Remove the headliner (see page 20-84).

3. Disconnect the side curtain airbag 2P connector (A) from the floor wire harness.



Left side shown; right side is similar.

4. Remove the mounting bolts (A) from the bracket.



Left side shown; right side is similar.

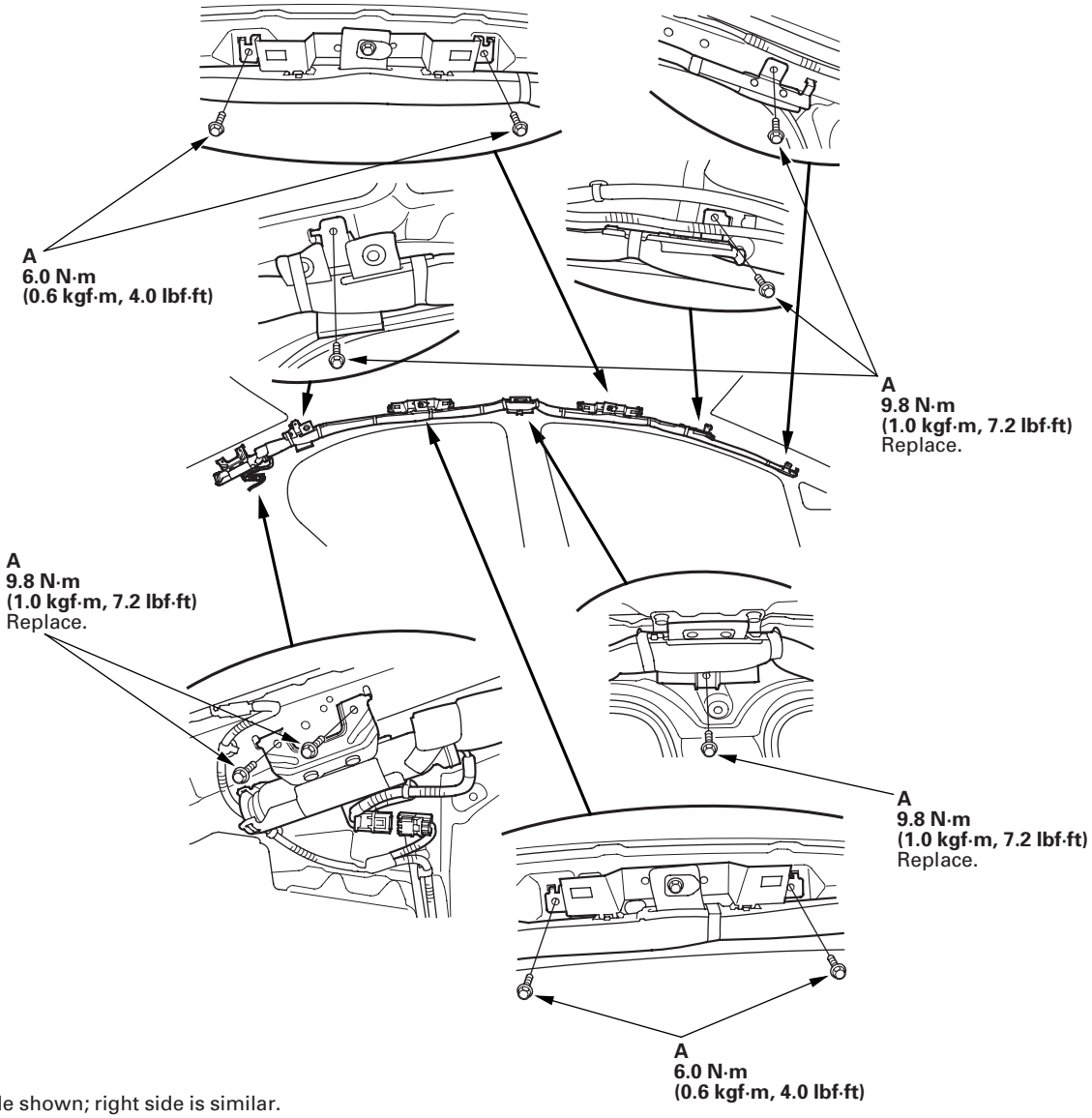
(cont'd)

Side Curtain Airbag Replacement (cont'd)

Installation

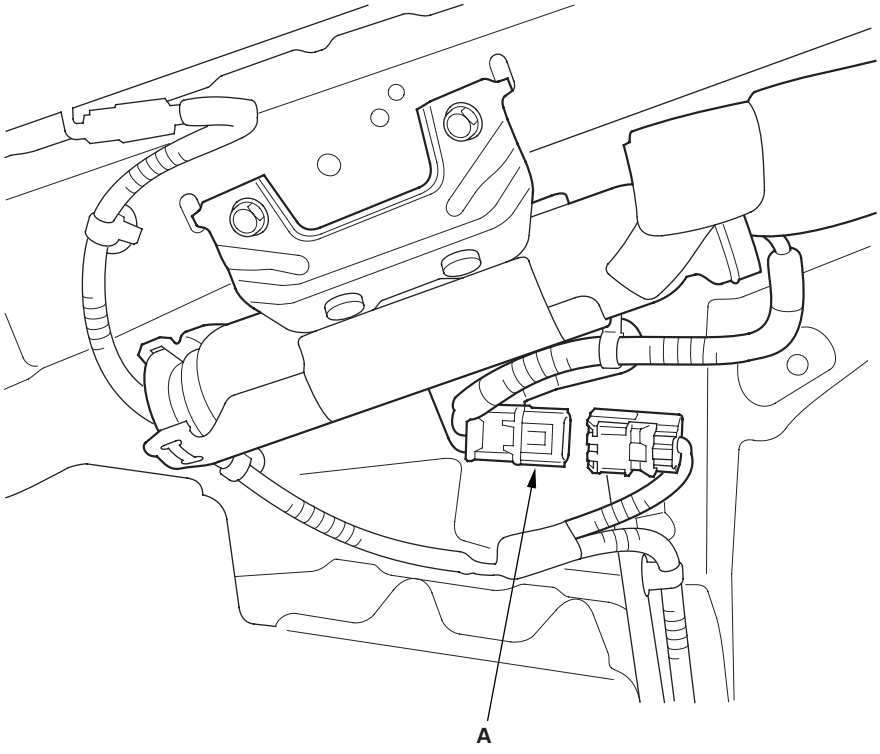
NOTE:
- Installation of the side curtain airbag must be done according to the Precautions and Procedures (see page 24-13).
- If the airbag is frayed, or has only other visible damage, replace it. Do not attempt to repair an airbag.
- When you install the airbag, make sure it is not twisted, and that it is not caught between the inflator bracket by the bracket bolts.
- Make sure that the side curtain airbag inflator retainer is installed properly. Otherwise the airbag could accidentally deploy and cause damage or injuries.
- If there is any damage to the side curtain airbag, do not try to repair it. Replace any damaged side curtain airbag.

1. Place the side curtain airbag assembly on the side of the roof. Tighten the side curtain airbag mounting bolts (A).



Left side shown; right side is similar.

2. Connect the side curtain airbag 2P connector (A) to the floor wire harness.



Left side shown; right side is similar.

3. Do the battery terminal reconnection procedure (see page 22-68).

4. Clear any DTCs (see page 24-23).

5. After installing the side curtain airbag, confirm proper system operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

6. Install all removed parts.

7. Confirm proper headliner/pillar trim overlap (see page 24-187).

Airbag and Tensioner Disposal

Special Tools Required
Deployment tool 07HAZ-SG00500

Before scrapping any airbags, side airbags, side curtain airbags, seat belt tensioners, or seat belt buckle tensioner (including those in a whole vehicle to be scrapped), the part(s) must be deployed. If the vehicle is still within the warranty period, the Honda District Parts and Service Manager must give approval and/or special instructions before deploying the part(s). Only after the part(s) have been deployed (as the result of vehicle collision, for example), can they be scrapped.
If the parts appear intact (not deployed), treat them with extreme caution. Follow this procedure.

Deploying Airbags in the Vehicle

If an SRS equipped vehicle is to be entirely scrapped, its airbags, side airbags, side curtain airbags, seat belt tensioners, and seat belt buckle tensioner should be deployed while still in the vehicle. These parts should not be considered as salvageable parts and should never be installed in another vehicle.

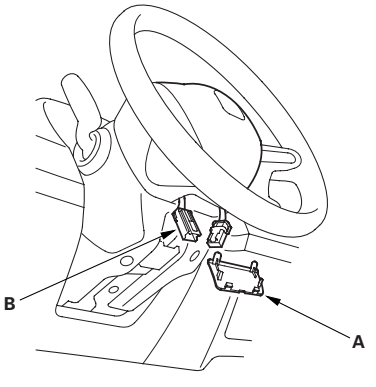
1. Turn the ignition switch to LOCK (0), then disconnect the negative cable from the battery, then wait at least 3 minutes before starting work.

2. Confirm that each airbag, side airbag, side curtain airbag, seat belt tensioner, or seat belt buckle tensioner is securely mounted.

3. Confirm that the deployment tool is functioning properly by following the check procedure on the tool label.

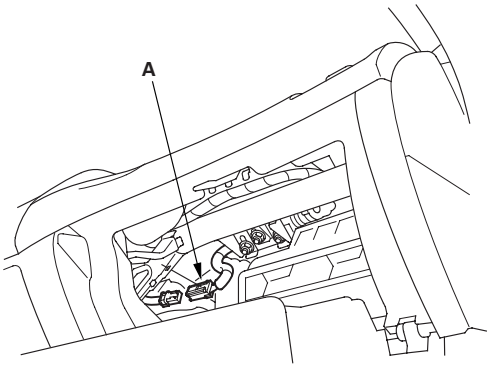
Driver's Airbag

4. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



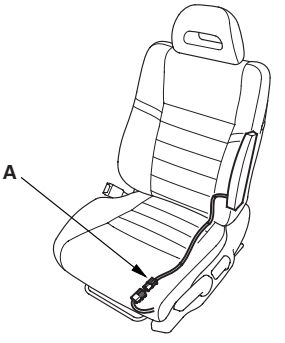
Front Passenger's Airbag

5. Remove the glove box, then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



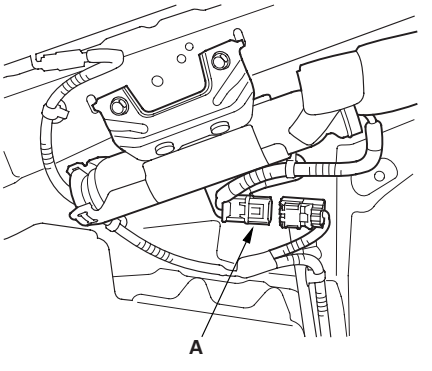
Side Airbag

6. Disconnect the side airbag 2P connector (A) from the floor wire harness.



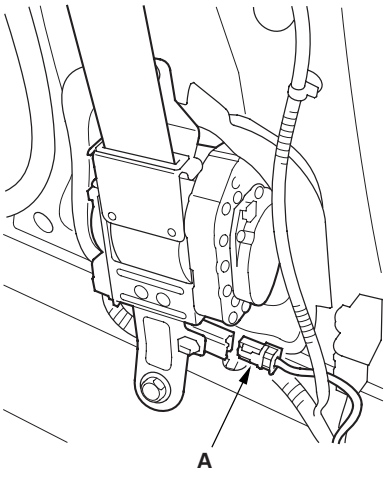
Side Curtain Airbag

7. Disconnect the floor wire harness 2P connector from the side curtain airbag (A).



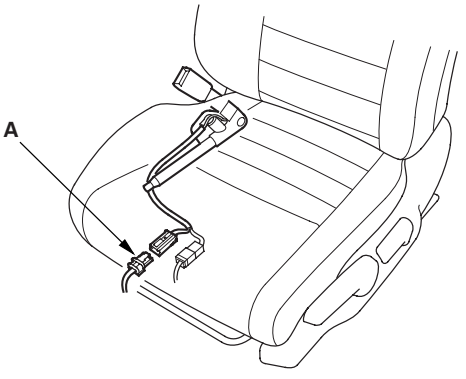
Seat Belt Tensioner

8. Disconnect the floor wire harness 4P connector (A) from the seat belt tensioner. Pull the seat belt out all the way and cut it.



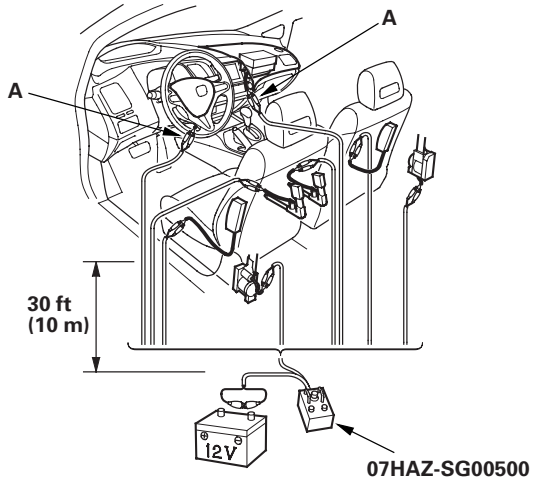
Seat Belt Buckle Tensioner

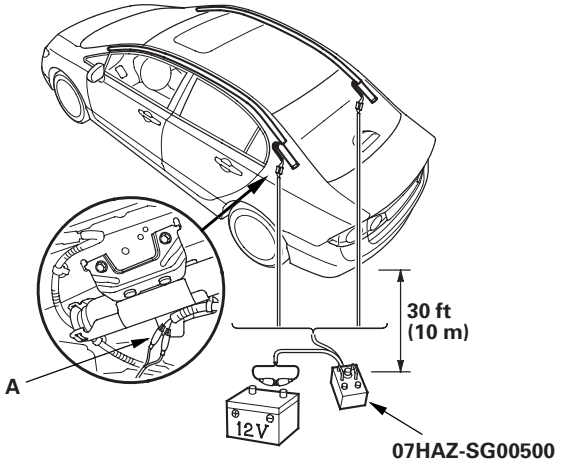
9. Disconnect the floor wire harness 2P connector (A) from the seat belt buckle tensioner.



10. Cut off each connector, and strip the ends of the wires. Twist each pair of unlike colored wires together, and clip an alligator clips (A) from the deployment tool to each pair.

NOTE:
- Place the deployment tool at least 30 ft (10 m) away from the vehicle.
- The driver's and front passenger's airbags have dual inflators. Twist each pair of unlike colored wires together, and clip an alligator clip to each pair.





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Airbag and Tensioner Disposal (cont'd)

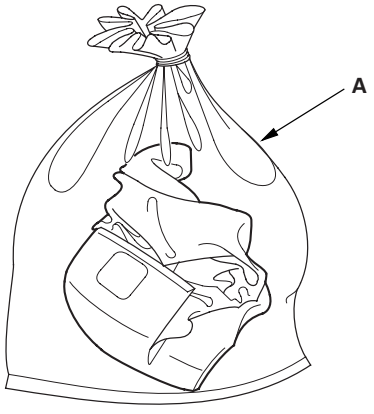
11. Connect a 12 V battery to the tool.

    - If the green light on the tool comes on, the igniter circuit is defective and cannot deploy the component. Go to Disposal of Damaged Components.
    - If the red light on the tool comes on, the component is ready to be deployed.

12. Push the tool's deployment switch. The airbags and tensioners should deploy (deployment is both highly audible and visible: A loud noise and rapid inflation of the bag, followed by slow deflation).

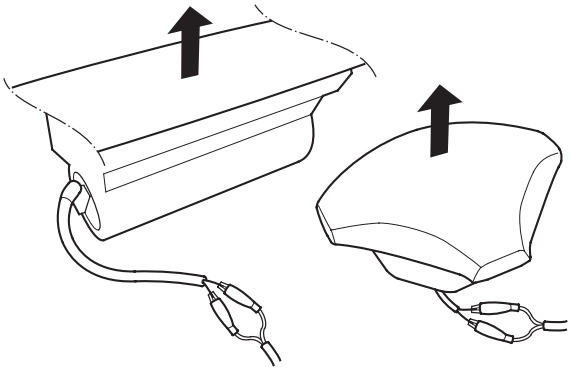
    - If the components deploy and the green light on the tool comes on, continue with this procedure.
    - If a component does not deploy, and the green light comes ON, its igniter is defective. Go to Disposal of Damaged Components.
    - During deployment, the airbags can become hot enough to burn you. Wait for 30 minutes after deployment before touching the airbags.

13. Dispose of the complete airbag. No part of it can be reused. Place it in a sturdy plastic bag (A), and seal it securely. Dispose of the deployed airbag according to your local regulations.



Deploying Components Out of the Vehicle

If an intact airbag or tensioner has been removed from a scrapped vehicle, or has been found defective or damaged during transit, storage, or service, it should be deployed as follows:



1. Confirm that the deployment tool is functioning properly by following the check procedure Deploying Airbags in the Vehicle on the tool label.

2. Position the airbag face up, outdoors, on flat ground, at least 30 ft (10 m) from any obstacles or people.

3. Follow steps 10 through 13 of the in-vehicle deployment procedure.

   NOTE: The driver's and front passenger's airbags have dual inflators. Twist each pair of unlike colored wires together, and clip an alligator clip to each pair.

Disposal of Damaged Components

1. If installed in a vehicle, follow the removal procedure for the driver's airbag (see page 24-188), front passenger's airbag (see page 24-189), side airbag (see page 24-191), side curtain airbag (see page 24-192), seat belt tensioner (see page 24-4), and seat belt buckle tensioner (see page 24-6).

2. In all cases, make a short circuit by cutting, stripping, and twisting together the two inflator wires.

   NOTE: The driver's and front passenger's airbags have dual inflators. The like color wires go to the individual inflators.

3. Package the component in exactly the same packaging that the new replacement part came in.

4. Mark the outside of the box DAMAGED AIRBAG NOT DEPLOYED, DAMAGED SIDE AIRBAG NOT DEPLOYED, DAMAGED SIDE CURTAIN AIRBAG NOT DEPLOYED, or DAMAGED SEAT BELT TENSIONER NOT DEPLOYED so it does not get confused with your parts stock.

5. Contact your Acura District Parts and Service Manager for instructions on how and where to return it for disposal.

Deployment Tool Check

1. Connect the yellow clips to both switch protector handles on the tool.

2. Then connect the red lead to the positive battery post and the black lead to the negative battery post.

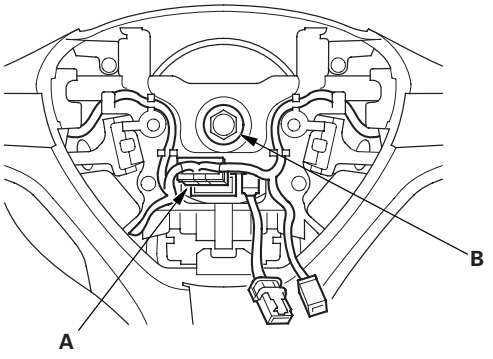
3. Push the operation switch: The green light should come on, indicating that the tool is operating properly and is ready for use. If the red light stays on, the tool is faulty, and another one must be used for the procedure.

4. Disconnect the tool clips and connectors from the protector handles and the battery.

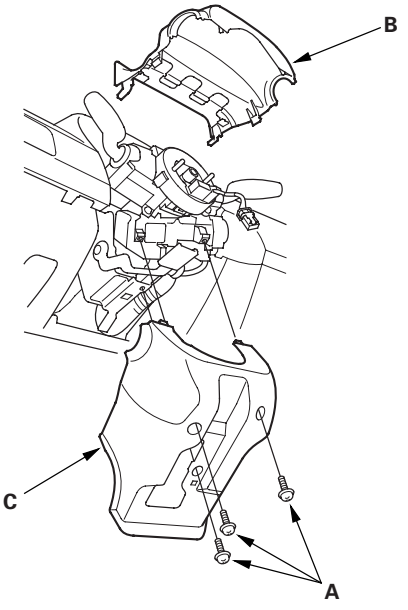
Cable Reel Replacement

Removal

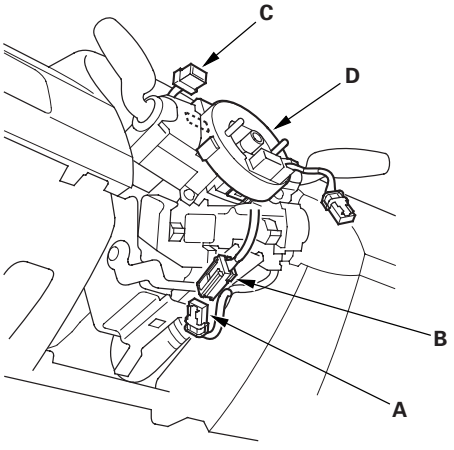
1. Make sure the front wheels are aligned straight ahead.
2. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
3. Remove the driver's airbag (see page 24-188).
4. Disconnect the connector (A) from the cable reel, then remove the steering wheel bolt (B).



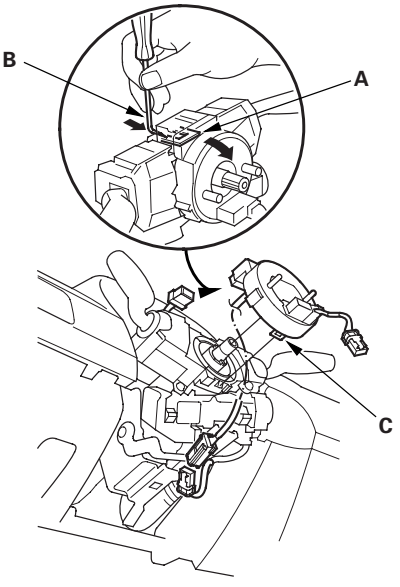
5. Confirm that the front wheels point straight ahead, then remove the steering wheel with a steering wheel puller (see step 5 on page 17-6).
   Do not tap on the steering wheel or steering column shaft when removing the steering wheel.
6. Remove the driver's undercover (see page 20-103).
7. Remove the column cover screws (A), then remove the column covers (B, C).



8. Disconnect the dashboard wire harness 4P connector (A) from the cable reel 4P connector (B), then disconnect the dashboard wire harness 20P connector (C) from the cable reel (D).



9. Release the lock tab (A) under the cable reel connector with a 90 ° hook shaped tool (B). Slide the tool below the cable reel connector just above the lock tab. Release the lower lock tab (C), and slide the cable reel off the column.

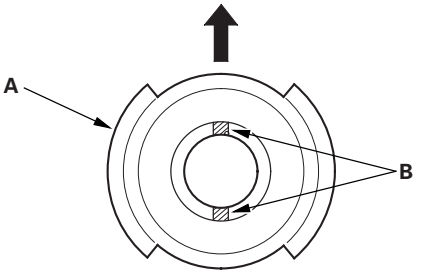


Installation

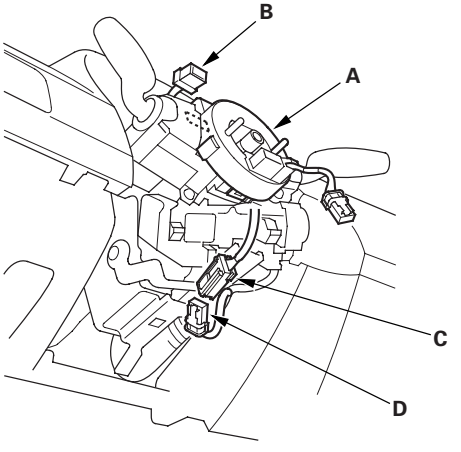
1. Before installing the steering wheel, align the front wheels straight ahead.

2. If not already done, disconnect the negative cable from the battery, then wait at least 3 minutes before starting work.

3. Set the turn signal canceling sleeve (A) so that the projections (B) are aligned vertically.



4. Carefully install the cable reel (A) on the steering column shaft. Then connect 20P connector (B) to the cable reel, and connect the 4P connector (C) to the dashboard wire harness 4P connector (D).

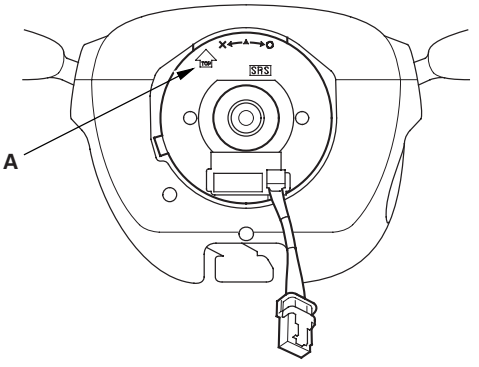


(cont'd)

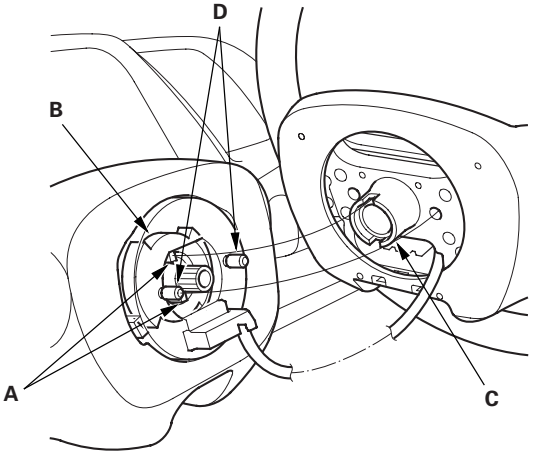
Cable Reel Replacement (cont'd)

5. Install the steering column covers.

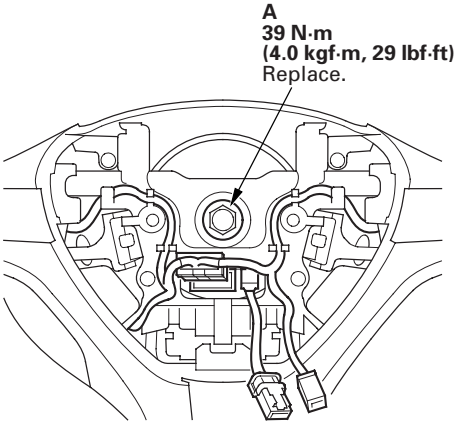
6. If necessary, center the cable reel (new replacement cable reels come centered). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise (about three turns) until the arrow mark (A) on the cable reel label points straight up.



7. Position the two tabs (A) of the turn signal canceling sleeve (B) as shown, and install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the turn signal canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



8. Install a new steering wheel bolt (A), then reconnect the connectors.



9. Install the driver's airbag (see page 24-188).

10. Do the battery terminal reconnection procedure (see page 22-68).

11. Clear any DTCs (see page 24-23).

12. After installing the cable reel, confirm proper system operation:

    - Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.
    - After the SRS indicator has turned off, turn the steering wheel fully left and right to confirm the SRS indicator does not come on.
    - Make sure the horn and turn signal switches work properly.
    - Make sure the steering wheel switches work properly.

SRS Unit Replacement

Removal

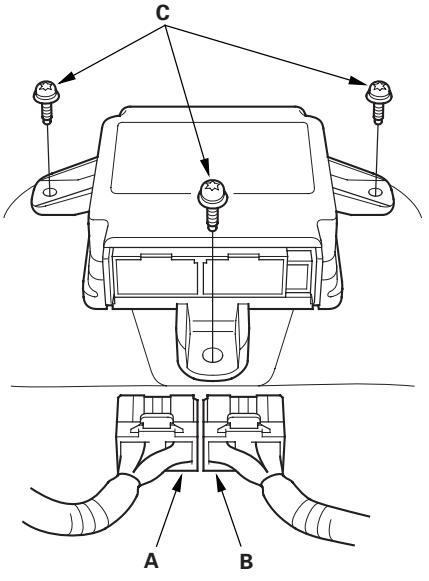
NOTE: If you are disconnecting only SRS unit connector A, skipstep 2.

1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.

2. Disconnect both seat belt tensioner connectors (see page 24-21) and both seat belt buckle tensioner connectors (see page 24-21).

3. Remove the center console (see page 20-92).

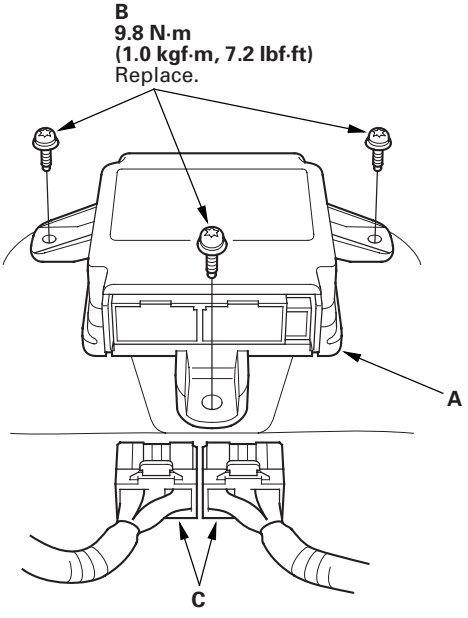
4. Disconnect SRS unit connector A (28P), B (28P) and remove the TORX bolts (C), then pull out the SRS unit.



Installation

1. Install the SRS unit (A) with new TORX bolts (B), then connect the connectors (C) to the SRS unit; push them into position until they click.

   NOTE: Be sure the SRS unit is sitting squarely against its bracket before torquing the TORX bolt.



2. Reconnect both seat belt tensioner connectors (see page 24-21) and both seat belt buckle tensioner connector (see page 24-21).

3. Do the battery terminal reconnection procedure (see page 22-68).

4. Calibrate the ODS unit (see page 24-27).

5. Do the ODS unit operation check (see page 24-28).

6. Confirm proper SRS operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

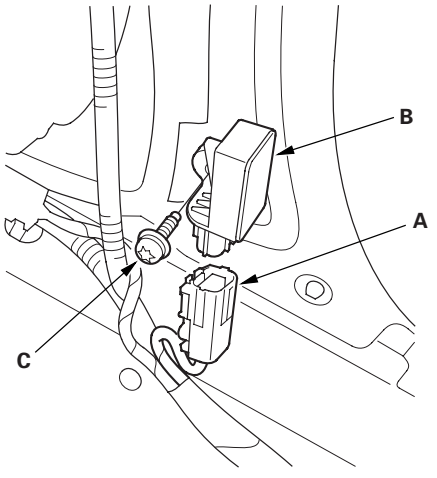
7. Reinstall all removed parts.

Side Impact Sensor (First) Replacement

NOTE: Review the seat replacement procedure (see page 20-118) before doing repairs or service.

Removal

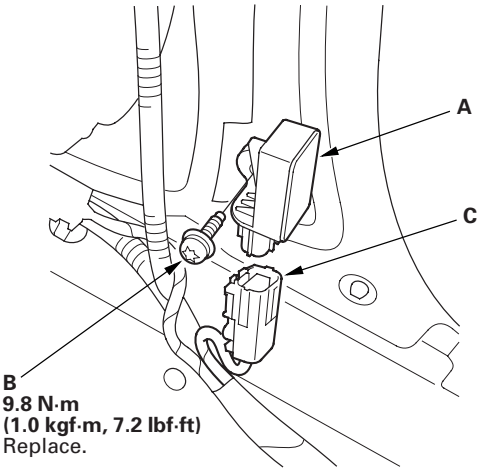
1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the front seat assembly (see page 20-118).
3. Remove the front door sill inner trim (see page 20-66).
4. Remove the lower B-pillar lower trim panel (see page 20-69).
5. Disconnect the floor wire harness 4P connector (A) from the side impact sensor (first) (B).



6. Using a TORX T30 bit, remove the TORX bolt (C), then remove the side impact sensor (first).

Installation

1. Install the side impact sensor (first) (A) with a new TORX bolt (B), then connect the floor wire harness 4P connector (C) to the side impact sensor (first).

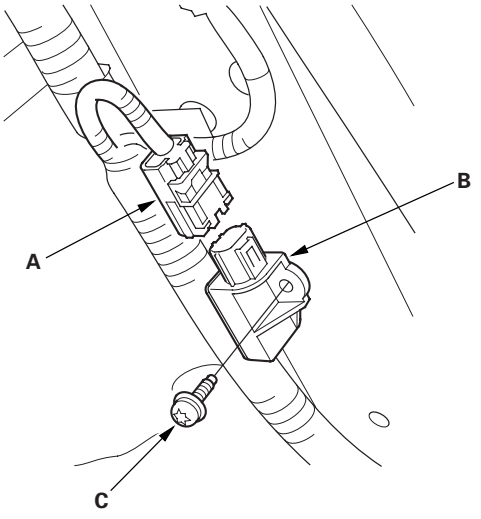


2. Do the battery terminal reconnection procedure (see page 22-68).
3. Reinstall all removed parts.
4. Clear any DTCs (see page 24-23).
5. Confirm proper operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Side Impact Sensor (Second) Replacement

Removal

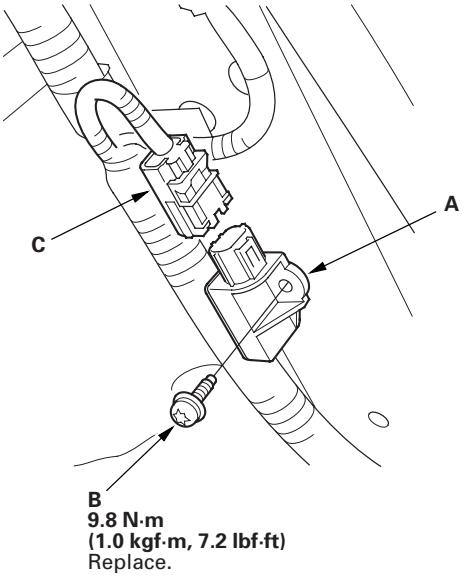
1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the rear seat and seat side bolster (see page 20-131).
3. Disconnect the floor wire harness 2P connector (A) from the side impact sensor (second) (B).



4. Remove the TORX bolt (C) using a TORX T30 bit, then remove the side impact sensor (second).

Installation

1. Install the side impact sensor (second) (A) with a new TORX bolt (B) then connect floor wire harness 2P connector (C) to the side impact sensor (second).

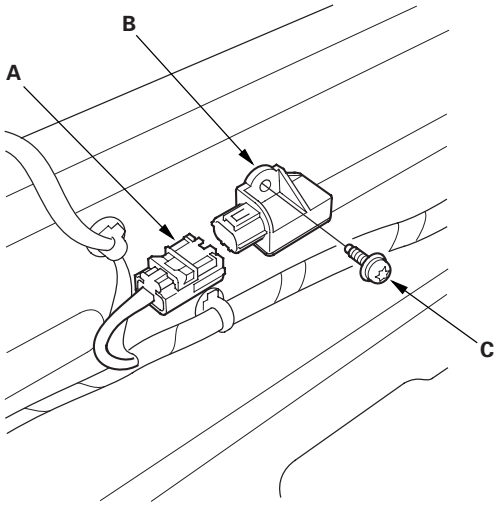


2. Do the battery terminal reconnection procedure (see page 22-68).
3. Clear any DTCs (see page 24-23).
4. Reinstall all removed parts.
5. Confirm proper operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Rear Safing Sensor Replacement

Removal

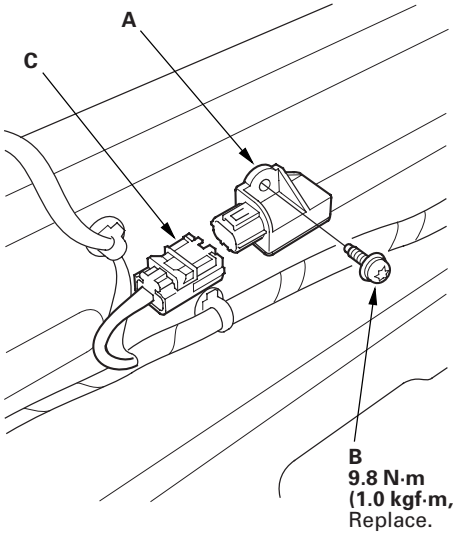
1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the rear seat (see page 20-131).
3. Disconnect the floor wire harness 2P connector (A) from the rear safing sensor (B).



4. Using a TORX T30 bit, remove the TORX bolt (C), then remove the rear safing sensor.

Installation

1. Install the rear safing sensor (A) with a new TORX bolt (B) then connect the floor wire harness 2P connector (C) to the rear safing sensor.



2. Do the battery terminal reconnection procedure (see page 22-68).
3. Clear any DTCs (see page 24-23).
4. Reinstall all removed parts.
5. Confirm proper operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

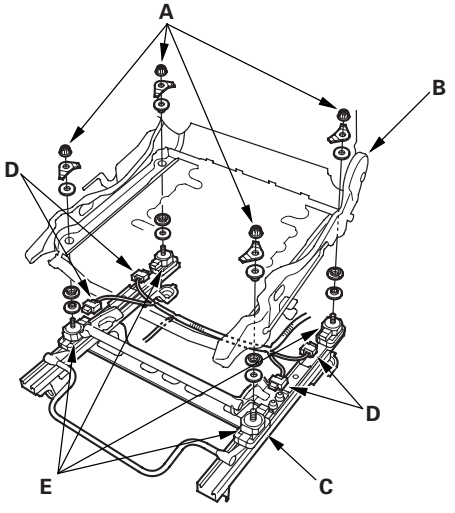
Front Passenger's Weight Sensor Replacement

Special Tools Required
Pin driver, 3.5 mm 07744-0010300

Removal

NOTE: Removal of the front passenger's weight sensors must be done according to Precautions and Procedures (see page 24-13).

1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the front passenger's seat assembly (see page 20-118).
3. Remove the cushion cover/pad from the seat cushion frame (see page 20-127).
4. Using a TORX E18 socket, remove the TORX nuts (A) attaching the seat track (B) to the seat slide assembly including all four front passenger's weight sensors (C).

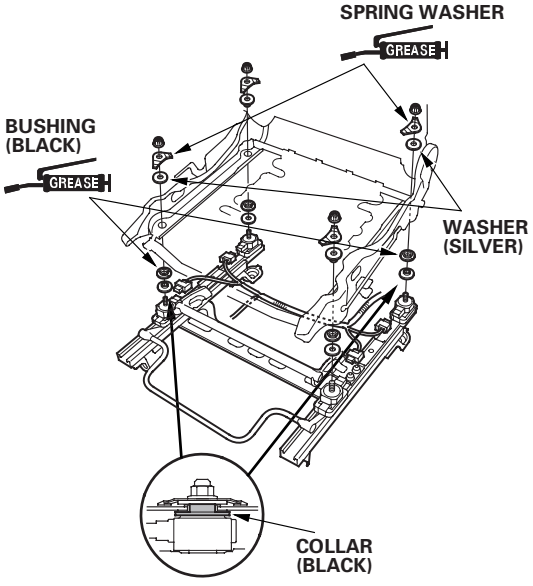


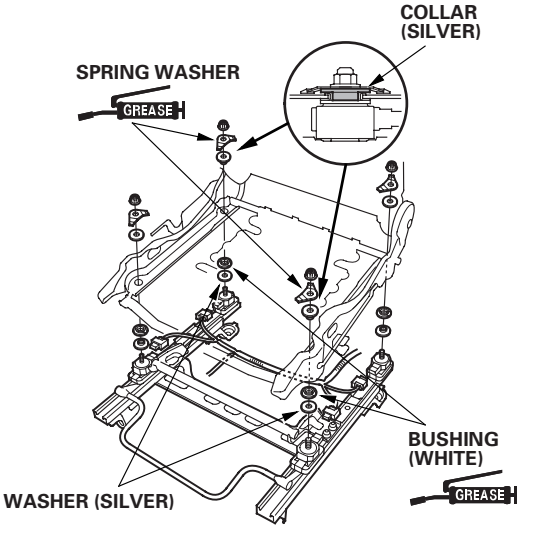
5. Disconnect the sensor connectors (D) from the seat weight sensors (E), then remove the front passenger's weight sensors.

Installation

NOTE: Be sure to install the wire harness so they are not pinched or interfering with other parts.

1. Install the new front passenger's seat slide assembly including all four front passenger's weight sensors with under the seat track.
2. Apply multipurpose grease to the spring washer and bushing.

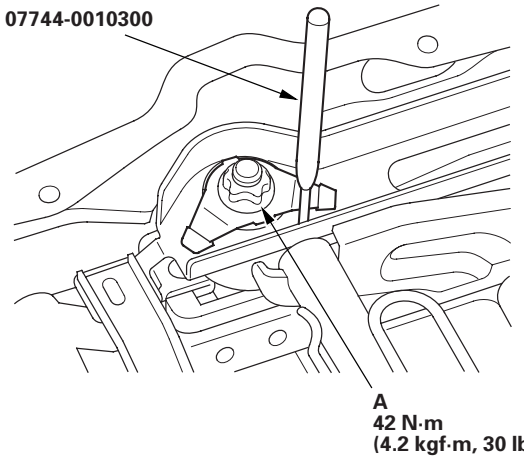


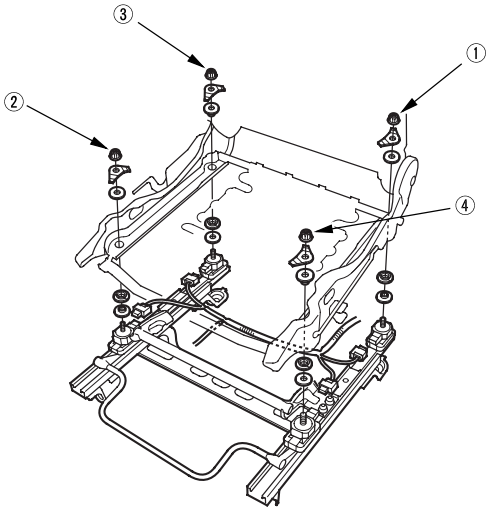


(cont'd)

Front Passenger's Weight Sensor Replacement (cont'd)

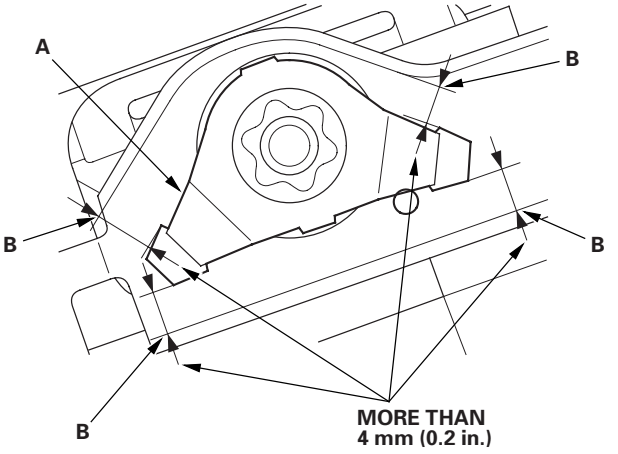
3. Insert the special tool into the hole in the cushion frame to position the spring washers, then tighten the TORX nuts (A). Begin with ①, and tighten them in crisscross pattern in two or more steps.





4. Using the pin driver to position the spring washer's, torque the TORX nuts in the sequence shown in two or more steps.

5. Make sure the gap between the spring washer (A) and the seat track (B) is more than 4 mm (0.2 in.) as shown.



6. Reassemble the front passenger's seat cushion cover/pad (see page 20-127).

7. Reinstall the front passenger's seat (see page 20-118).

8. Do the battery terminal reconnection procedure (see page 22-68).

9. Calibrate the ODS unit (see page 24-27).

10. Clear any DTCs (see page 24-23).

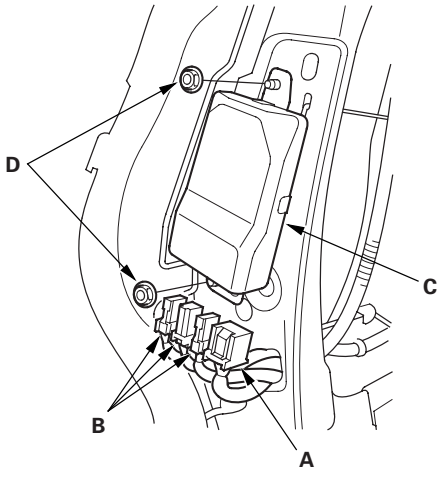
11. Confirm proper operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

ODS Unit Replacement

NOTE: Review the seat replacement procedure (see page 20-118) before doing repairs or service.

Removal

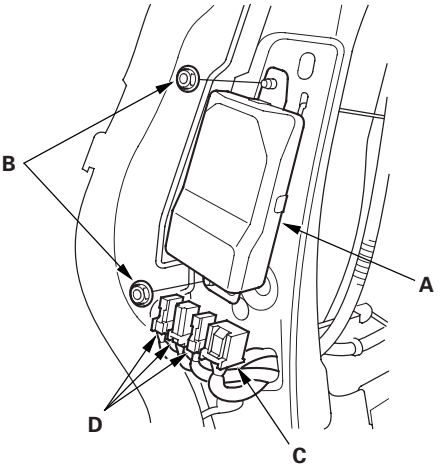
1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the passenger's seat assembly (see page 20-118) and seat-back cover (see page 20-127).
3. Disconnect the ODS unit 18P connector (A) and OPDS sensor connectors (B) from the ODS unit (C).



4. Remove the two nuts (D) and the ODS unit.

Installation

1. Place the ODS unit (A) on the seat-back frame. Tighten the two nuts (B), and connect the ODS unit harness 18P connector (C) and OPDS sensor connectors (D) to the ODS unit.

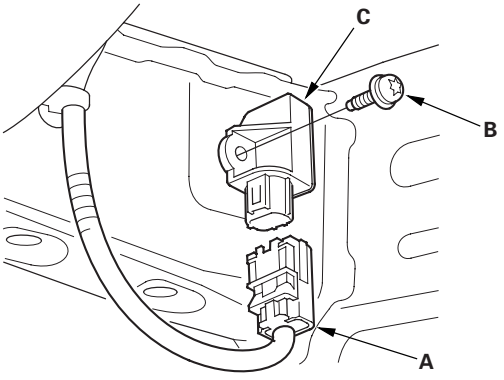


2. Install the seat-back cover in the reverse order of removal.
3. Do the battery terminal reconnection procedure (see page 22-68).
4. Set the seat-back in the normal position, and make sure there is nothing on the front passenger's seat.
5. Initialize the ODS unit (see page 24-26).
6. Clear any DTCs (see page 24-23).
7. Confirm proper system operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.

Front Impact Sensor Replacement

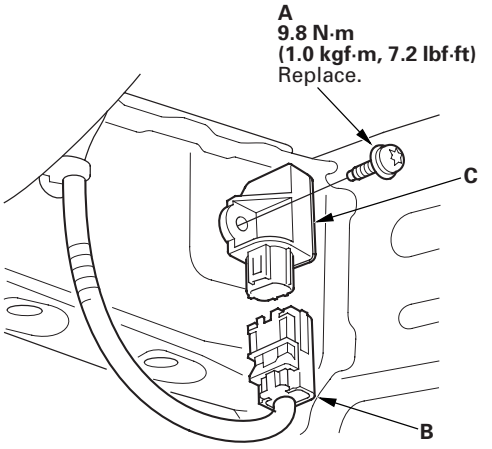
Removal

1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.
2. Remove the front inner fender (see page 20-171).
3. Remove the washer reservoir (see page 22-234).
4. Remove the intake air resonator:
   - K20Z2 engine (see page 11-346)
   - K20Z3 engine (see page 11-347)
5. Disconnect the engine compartment wire harness 2P connector (A). Using a TORX T30 bit, remove the TORX bolt (B), then remove the front impact sensor (C). Discard the bolt.



Installation

1. Install the front impact sensor with a new TORX bolt (A), then connect the engine compartment wire harness 2P connector (B) to the front impact sensor (C).



2. Do the battery terminal reconnection procedure (see page 22-68).
3. Clear any DTCs (see page 24-23).
4. Confirm proper operation: Turn the ignition switch to ON (II); the SRS indicator should come on for about 6 seconds and then go off.
5. Reinstall all removed parts.

Driver's Seat Position Sensor Replacement

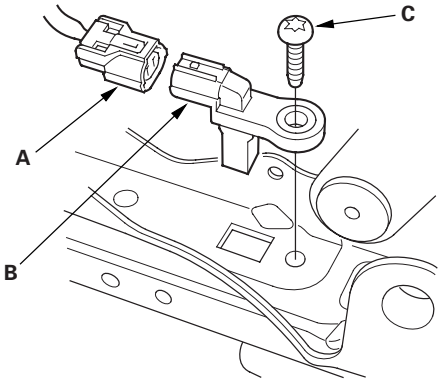
Removal

NOTE:
- Removal of the driver's seat position sensor must be done according Precautions and Procedures (see page 24-13).
- Do not turn the ignition switch to ON (II), and do not connect the battery cable while removing the driver's seat position sensor.

1. Do the battery terminal disconnection procedure (see page 22-68), then wait at least 3 minutes before starting work.

2. Remove the driver's seat assembly (see page 20-118).

3. Disconnect the seat position sensor harness 2P connector (A) from the driver's seat position sensor (B).

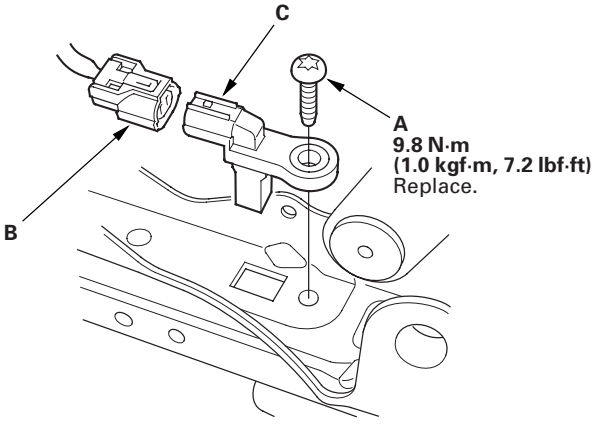


4. Using a TORX T30 bit, remove the TORX bolt (C), then remove the driver's seat position sensor.

Installation

NOTE:
- Be sure to install the harness so it does not pinched or interfere with other parts.
- Do not turn the ignition switch to ON (II), and do not connect the battery cable while installing the driver's seat position sensor.
- After installing the driver's seat position sensor, make sure it is clean. Keep it away from dust.

1. Install the driver's seat position sensor with a new TORX bolt (A), then connect the seat position sensor harness 2P connector (B) to the driver's seat position sensor (C).



2. Install the driver's seat assembly (see page 20-118).

3. Do the battery terminal reconnection procedure (see page 22-68).

4. Clear any DTCs (see page 24-23).

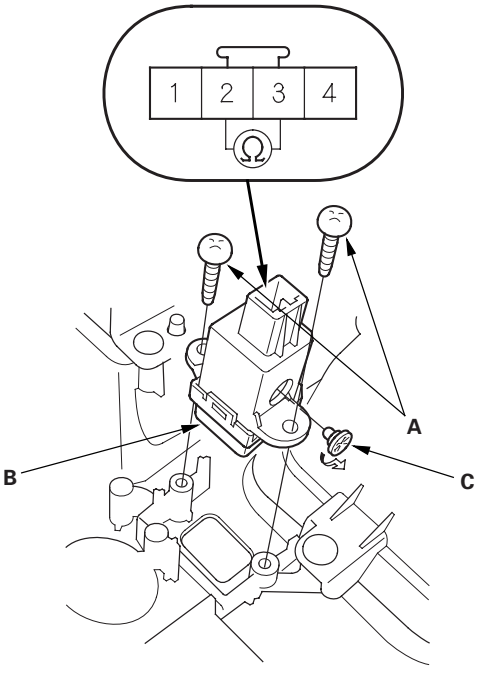
5. Check the operation of the driver's seat position sensor with the HDS (see page 24-29).

Passenger's Airbag Cutoff Indicator Illumination Bulb Test/Replacement

1. Remove the center panel:

   - Navigation unit, with navigation system.
     – '06-08 models (see page 23-256)
     – '09 model (see page 23-355)
   - Audio unit, without navigation system.
     – '06-08 models (see page 23-80)
     – '09 model (see page 23-155)

2. Remove the screws (A) and the passenger's airbag cutoff indicator (B) from the center panel.



3. Check for continuity between the No. 2 and No. 3 terminals of the indicator. If there is no continuity, replace the bulb (C).

4. Reinstall the parts in the reverse order of removal.